STUDIES IN THE HISTORY AND ARCHAEOLOGY OF JORDAN
X

Department of Antiquities
Amman - Jordan

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★ تم إعداد بيانات الفهرسة والتصنيف الأولية من قبل دائرة المكتبة الوطنية

HIS MAJESTY KING ABDULLAH THE SECOND BIN AL-HUSSEIN
OF THE HASHEMITE KINGDOM OF JORDAN

HIS ROYAL HIGHNESS PRINCE
EL-HASSAN BIN TALAL

THE HASHEMITE KINGDOM OF JORDAN

STUDIES IN THE HISTORY AND ARCHAEOLOGY OF JORDAN X

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STUDIES IN THE HISTORY AND ARCHAEOLOGY OF JORDAN X: CROSSING JORDAN

Contents

System of Transliteration from Arabic

Consonents

ء	' (except where initial)	ض	ḍ
ب	b	ط	ṭ
ت	t	ظ	dh
ث	th	ع	ʿ
ج	j	غ	gh
ح	ḥ	ف	f
خ	kh	ق	q
د	d	ك	k
ذ	dh	ل	l
ر	r	م	m
ز	z	ن	n
س	s	هـ	h
ش	sh	و	w
ص	ṣ	ي	y
ـة ة	a or at	ـه ه	a or ah

Long Vowels

ا،ى	ā
و	ū
ي	ī

Short Vowels

ـَ	a
ـُ	u
ـِ	i

Common Nouns

تل	Tall	دير	Dayr
جبل	Jabal	عين	ʿAyn
خربة	Khirbat	وادي	Wādi

THE INTERNATIONAL CONFERENCE ON THE HISTORY AND ARCHAEOLOY OF JORDAN

Conference	*Theme*	*Venue*	*Dates*
I	The Hisory and Archaeology of Jordan from the Earliest Prehistoric Times to the End of the Ottoman Period	University of Oxford / Oxford - UK	25-31 March 1980
II	Jordanian Environment: Geographical and Historical	Department of Antiquities - ‘Amra Hotel / ‘Amman - Jordan	4-16 April 1983
III	Trade, Communications and International Relations throughout the Ages	University of Tübingen / Tübingen - Germany	6-12 April 1986
IV	Sites and Settlement in Jordan	University of Lyons / Lyons - France	30 May - 4 June 1989
V	Art and Technology throughout the Ages	University of Science and Technology / Irbid - Jordan	12-17 April 1992
VI	Landscape Resources and Human Occupation in Jordan throughout the Ages	University of Turin / Turin - Italy	5-10 June 1995
VII	Jordan by the Millenia	University of Copenhagen / Copenhagen - Denmark	12-19 June 1998
VIII	Archaeological and Historical Perspectives on Society, Cutlure and Identity	The University of Sydney / Sydney - Australia	9-13 July 2001
IX	Cultural Interaction through the Ages	Al - Hussein Bin Talal University / Petra - Jordan	23-27 May 2004
X	Crossing Jordan	George Washington University/U.S.A	23-28 May 2007
XI	Changes and Challenges	University Paris-1 Panthéon-Sorbonne/ France	7-14 June 2010

Bism Illah Al Rahman Al Rahim

Excellencies, Ladies and Gentlemen,
Dear friends of Jordan,

It is indeed a great pleasure to represent my father, HRH Prince Hassan, here at George Washington University on the occasion of the 10th International Conference on the History and Archaeology of Jordan. The theme, "Crossing Jordan", reminds us that this territory has been home to a great number of cultures and societies, and a vibrant centre where races, religions and people have met over time. As the 10th conference in this series, we have indeed reached a milestone. Year after year, the value of meeting to share our thoughts and research on the history and archaeology of Jordan is reflected in the work that comes out of conferences such as these. Milestones are often excellent opportunities to take stock of where we are and where we can go.

If you will pardon the pun, we have come a long way! In the past few decades, Jordan has experienced a number of highly specialised conferences on the history of Bilad ash-Sham and the archaeology of Jordan, during which we have been enlightened on the range of research that has taken place. I am continuously impressed by the proliferation of archaeological projects in Jordan. Importantly, this archaeological energy is not all being directed academically, inwardly to the community of scholars. Much effort is being expended on conservation and presentation – and not only on site, although there have been important works undertaken at sites such as Qasr Hallabat. I was pleased to be part of the Discover Islamic Art virtual museum project. And, as a tribute to our history, and in a sense, continuity to our efforts here, we are working to establish the Jordan Museum, our first national museum. These are just two of a number of projects where the end product of archaeological research will be interpretation for the public audiences within Jordan and beyond. The global process of interaction, with mass migration and the information revolution, means there is no longer a limit to our ability to exchange knowledge and expertise. This is a positive development as it comes at a time when heritage, whether natural or cultural, is increasingly exposed to many risks of deterioration resulting from such causes as wear and tear over time, pollution, rapid population growth and rampant urbanisation. In the face of such dangers, there is a heightened need to actively cooperate and coordinate conservation efforts.

HER ROYAL HIGHNESS, PRINCESS SUMAYA BINT EL-HASSAN

In the context of protecting Jordan's cultural heritage, it has come to my attention that a paper will be presented during this conference on the sustainable management of Petra, possibly Jordan's most iconic site which is protected by its status as a World Heritage Site. I would like to take this opportunity to suggest that we make a dedicated effort to protect more of Jordan's archaeological treasures in this way, as much for Jordan, as for civilisation, past, present and future. With this thought in mind, this conference is not only a celebration of the archaeology and history of Jordan, but of the thousands of years of history which have been lived on these lands and in neighbouring areas.

Exchange and Understanding

As we look at ourselves today, we see our roots originating in the beginning of human civilisation and extending to a country rich in culture, in history and in the diversity of its people. Being at the crossroads of three continents, this territory has felt the impact of each of the great civilisations which flourished in the nearby regions, imprinting on Jordan the 'cultural footprints' of peoples from ancient Mesopotamia to modern Europe. Each of these communities has contributed to the ethnic, cultural and linguistic mosaic that we have here today. I am all too aware that despite numerous examples of peaceful contact, historically, the land of Jordan has often been the dispute zone between empires. And it is unfortunate that the last 86 years since Jordan's inception, have increasingly seen engagement in the form of crises and wars in and around our country. In such a pluralist region, the importance of continuing to evaluate where we stand in terms of territoriality, identity and migration has never been so clear. To preserve our collective heritage, we must strike a balance between finding our past and respecting our present.

As we look at the history of Jordan, as we look at the birthplace of the world's monotheistic religions, as we look at the context of dialogue and interchange between cultures and dynasties over time, we must realise the responsibility that we have towards developing understanding between peoples within the region and with those beyond the region. At these times of crisis, moderates on all sides need to take a stand for a more peaceful world. In the words of Franklin D. Roosevelt, "Today we are faced with the pre-eminent fact that, if civilisation is to survive, we must cultivate the science of human relationships – the ability of all peoples, of all kinds, to live together in the same world, at peace."

Research in history and archaeology can be seen as a means of promoting understanding among peoples and states, if only because such research almost invariably points to the essential unity of human interests and aspirations. In our past, we find our shared humanity. In this context, I would like to highlight a unique project with which I have become involved recently. Along with a group of historians, I am working on a book entitled Arab Thought at the Crossroads of Civilisation, which will include a collection of texts from Arab Muslims, Christians and Jews that will re-examine our shared histories in light of Arab thought since pre-Islamic times. Tolerance and respect stem from a clear understanding of "the other". In highlighting the Arab contribution, my hope is that we can emphasize our commonalities. This becomes an especially important task as border-lines between us fade.

Bism Illah Al Rahman Al Rahim

Your Royal Highness Princess Sumaya bint El Hassan, Distinguished Guests, Colleagues, Participants, Ladies and Gentlemen

It is my great pleasure to be with you today and also to welcome you to the opening ceremony of the 10th International Conference on the History and Archaeology of Jordan taking place at the prestigious George Washington University. I remember well when His Royal Highness Prince El Hassan bin Talal inaugurated this conference almost three decades ago in 1980 in Oxford. This is my third opportunity to preside at this venue as Director General of the Department of Antiquities.

The research studies and working papers presented at this triennial conference are compiled and published by the Department of Antiquities in the series entitled *Studies in the History and Archaeology of Jordan* (*SHAJ*) which remains a very important source for those interested in studying the history and civilization of Bilad Al Sham and the Arabian Peninsula. We are pleased that *SHAJ* 9 from the 2004 conference in Petra is available to you now thanks to the efforts of the Department's publication staff.

Many of you have worked in Jordan through educational institutions and research centers and have been part of the fruitful and constructive cooperation with the Department of Antiquities. In the coming days, you will present your papers and the findings of your fieldwork or other research. You will also exchange views and expertise and have the opportunity to consider the efforts and achievements of your colleagues. This remarkable intellectual and scientific convergence will certainly have a positive impact on the development of research in Jordan. It will also enrich our knowledge of Jordan's archaeological and historical treasurers through the ages— from Prehistory to Ottoman times.

The very fact that we are convening this conference for the tenth time is a clear indication of the unceasing efforts of well placed and prestigious scientists and experts, many of whom have worked in Jordan for many decades. This is because they believe that the land of Jordan was— since the dawn of history—at the cross road of ancient civilizations and at the point where east and west meet in a unique and reciprocal way.

DR. FAWWAZ AL KHRAYSHEH

The research studies and fieldwork of the experts gathered for this conference from all corners of the globe are a tribute to the cultural role Jordan has performed over the ages through its land and people. The many decades of research in Jordan will be reflected in what we shall hear in the coming days and the many nations who have been involved in Jordan are well represented in this gathering.

To conclude I would like to express my deep gratitude and appreciation to Her Royal Highness Princess Sumaya bint El Hassan for her continued patronage of this conference and other activities relevant to archaeology and heritage. My thanks also go to the organizers of this conference, Douglas R. Clark and Barbara A. Porter, who devoted much time, effort and energy to it these past two years—Dr. Clark in California and Dr. Porter in Amman where her first year as Director of ACOR focused on this endeavor. Particular gratitude most definitely goes to H. E. Ambassador Edward W. Gnehm, Jr., who served as the U.S. Ambassador to Jordan from 2001 to 2004. Through his auspices as Professor in The Elliott School of International Affairs of George Washington University we will be experiencing state-of-the art classrooms and enjoying spectacular views of Washington, D.C. Indeed my thanks go to all of the individuals and institutions that have made this congress a reality.

It will be my pleasure to meet with you in this hospitable environment during the coming week.

Wassalamu alykum warhmatu Allah wa barakatuh

Your Highness, Excellencies, Colleagues, Ladies and Gentlemen

Before I begin, my husband, Pierre Bikai, wanted me to say something on his behalf: six years ago at the wonderful conference in Sydney, Pierre announced that the committee had accepted his proposal to have the 2007 conference in the United States under the aegis of ACOR. Of course he and I retired from ACOR in 2006, leaving Barbara Porter one year to put it all together. I join Pierre in congratulating the many people, many too many to list here, who put in hundreds of hours to make this work, but we give a special congratulations to Barbara who, with the assistance of Doug Clark, and the support of the ACOR Board of Trustees under its chair, Artemis Joukowsky, took up the challenge of a task set for her by Pierre six years ago, a task set for her without her knowledge or agreement. Mabruk!

The theme of this conference "Crossing Jordan" is, on the face of it, somewhat obscure. Pierre chose the theme and when I asked him what it was supposed to mean, he explained in an appropriately vague manner that he meant it to be abstract so that it could be inclusive and it has turned out to be that.

The past nine History and Archaeology of Jordan conferences have had concrete themes referring to art, archaeology, trade, cultural interaction, technology, and international relations. We as archaeologists, historians, anthropologists, and members of the related disciplines are very comfortable with such straight-forward themes.

The first Studies in the History and Archaeology of Jordan (SHAJ) conference in 1980 was entitled "The History and Archaeology of Jordan from Earliest Prehistoric Times to the End of Ottoman Period." That was a rather ambitious agenda. The sweep of that agenda was much reflected in the very broad scope of many of the papers given: Diana Kirkbride's paper was titled "Early Jordan: A Survey"; Kyriakos Nicolaou spoke about "The Mycenaeans in the East"; Crystal-M. Bennett on "Neo-Assyrian Influence in Transjordan"; and Asem Barghouti on the "Urbanization of Palestine and Jordan in Hellenistic and Roman Times". It was a different age.
By the way, while reviewing what happened at that first SHAJ conference,* I was struck by how few Jordanians gave papers. No joint papers and, appar-

* Hadidi, Adnan (ed). 1982. *Studies in the History and Archaeology of Jordan* I. Amman: Department of Antiquities

ently, no joint projects. It is very nice to be able to say that that situation has changed completely.

During the course of the last 27 years and the nine conferences that have taken place, over 50 days of conference papers have been given that related in some way to the ambitious agenda of 1980. Those nine conferences were given over the period of a generation, a period that has witnessed the growth of Jordanian cultural studies in a multiplicity of fields. The SHAJ volumes themselves document a growing maturity of the discipline and an exponential growth in the scope of our knowledge about Jordan. I cannot pass up the opportunity to congratulate the Department of Antiquities for producing the SHAJ volumes on time every time. Some of the growth that is now apparent in those volumes and elsewhere could not have been predicted in 1980. Who would have guessed how much energy would now be devoted to prehistoric studies? Who could have known that conservation would become such a major component of our efforts. The conservation of sites and the seriousness with which excavators now take their responsibility to the site they excavate have put Jordan miles ahead of many countries, not just in the region, but around the world. In SHAJ vol. I, there is not a single paper on conservation, although Antonio Almagro and Emilio Olavarri reported on "A New Umayyad Palace at the Citadel of Amman"; the palace would, of course, become the subject of a major conservation project by the Spanish. There was also a paper by J.M. Dentzer, F. Villeneuve and F. Larchê on excavations at Iraq al-Amir, a site that would become a French restoration project.

In that same volume, there is only one article on physical anthropology and none on archaeobotany or any of the many other subdisciplines that now enrich our field. I will end this retrospective by noting that there are in that volume testaments to the longevity of some projects and some researchers in Jordan, projects and researchers that have over these decades became part of the reason that we now have such a wealth of information. The following scholars gave papers at the first conference and will give papers here: Thomas Schaub spoke on the Early Bronze Age; Roberto Parapetti on Jerash; Nabil Khairy on Nabataean pottery; Denyse Homès with Paul Naster on the first Belgian excavations; Michele Piccirillo about Mount Nebo; and Alan Walmsley with Anthony McNicoll reported on Pella.

The theme for 2007, "Crossing Jordan", is much less user friendly and the papers submitted for the conference showed how many potential participants struggled with the theme, but many showed exactly the sort of creativity that the theme asked of them. I believe that the theme reflects the complexity of Jordan studies today and can illustrate how far we have come in so many areas and so many different directions since 1980.

Before I do that, however, I would like to point out that the conference literature states that, "In addition to the conference theme of "Crossing Jordan," presenters will also concentrate on the conservation and presentation of sites and monuments." It was apparently felt that the conservation and presentation of sites was somehow outside of the main theme of the conference. I will suggest here that conservation and presentation have become very much part of everything else that is going on.

So what did potential participants make of “Crossing Jordan”?

Many projects fit into the understanding of “Crossing Jordan” as a physical endeavor: surveys of road networks, regional surveys, trade routes, boats on the Dead Sea, and physical connections between settlements; this includes aerial documentation, GIS studies and mapping projects. Archeobotany even made it into the theme: the remains of parrot fish from the reef in ʻAqaba are now turning up in lots of places with ash-Shawbak Castle being the most recent to report. The geologists have earthquakes crossing Jordan and marble is imported from Greece and Turkey.

The importance of these concrete, primary studies has grown exponentially in the last several years. The archaeology of Jordan can be extremely exciting because so many sites have been untouched since antiquity. My own site at Bayḍa, for example, seems to have been essentially untouched since the end of first century AD – no Byzantines though they built a church nearby; no Crusaders, though they built a whole village within meters; and no Bedouin visitors, though they have been at Bayḍa for ages. Jordan’s importance as trade route has fluctuated dramatically over the millennia. We can see a change after the Roman occupation, again after the Umayyad era, and again after the Crusader era. In the down periods, the population appears to have dropped precipitously. After the Umayyad era, there was little or no urbanism, so there were few places where antique sites were looted of their stones for new buildings or where antique sites were simply built over by modern ones. The sites were abandoned. However, the re-growth of the population in the 20th century and the continuous influx of refugees, reported on in papers here, have led to an urban sprawl within which even a Department of Antiquities with an enormous budget would not be able to protect the sites. They are disappearing and need to be documented as fast as possible. One thinks of Ayn Ghazāl, now engulfed by buildings and freeways and of the now-buried Roman fort on the Jarash road, of the mosaics of Mādabā, and of downtown ʻAmmān. In too many cases, we will not be able to conserve the landscape or the sites themselves, but the documentation of these has become very much part of the conservation movement, whether the archaeologists involved are conscious of that fact or not.

Aside from simple documentation, we have learned so much about Jordan from the many excavations and surveys. Choose any period, any region and you will find that what was written in 1980 is now completely outdated. Because I have worked there, I myself think particularly of Petra: no one expected the multiplicity of Byzantine churches (we now have four of them documented and several others located); no one expected the discovery of Byzantine scrolls; no one expected the elephant-headed capitals and the elaborate plaster work found at the Great Temple; no one expected the extensive water conservation infrastructure now being documented all over the Petra basin; no one expected frescoes such as those at az-Zanṭūr. I could go on, but I also need to say that if this is what has been discovered during my time in Jordan, imagine what is still out there, not just at Petra but elsewhere in Jordan. We as archaeologists are the guardians of such places. I consider that an honor, but it is an honor that we must live up to by our actions as spokespersons for the sites. No one else will speak for them, certainly not those who

see the sites only as economic assets. We must protect the sites for the future. I mourn for what we will in fact lose over the next decades, but celebrate how much has been saved, how well Jordan has been crossed by those seeking to learn what happened.

If we turn in another direction, we see the theme applied to cultural influences and actual groups coming from Egypt, Assyria, Rome, Damascus, France, and elsewhere. In Jordan, we can identify the concrete physical remnants of those influences on religious statuary, architecture, coinage, ceramics, and so on. The touristic icons of Jordan: the Treasury in Petra, the temples on the Citadel and at Jarash, the mosaics of Mādabā, and ash-Shawbak Castle all reflect the multiple cultures that "Crossed Jordan". We can also see all the great religions crossing Jordan. While this area of studies, the documentation of very concrete influences on specific areas of the cultural record, has grown by leaps and bounds, what is lacking is an acknowledgment that we have no idea how the objects, themes, religions, or even persons and groups were understood by the ancient residents of Jordan. A specific scene on a mosaic can be shown to have been influenced by Roman or Assyrian art, but what the Byzantine viewer of that scene understood we will never know. Likewise, what did the neighbor of the Limes forts or the Crusader castles think of the Romans or the Crusaders? What did the ancient inhabitants of Petra make of Isis and Dionysos?

There are, of course, a few instances in which we think we know at least part of what the viewer understood; these instances are mainly in the area of displays of power, sometimes as military power, sometimes as royal power, sometimes as religious power, but as much attention as we give to these examples, there are a multitude of other examples of which we have to say we do not know what was understood. Indeed, we are still struggling with a methodological framework within which we can venture a hypothesis of what was understood. Some years ago at ACOR, a fellow who was an art historian was lecturing on a particular piece of art and stated that it was a raw display of power. The social scientists in the audience immediately said, "How do you know that?" Well, we do not really know, do we? So in this case, I celebrate how much we have learned about those who left their influences as they crossed Jordan, but I mourn what we cannot know about the real impact of those influences.

Jordan has also been crossed by those who see poetry in its landscape. I think of the wonderful paintings by the late Ali Jabri and I think of the many times that all or at least most of us have been touched in a less concrete way by the things we otherwise approach as objective scholars. This dimension of crossing Jordan is expressed in a poetic way by Kay Prag in her abstract and I hope she will not mind if I paraphrase her words:
Monuments that are well preserved in arid regions provide a strong visual image of the past, and even when they lack documentation, they affect our feeling for the landscape and evoke a response. Jordan is still especially rich in such remains. In many places one can stand and consider who were our predecessors in that landscape, and when and why they came there.
We as archaeologists tend to keep our eyes on the ground, not just in the field, but as a lifetime habit. Sometimes we miss what is all around us. When I was working in Petra, we would arrive at the site in a car, having come down the

back road. We would then spend the day looking down. I worked there long enough to realize that I was missing the main show, so every so often I would skip the car and walk in through the Sīq, just to remind myself where I was. I was not in some anonymous trench, I was in Petra, in Jordan, a very special place. I hope that as you listen to papers and in giving your own paper, you will give some thought to the more poetic aspects of "Crossing Jordan."

There is another less abstract, more physical, and concrete case of "Crossing Jordan" – research dealing with the peoples of prehistory literally crossing Jordan as they came out of Africa. Some of the most exciting archaeology/ anthropology in Jordan has to do with the movements of those peoples.

They, like the peoples of much later times, the Romans and Ottomans and others, left their imprint on Jordan. However, cultural interaction does not just go one way. There had to have been influences leaving Jordan, but one would be hard pressed to point to examples of them in the archaeological record. Yes, there are some coins and references to Nabataean rulers in inscriptions. There are pieces of Nabataean pottery around. But in the archaeological record of Italy or even of Egypt there is almost nothing. Were there influences there? Did the Assyrians or the Egyptians or the Italians or the Turks take something home with them after they crossed Jordan. Of course they did, but those influences are probably no longer accessible to us except by analogy. What might those influences leaving Jordan consist of? Desert hospitality perhaps. Ideas of family and tribal loyalty? Ideas of an exchange culture? We will probably never know, but there must have been something. We cannot, of course, idealize any of this as though we were patronizing 21st century Orientalists. In fact, there were times, as we all know, when Jordan, in common with most of the world, was not very hospitable. The Nabataeans were hardly hospitable to many who were "Crossing Jordan" in their era – trading trips were subject to the rules of the Nabataeans, in what I always think of as well-organized banditry. In the middle of the last millennium, crossing Jordan to go on Hajj was a risky business. It remained that way until the Ottomans imposed order on the route. The Ḥajj forts visible from the Desert Highway are testaments to that effort at creating law and order for those crossing Jordan in that era. I would note the Ḥajj Fort at Qaṭrāna was restored by the Turkish government in the 1950s, making it one of, if not the earliest, example of architectural conservation in Jordan. The early nineteenth century western visitors to Petra make it clear that Jordan could still be dangerous and inhospitable even after the imposition of Ottoman control.

Nevertheless, I would like to think that many of those who crossed Jordan in antiquity and in more modern times probably took with them something we have all experienced: the generosity and hospitality of the Jordanians. I thank our Jordanian colleagues for allowing us to be among those "Crossing Jordan." We are very happy that you are our guests here. Ahlan wa-Shalan to you and to all of our guests in Washington.

Thank you.

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P. M. Michèle Daviau

The Inhabited Vine Motif and Mould-Made Lamps: A Continuing Tradition in the Early Islamic Period

I would like to dedicate this paper to the Franciscan scholars who have brought to light and published a large number of Christian sites in Palestine and Transjordan: Virgilio Corbo, who excavated at Capernaum, Herodion, Mount of Olives, and Holy Sepulchre, Bellarmino Bagatti at the Tomb of the Virgin Mary in Gethsemane, Nazareth, and the Church of the Circumcision, Sylvester Saller at Dominus Flevit, Bethphage, Mount Nebo, Bethany, Khirbat al-Mukhayyaṭ, and ʻAyn Karim, Hilary Schneider, Eugenio Alliata, Marian Arndt, Stanislao Loffreda for their work on the pottery, lamps, and inscriptions, and Michele Piccirillo for excavations at Mādabā, Mount Nebo, Māʻīn, Mukhayyaṭ, and Umm ar-Raṣāṣ. Their incomparable contribution to archaeology and art history provides the basis for both my research on the decorative motif of the inhabited vine and the publication of a corpus of early Islamic lamps and pottery from Building 600 at Tall Jāwā, near al-Yādūda.

Introduction

The inhabited vine is a decorative motif that consists of a vine with tendrils forming circles or medallions that surround figures and floral images.[1] While the figures may be human, animal, fish or fowl, the floral elements are usually those directly associated with the vine itself, such as grape clusters and grape leaves. Other elements include flowers, pomegranates, or other fruit. The vine and its tendrils can also serve as a connecting element, linking together an elaborate scene that includes agricultural[2] or hunting activities.[3] In Jordan in the late Byzantine period, this motif appears on mosaic floors in the form of parallel vine scrolls which constitute the central element in a carpet. The design is also used in borders and between columns (FIG. 1a).

a

b

1a. Mosaic scroll (after Piccirillo 1993: fig. 253, published here with permission of the author; b) scroll on a ceramic lamp from Tall Jāwā (V1614; D23/15.35).

[1] For the history of the term, see Dauphin (1987:183, n.1).

[2] The most popular agricultural scene is that of the grape harvest and processing. This motif had a long history, appearing already during the New Kingdom in Egypt in the Tomb of Nakht (Bongioanni 2004: 185) and the tomb of Neberhabef , first prophet of the Ka (Magi 1990: 82). In the Late Antique period, the vine harvest scene appears on mosaic floors in Jordan at the Church of the Deacon Thomas at ʻUyūn Mūsā (Piccirillo 1993: figs. 252–256, 263) and the Church of the Holy Martyrs Lot and Procopius at Mukhayyaṭ (1993: figs. 202, 213, 214). It is also known in Egypt in a long relief on a frieze (2.87m) from Oxyrhynchus (?) dating to the 4th/5th century (Nos. 7960, 7962–7965; Gabra and Eaton-Krauss 2007: pl. 68).

[3] Hunting scenes also appear on floors in Jordan, for example in the Basilica of Moses on Mount Nebo (Piccirillo 1993: fig. 166).

A miniature version of this motif is the most common design found on mould-made lamps (FIG. 1b) from the sites of Tall Jāwā, south of ʻAmmān (Daviau and Beckman 2001), and the Probatica in Jerusalem (Arndt 1987). The close association of this design with the use of the inhabited vine on mosaic floors in central Jordan suggests that the Madaba school of craftsmen and their pattern repertoire may have influenced the designs on the lamps. The motif also appears on the walls of the entrance hall of the Umayyad palace at ʻAmmān, while a more elaborate version covers the façade of Qaṣr al-Mushatta, an unfinished Umayyad palace to the east of Mādabā. This paper will discuss this motif and its distribution in Jordan and Palestine and the continuity of this design in the early Islamic artistic repertoire.

History and Distribution of the Inhabited Vine Motif

The "inhabited vine" is a variant of the grape vine motif which had an extensive geographical distribution and a long history. In New Kingdom Egypt, the vine makes its appearance in the Tomb of Sennefer, the mayor of the City under Amenhotep II; here the vine motif covers a large section of the ceiling. Along with scenes of grape treading (see note 2), women are shown on the walls of the Tomb of Nakht holding grape vines (Bongioanni 2004:185, 166). The motif was also used extensively in the Hellenistic period (Avi-Yonah 1948:149),[4] and is seen in Roman period art throughout Jordan and Palestine. It appears as an ornament carved on capitals at the Nabataean site of Bayḍa (Bikai *et al*. 2007), on stone sarcophagi, such as the lid of sarcophagus No. 1 from Dominus Flevit in Jerusalem (Avi-Yonah 1961: pl. II:2), and engraved on 4th century lead coffins at Beth She'arim (Avigad 1971:173–182). The vine also appears painted on the walls of burial caves, such as the one on the Mount of Olives (Bagatti 1974: figs. 3–8) and in Chamber A of the Goliath Family Tomb at Jericho (Hachlili and Killebrew 1999: pl. V.1). That this motif was known throughout the late Roman world can be seen on a "door-post and lintel" at Khirbat al-Beida in Syria (Bell 1987: 125, 129),[5] on a pavement in the basilica at Sabratha in Libya (Darmon 1995: fig. 25), on a wall mosaic in an arcosolium in Naples (Bellucci 1932: fig. 5),[6] on a pavement in Valence-sur-Baïse in the Aquitaine region (Balmelle 1994: fig. 3), and on the exterior of the Visigothic church at Quintanilla de las Viñas near Burgos in Spain (www).[7] In Egypt, the vine continues to be used during the 3rd–4th century A. D. on limestone reliefs from Heracleopolis Magna, either as a frame on one side and across the top of a scene (No. 7041), or as a vine scroll forming an arch above human figures (No. 7058, Coptic Museum, Cairo, personal observation). Of special interest is the relief on a pillar from the 6th century monastery of St. Jeremiah at Saqqara which depicts a vine sprouting from an amphora with grape clusters alternating with grape leaves (Coptic Museum, personal observation), as well as a capital with large medallions formed by a vine which encircles both leaves and clusters (Gabra and Eaton-Krauss 2007: pl. 41).

In small works of art, the wide distribution of the vine motif is demonstrated by its presence on artefacts of various types, including Roman period lamps from Israel (Rosenthal and Sivan 1978: 578, 579) and Jordan (Khirbat al-Mudayna [Thamad]; Daviau *et al*. 2000: fig. 7:8), the exterior of the Antioch chalice (Painter 1977b: ill.147), and a Sassanian silver goblet from Iran (Painter 1977a: ill. 323).[8] A vine heavy with grape clusters decorates the shoulder of an Egyptian wine jug (8972) of unknown provenience (Gabra and Eaton-Krauss 2007: pl. 126), which is tentatively dated to the 4th–5th centuries A.D. Several lamps, one from Egypt (2834) dated to the 3rd–4th centuries and one from North Africa, assigned to the 5th century, serve as examples of mould-made lamps with a vine motif on the shoulder (Gabra and Eaton-Krauss 2007: pl.

[4] The motifs of a grape cluster, pomegranates, and birds also appear on a Neo-Punic Tanit stela (BM 125102) dating to the 1st century BC (Barnett 1989:7*–8*; ill. 7).

[5] Bell (1987:126) suggested that this fort was first a Roman fort and later a Ghassanid fortress. The vine scrolls are seen in her photograph, which she made on site (University of Newcastle-on-Tyne, Gertrude Bell Archive, photos B 063–065 for the year 1905, http://www.gerty.ncl.ac.uk/).

[6] Cited in Foerster 1990: 548; fig. 4; n. 17).

[7] Also in the early Roman period, a single inhabited vine appears on a relief at the Nabataean site of Khirbat adh-Dharīḥ (el-Khouri 2007: fig. 8b), as well as on a stone beam from the Temple of Bel in Palmyra, where the vine runs horizontally below a row of Palmyrene deities (Browning 1979: fig. 8).The vine motif is also found on a frieze from the Fayum(?) dating to the 6th/7th century; here it consists of a single scroll with grape leaves and clusters above a row of animals each encircled with acanthus leaves (Gabra and Eaton-Krauss 2007: pl. 69).

[8] I am grateful to Martin Beckmann for the last two references.

128; Bickel *et al*. 2007: fig. 63). The motif also appears as a Eucharistic motif in association with a chalice, for example, on the incised bronze tripod from Mādabā (Piccirillo 1986: fig. 6). In Jewish and Christian literature of the Roman period, the vine was a sign of abundant life at the end of days and represented the Messianic Age (2 Bar 29:5; Jn 2:1–11).[9]

In the late Byzantine period, the inhabited vine is seen on mosaic floors throughout certain sectors of the Levant, from Antioch (Donceel-Voûte 1995: fig. 8) to Gaza and in central and northern Jordan.[10] While this motif is only one of many, it functions in similar fashion to the acanthus leaf which also appears as a scroll, forming medallions filled with images.[11] In order to determine the distribution of the vine motif during the Late Byzantine period in Palestine and Transjordan, a total of 480 floors were examined.[12] Of special interest were those design elements that also appear on mould-made ceramic lamps.[13] These elements include the vine itself, as well as vine scrolls, grape clusters, grape leaves, birds, amphorae, pomegranates, other fruits, palm trees, and rosettes. Two other mosaic design elements included in the quantification that would be useful for a study of the lamp corpus under consideration are the guilloche and the donkey. In order to determine areas of heaviest concentration of this design, each element was quantified as either a single (1) or multiple (2) occurrence. These data were then compared to the degree of occurrence of geometric and scenic designs.[14]

At the same time, no attempt was made in this study to repeat the typology and analysis of the inhabited vine design undertaken by Claudine Dauphin (1976), who coded 116 mosaic floors dating to the 4th–7th centuries. The geographic distribution of her corpus was more extensive than that of the present study, since she analyzed pavements found throughout the Levant, including Constantinople (1976:114).[15] So too, she undertook a more refined comparison in which she distinguished various sections of the mosaic pavements, such as borders, central carpets, and inter-columnar spaces. In view of the variable preservation of the floors themselves, any quantification of the floors and of their decorative motifs remains somewhat approximative.

The Corpus

Transjordan

In Jordan, the single largest group of pavements dating to the 5th–8th centuries has been recovered in the city of Mādabā and the area around Mount Nebo. In this corpus, the principal designs include the inhabited vine, scenes of mythological figures, non-figurative geometric designs, and geometric patterns forming lozenges filled with plants and animals, such as the pattern on the central carpet in the church of the Apostles (Piccirillo 1993: fig. 95) and in the Burnt Palace (Piccirillo 1995: fig. 5). Examples of carpets illustrating all of these elements are present within the city, with the vine scroll being only one element among many.

Vines and vine scrolls are found on 21 pavements among 36 buildings in the Mādabā area.[16] Along with the other elements which occur in association with the vine, the degree of occurrence for this cluster of motifs is 70%. The use of acanthus borders and scrolls, the guilloche (both simple and braided), geometric patterns and various scenes represent 30% degree of occurrence.

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[9] In 2 Baruch, the ten thousand-fold abundance of fruit is manifest in a vine, which will have a thousand branches, each bearing 1000 grape clusters, with each cluster having 1000 grapes, and each grape producing a "cor of wine" (Charlesworth 1983: 6:30), approximately 120 gallons (Brown 1966:105). This Messianic sign is associated by Brown with the miracle at Cana in Jn 2.

[10] Dauphin notes that the popularity of pavements with an inhabited vine in the central field declines in North Africa following its floruit during the 1st–3rd centuries, whereas it increases in popularity in the Levant during the 4th–7th centuries (1987: 184).

[11] An example of the acanthus design can be seen in the Burnt Palace in Mādabā (Piccirillo 1993: figs. 49, 50). Dauphin calculates that the inhabited vine appears on 64 of the pavements (55%) in her corpus of 116 mosaic floors, whereas the acanthus scrolls were present on 49 floors (42%; 1987:186).

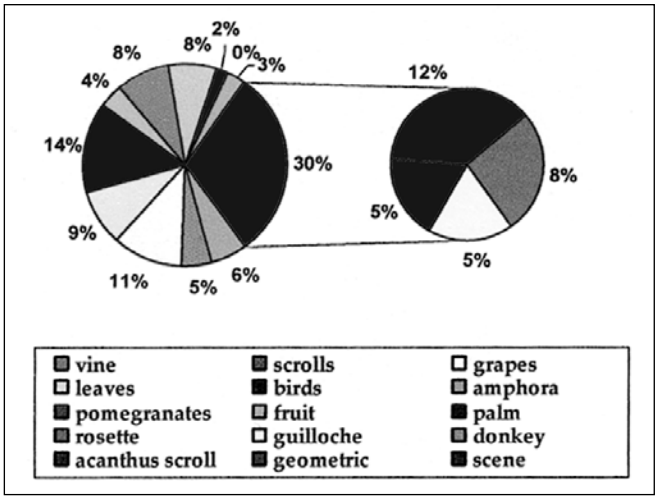
[12] Sources for the data on each floor are included in the list of references.

[13] The major sources are Avi-Yonah (1948), Ovadiah's *Corpus* (1970), and its three supplements (Ovadiah and Gomez de Silva 1981, 1982, 1984) for floors in Palestine, and Piccirillo (1993) for mosaic floors in Jordan. More recent reports concerning additional floors have also been included to compute data concerning distribution, such as Ḥorvat Ḥesheq (Aviam 1993), Tall Mādabā (Foran *et al*. 2004); Gaza (Humbert 2000) and Khirbat Yājūz (Khalil 1998), and various churches mentioned in Tsafrir 1993.

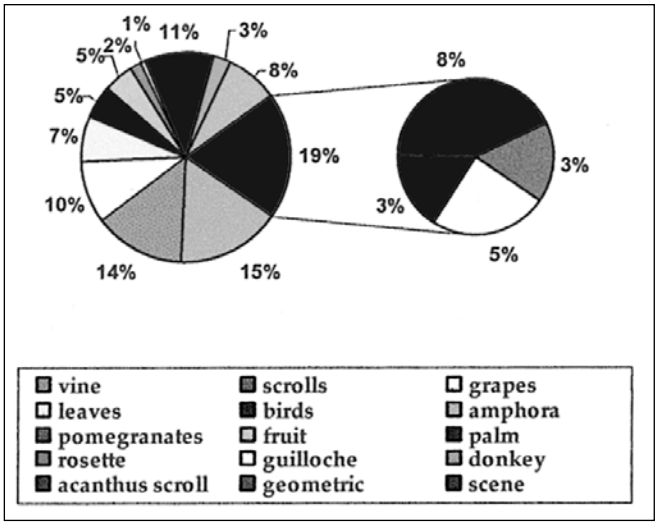
[14] Foran (2003: Table 2a) identified 18 elements depicted in the inhabited vine; the bird and the donkey are both relevant for this study, but other elements and human figures are not included in the present study since they do not appear on the lamps.

[15] Among her "types of scroll work" (C_1–C_4), Dauphin (1976: fig. 1) does not illustrate four parallel scrolls of equal size, such as the pattern represented on the floor of the Church of the Holy Martyrs Lot and Procopius (Piccirillo 1993: fig. 202).

[16] Foran (2003: Table 1) lists 31 pavements, with the inhabited vine scroll occurring on 45% of these floors.

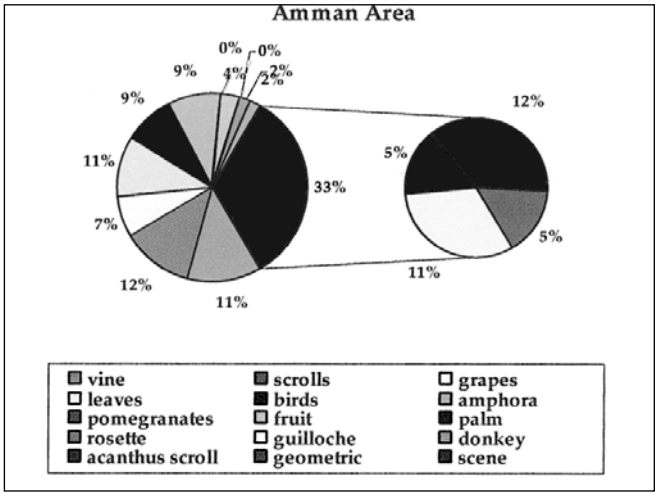


Sites to the south and north of Mādabā in central Jordan make use of the vine motif and its elements to an even greater degree, especially at Umm ar-Raṣāṣ, where it is seen in the Church of Saint Stephen (Piccirillo 1993: fig. 383). Other sites in this area include Mā'īn, Mukāwir village, Māsūḥ, and Ḥisbān. In this group, the degree of occurrence for the geometric designs falls to 19%, with the vine and its associated elements constituting 81%.



The 'Ammān area has a slightly different profile, due in part to the small number of floors reported for this area in our corpus (7 out of 148 for Jordan). Nevertheless, the vine motif remains dominant at 66%, with only 33% degree of occurrence for non-vine elements.

Sites north of 'Ammān reflect a very different



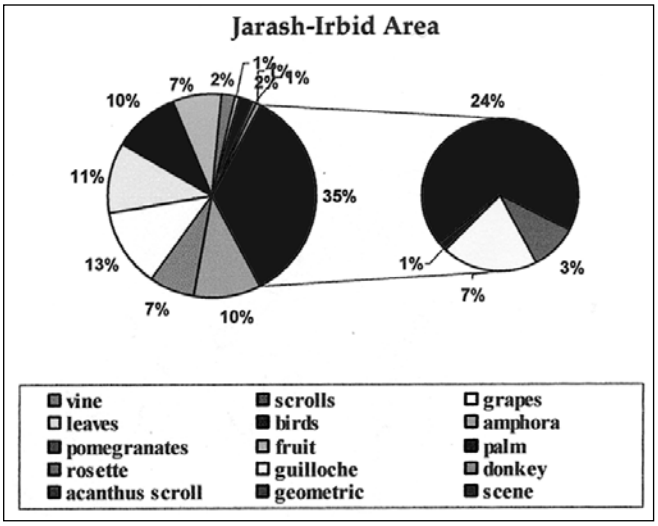
tradition. Although the vine scrolls and vines without medallions appear on certain floors at Jarash, these are now minor themes,[17] with geometric patterns forming the dominant decorative schemes. This can be seen clearly in the Synagogue Church, the Procopius Church, the Church of St. George and the Church of Cosmas and Damian (Piccirillo 1993: figs. 553, 560, 535). In the Church of Bishop Isaiah, the vine motif is relegated to inter-columnar spaces (1993: fig. 565) and to the chancel, whereas the nave is paved with an elaborate geometric carpet (1993: fig. 566).

At Khirbat as-Samrā, the dominant designs are geometric with fruit or flowers and an occasional grape cluster inside of quadrilobes (Piccirillo 1993:306: figs. 600, 601). In the Church of St. George, the vine, grape leaves, and birds are not present. The only motif relevant to our study is a simple guilloche which surrounds the central inscription in the nave. The inscription in the Church of Saint Peter also has a guilloche border (1993: fig. 607) surrounded by geometric pavements. The exception here is the floor of the Chapel of Anastasius, where the central carpet has four vine scrolls sprouting from amphorae located in the four corners.

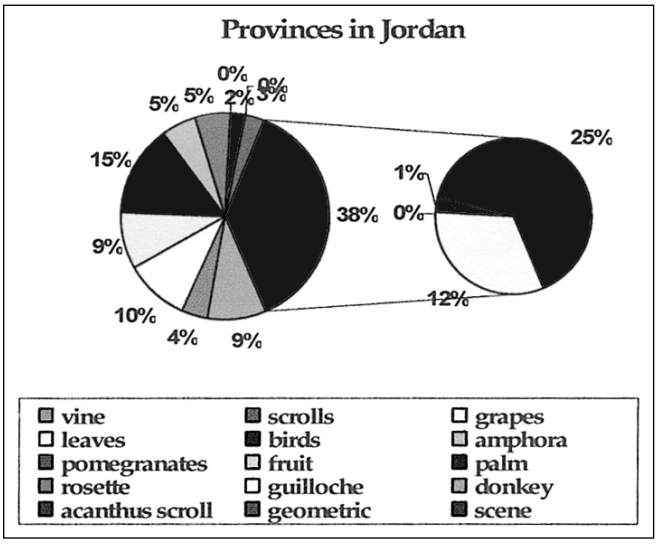
Among the 10 churches at Riḥāb, only the Church of Saint Paul has a design of vine scrolls emerging from an amphora, and this pattern is located in the inter-columnar spaces (Piccirillo 1993: figs. 627–629), rather than the central carpet. The simple guilloche appears as a border in an inter-columnar space in the Church of Saint Peter, and

[17] Dauphin identified Jarash as one of her four important centres, with Jerusalem as a minor centre (1976: 133). The opposite is suggested here; while Jarash may have had a mosaic workshop, geometric and scenic designs (representing donors) were the dominant motifs employed.

in a side aisle in the Church of Saint Mary (1993: figs. 633, 622), while the dominant border designs are meanders in various styles.



A similar degree of occurrence is represented at sites in Palestina Prima, Secunda, and Tertia, where the most common design is a geometric pattern. This area includes sites in the Jordan Valley and at Petra.



When we consider the actual number of floors, the results shows that the greatest concentration for the vine motif is in central Jordan.

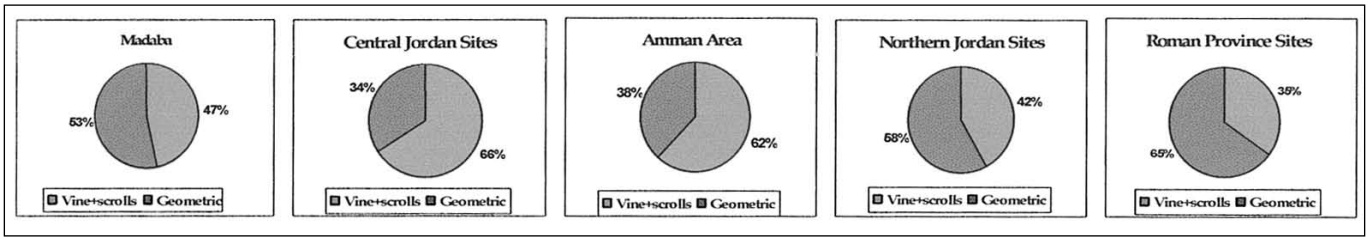
To the north, the opposite is the case with geometric patterns becoming the dominant decorative design for mosaic carpets. The same is true in southern Jordan; one example of the vine motif is used in a side aisle in the Petra Church (Fiema 2001: 309; North aisle), whereas the nave of this church has a stone pavement. Of interest is the limited use of the inhabited vine in Palestine during the same period.

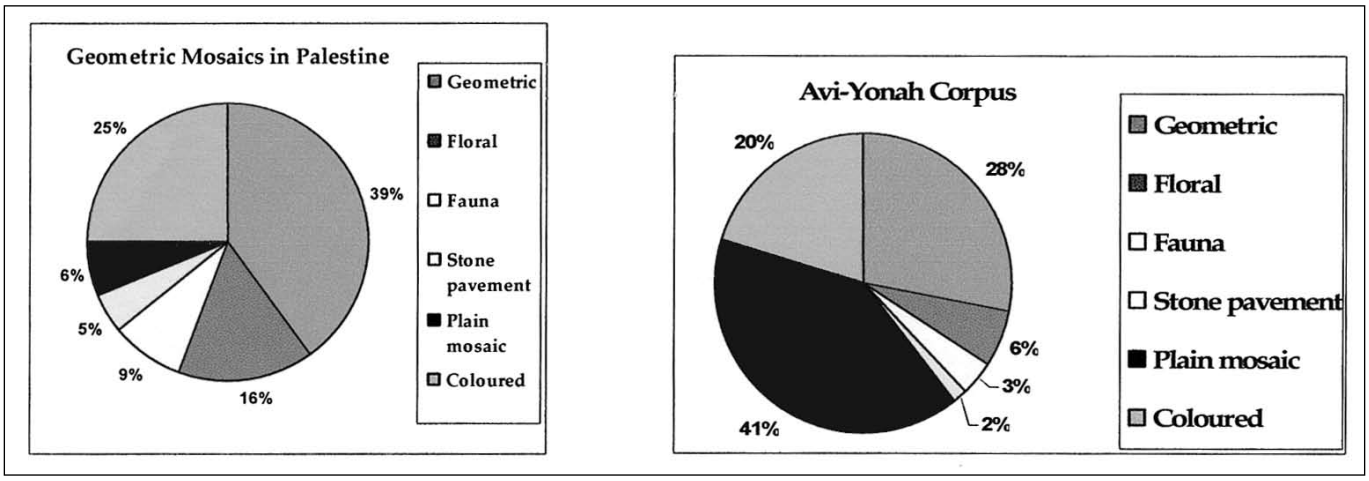
Palestine

Due to the large number of mosaic floors in Cisjordan, my analysis is divided into two groups; first, those with geometric designs, plain mosaics, or stone pavements, and secondly, those floors where the vine motif is dominant.

Geometric Mosaics: Beginning in Jerusalem and extending throughout Palestine, the dominant decorative scheme is the elaborate geometric mosaic. In some cases, the pattern is formed by floral elements, whereas on other floors the design consists of entwined pentagons and hexagons that provide small areas for bird, animal and floral elements. Such a carpet can be seen on floor fragments at Ḥorvat Berachot and on the floor of the Western Church at Kurnub/Mampsis in the central Negev (Tzaferis 1993:890). Altogether, these styles of geometric floors represent 64% of those without the vine motif. Among the pavements dating to the 5th–7th centuries in the corpus assembled by Avi-Yonah (1948), 91% can be classified as geometric, plain, coloured mosaics or stone pavements.

Vine Scrolls: Admittedly, the vine motif is not unknown and appears on a small number of mosaic floors and in architecture. For example, the combination of the amphora, the vine with its grape clusters and leaves, as well as a rosette, appears carved above two birds over the entrance of the cave tomb of Shefa ʻAmr (Testa 1990: fig. 7). Mosaic floors at Borvat Beit Loya (Patrich and Tsafrir 1993: pl. XVIII:A, B, D, E), Ḥorvat Be'er Shemʻa (Gazit and Lender 1993: pl. XX, XXI) and at the Monastery of St. Martyrius at Maʻale Adummim (Magen 1993: pls. X:A, XI:A) all have the standard



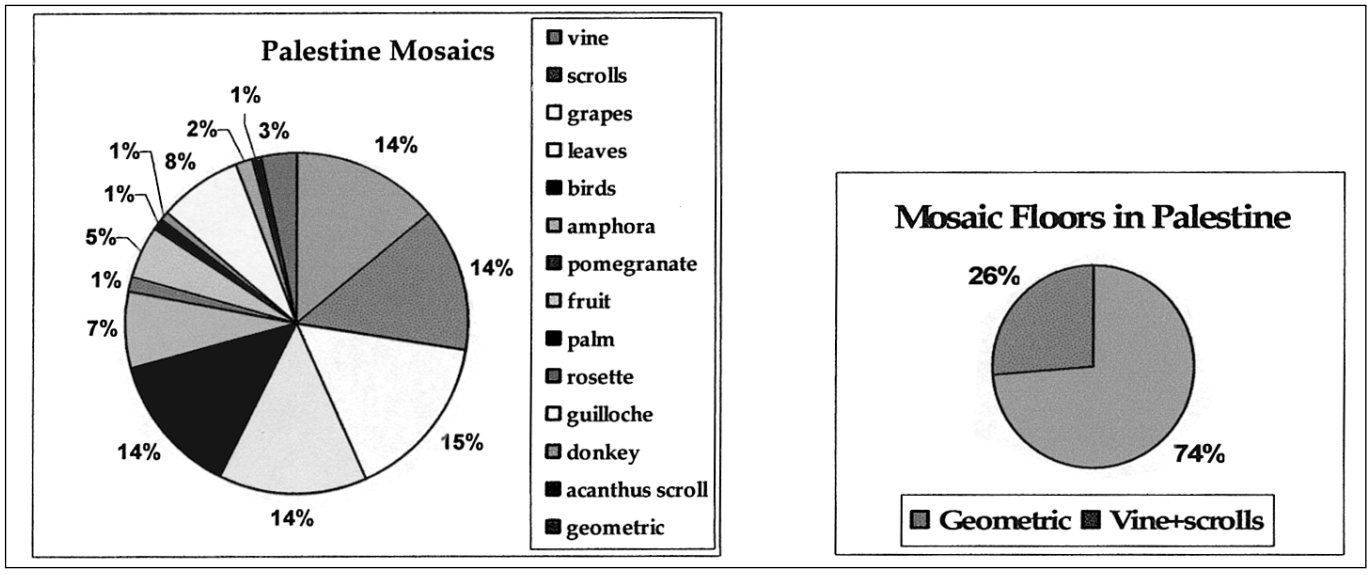


vine scrolls filled with images of plants, animals and people. Among these floors, the degree of occurrence of the various motifs is similar to that of central Jordan, although not in terms of the number of pavements.[18]

Sites with the vine are found on occasion in Jerusalem, Judea, the Shephelah and Gaza in the south, and at Caesarea and Beth Shean in the north.[19] What is significant for this study is the lack of a concentration of the mosaic floors with the inhabited vine in a given area, apart from Jerusalem and its environs. The wide distribution of the remaining floors opens up many questions concerning the mosaicists who made these floor and the origin of their designs (cf. Foran 2003).

The Inhabited Vine on Mould-made Lamps

Among the minor arts, the mould-made ceramic lamp also displays the inhabited vine motif. Such lamps are very distinctive and a number of unprovenienced finds have been published from private collections and from museum holdings. Of greater interest are those lamps that come from controlled excavations throughout Palestine and Jordan. At many sites, there are one or two examples of these lamps;[20] however, much larger collections come



[18] In Jordan, there are twice as many floors with the vine motif, even though there are many fewer sites excavated than in Israel.

[19] In the warehouse complex in front of vault 12, there were two sections of a mosaic carpet with vine scrolls sprouting from amphorae in the corners of the pavement (Lehmann 1999: figs. 9, 10). A square pavement, uncovered in a northeastern suburb of Byzantine period Caesarea, has 120 medallions, each containing a bird (Holum *et al*. 1988: fig. 132). Although inspired by the inhabited vine motif, these medallions are geometric, with no floral or vegetal elements.

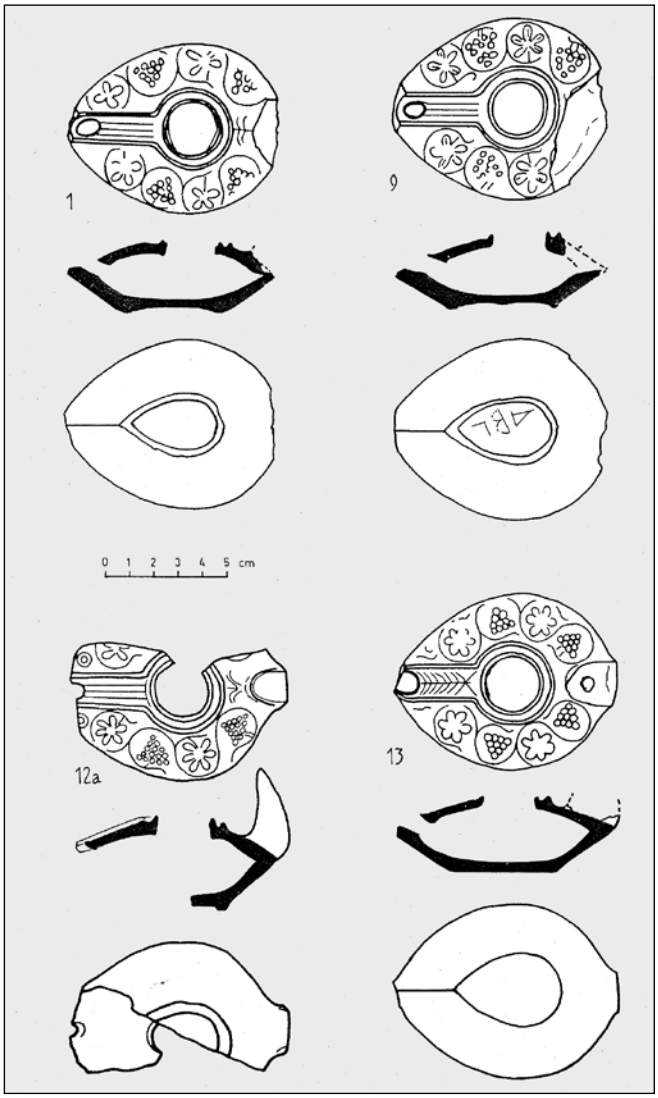
[20] More recently, the excavations at Shuqayra al-Gharbiyya (Shdaifat *et al*. 2006: fig. 7:10, 11) yielded one lamp with a pomegranate and vine motif, and a lamp fragment with an amphora.

from the excavations at the Probatica in Jerusalem and Tall Jāwā in central Jordan.

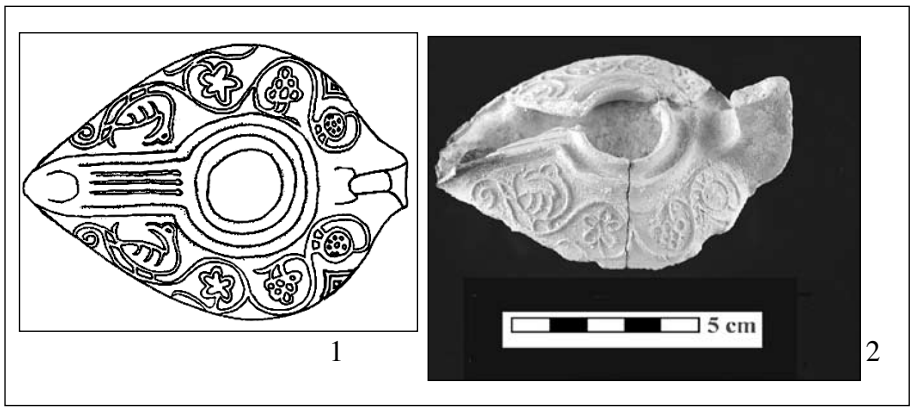
Jerusalem: The Probatica church and pool yielded 127 lamps with a vine scroll on the shoulder (FIG. 2; Arndt 1987: 241). The dominant design consists of two grape clusters and two leaves in the vine (I *gruppo*). Less common are vine scrolls with a pomegranate and a bird (II *gruppo*). So too, a vine sprouting from an amphora lying on its side is relatively rare and is a subtype of Arndt's II *gruppo*; a small vertical amphora appears to be more common at Jerusalem. Other designs include either a stylized vine with several grape clusters or a vine with enlarged grapes and a stylized leaf or flower.

Tall Jāwā: The corpus from the early Islamic building (B600) at Tall Jāwā includes 74 lamps and lamp fragments with various designs of the vine motif.[21] These lamps are similar in shape to those from Jerusalem and have similar designs in the channel (either parallel ridges or herringbone design). The pomegranate as the first element in the scroll is seen on 51% of the 56 best preserved lamps, where it is the dominant element flanking the handle (FIG. 3). Apart from the grape clusters and leaves, the most common element is a bird on either side of the channel. The birds may face the handle or look over their shoulder toward the nozzle. In some cases, the two birds on a single lamp face in different directions (see FIG. 4.2).

The second most common element is the amphora[22] at 18%, followed by a palm tree at 13%. Those lamps with more that one grape cluster are 9% of the assemblage, whereas the rosette is represented on only 7% of this group and the flower on 2%.



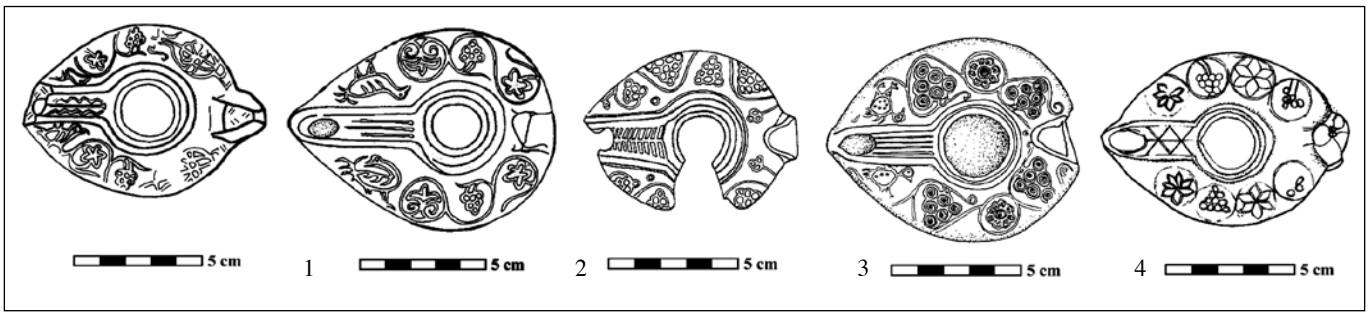
2. Lamps with two grape clusters alternating with two grape leaves encircled by vine tendrils, from the Probatica corpus (after Arndt 1987: figs. 1, 9, 12A, 13; published with permission of M. Piccirillo for *Liber Annuus*).



3. Standard design of inhabited vine with pomegranate and addorsed bird; 1) model drawing; 2) V1614.

[21] For a complete study of these lamps, see Daviau 2008.

[22] The amphora motif had a long history, appearing as the central motif on the discus of early Roman lamps at Samaria (Crowfoot 1957: fig. 88:9). These lamps were assigned by Crowfoot to the 1st century AD, and by L. E. Toombs to the 2nd century (personal communication).



4. 1) amphora, V1642; 2) palm, V1660; 3) all grapes, V1644; 4) rosette, V1629; 5) star-shaped flower, V1628.

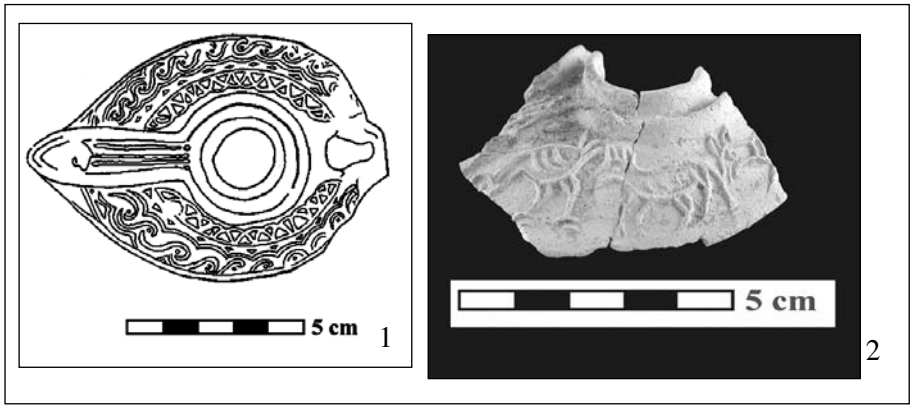
Guilloche and Donkey Parade

Two secondary motifs appear on the Tall Jāwā lamps, the guilloche and the parade of donkeys. In each of these groups, a number of well preserved lamps enable us to identify more than one lamp from the same mould. The guilloche was used extensively on mosaic floors as a border design surrounding large carpets, inter-columnar spaces, and inscriptions.[23] This design had a widespread geographical distribution, framing large geometric carpets formed with florets as in the domestic buildings at Ephesus (Parrish 1995: figs. 5, 6, 12). The guilloche is also found surrounding a group of small carpets in a side aisle of a church in Corsica (Campbell 1995: fig. 8), and was used as far afield as Verulamium in Britain (Tebby 1994: fig. 9). This pattern is often associated with single and double braided borders.

Lamps with the guilloche design, as well as those with a parade of donkeys, were made in the same shape as those with the inhabited vine (FIG. 5). At least nine lamps with guilloche motif are present in the Tall Jāwā corpus. Of the two designs, the donkey parade is the most unusual, with the only known parallel coming from the Umayyad palace on the ʻAmmān citadel (Olávarri-Goicoechea 1985:24–25; fig. 24:12). This link suggests the concentration of an artistic tradition and production centre which incorporates Tall Jāwā in the ʻAmmān area, but apparently did not extend beyond central Jordan.

A Continuing Tradition

Evidence for the importance of the vine motif in the region between Jerusalem and central Jordan can also be seen in its utilization in Byzantine architectural decoration and in early Islamic ornamentation. Vines sprouting from amphorae along with their leaves and grape clusters form a border on a scenic mosaic at Qaṣr Ḥallabāt. In other early Islamic buildings, the vine appears along with a large number of other floral and faunal images. This can be seen clearly in the architecture of the Reception Hall of the palace on the ʻAmmān Citadel. Here, a vine with three large grape clusters appears above one of the decorated panels in register 1 (Northedge 1992: fig. 47:8.98Aa=pl. 26C), while vines with multiple grape cluster, leaves and buds decorate two of the small panels (1992: fig. 49:



5. 1) guilloche, V1640; 2) donkey parade, V1633.

[23] The guilloche was also used with plain mosaics. For example, among the mosaics uncovered in the Basilica of the Nativity, is a section of white mosaic with a single guilloche stripe (Richmond 1936: pl. XLVIII).

30Ab=pl. 22E, SN/26; 80Ab/B=pl. 25C). A more elaborate vine with leaves and clusters fills one of the larger panels in register 2 (1992: fig. 53: 1. SW/D=pl. 27B).

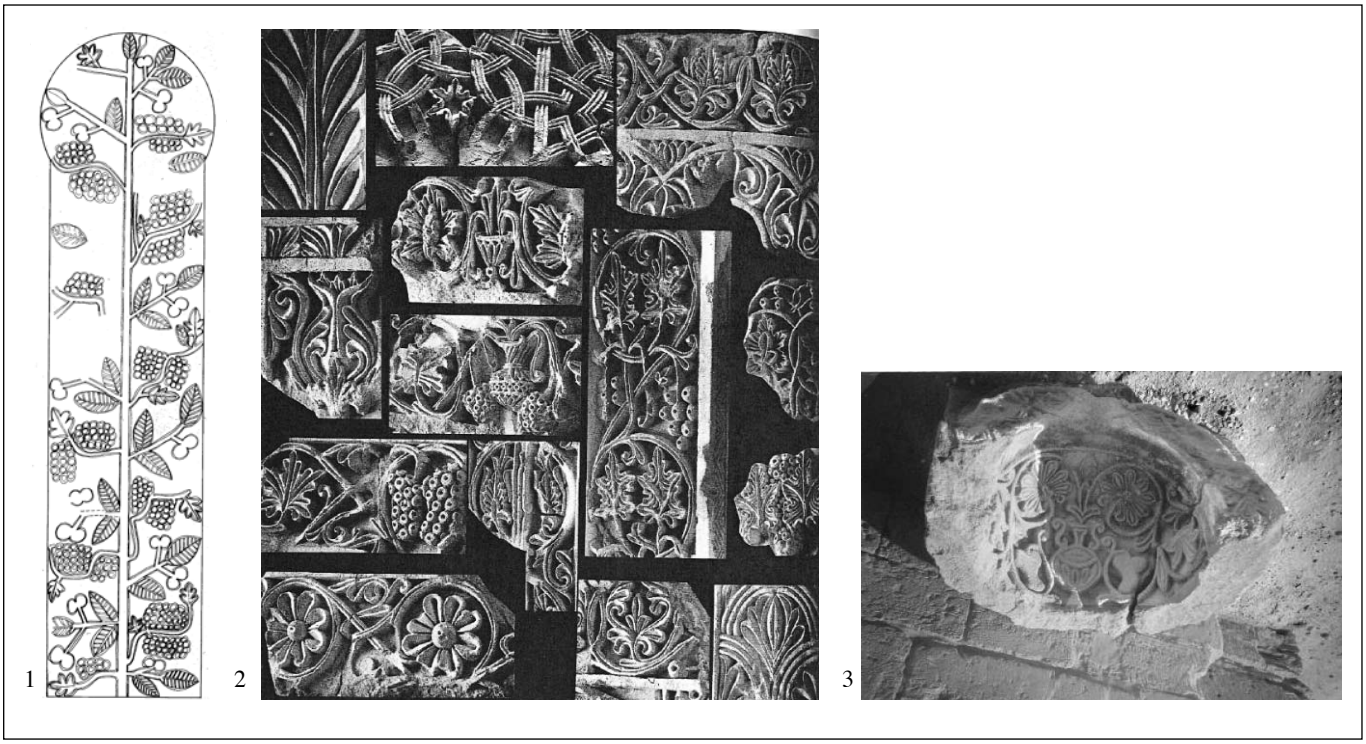
Also of interest to our study of the lamp corpus is the association of the vine with the rosette; two examples of this combination are preserved on a plaster balustrade at Hishām's palace. Here at Khirbat al-Mafjar, a border of rosettes surrounds a field of vines heavy with grape clusters (Hamilton 1948: pl. XV). Other plaster fragments include grape clusters entwined with other floral elements, as well as one example of vines growing out of an amphora (1948: pl. XXIII). This motif is also represented on a limestone architectural fragment at Khribat al-Mafjar (FIG. 6.3).

More elaborate are the vine scrolls that surround medallions containing flowers, real and imaginary animals, and birds on the carved façade of Qaṣr al-Mushatta's reception hall (Enderlein and Meinecke 1993). The vine and the amphora were also used as a motif on the interior of the Mosque of Omar in Jerusalem, although by this time, the vine is no longer inhabited; instead it is a thick vine heavy with leaves and fruits of various kinds (Rosen-Ayalon 1989). The amphora itself has changed in form and is bejeweled in style, which suggests a transformation of the artistic tradition.

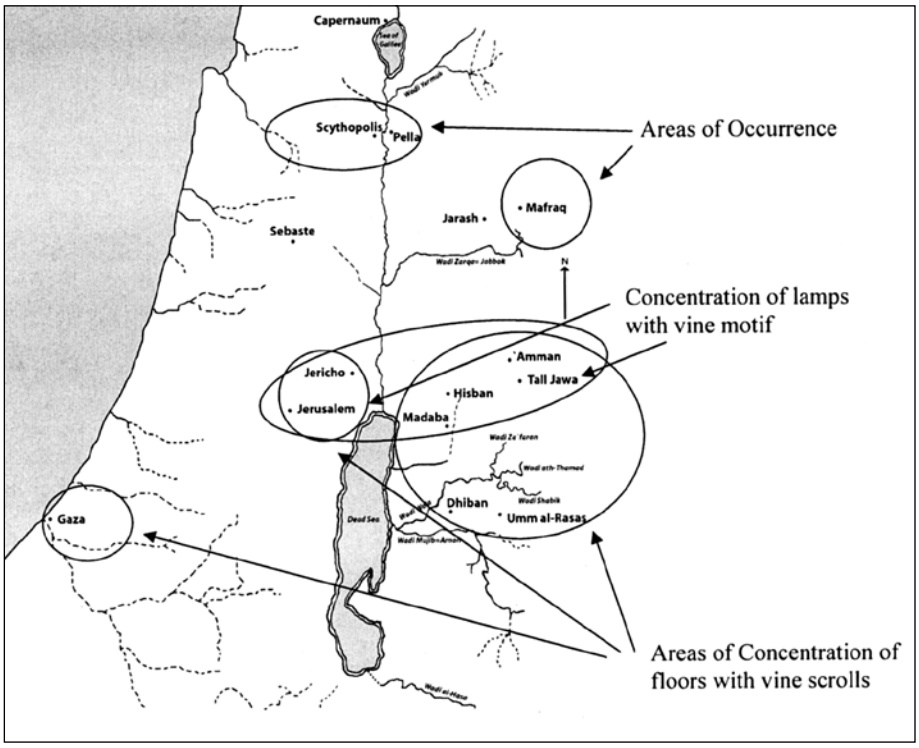
In Jordan, the most unusual combination of elements related to the inhabited vine motif appears on basalt slabs from an Umayyad period platform at the reservoir at ʻAyn as-Sawdā near al-Azraq. Three slabs each have the same design; two tendrils, each bearing three pomegranates, sprout from an amphora and are topped by a palmette (Vibert-Guigue 2006: 347; figs. 14:43; 18; 36). Although the basic amphora and vine motif is employed, there is again a difference in style and the addition of new elements, in this case, the palmette.

Conclusions

In this study, I investigated the spread and degree of occurrence of the inhabited vine and associated decorative motifs as an aspect of the artistic tradition of the late Byzantine–early Islamic period. While these elements had a wide distribution, their concentration in a particular area, extending from Jerusalem to Mādabā and beyond to ʻAmmān in the north and to Umm ar-Raṣāṣ in the south, goes hand in hand with that of mould-made lamps with similar designs (FIG. 7). Whether at this time we



6. 1) Panel from the Umayyad palace on the ʻAmmān citadel (after Northedge 1992: fig. pl. 27B; published with permission of the author and CRBL; 2) stucco from Hisham's palace (after Hamilton 1948: pl. XV); 3) architectural fragment at Hisham's palace; photo, M. Beckmann.



7. Map showing distribution of mosaic floors with vine motif and the distribution of lamps also using the vine as the principal artistic design.

posit a chronological coincidence,[24] or infer that the Madaba mosaic workshop, studied by Foran (2003), was responsible for the popularity of the vine scroll motif in this region, remains tentative. However, the high standards of artistic skill in the production of both the floors and the lamps make it clear that their coincidence was anything but a random phenomenon. In the early Islamic period, the vine also appears to be concentrated in the area between Jerusalem and Umm ar-Raṣāṣ. Apart from Qaṣr al-Ḥallabāt and ʻAyn as-Sawdā, the vine motif is present at Jericho (Hishām's Palace) ʻAmmān, and Mushatta.

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[24] Winter has pointed out that it is important that the date of one artistic medium is fairly well ascertained in order to avoid circular reasoning regarding the directionality of artistic influence (1989: 326).

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Archaeological Museums Crossing Jordan*

Introduction

The idea of collecting valued objects dates back to the period prior to the arrival of Islam, Arabs having traditionally placed precious things inside the Ka'ba in Mecca for religious purposes associated with their idols. In addition, an Arabian poem called "Seven or Ten Suspended" (in Arabic *al-mu'llaqāt*) were inscribed on golden plates and suspended on the walls of the Ka'ba, especially in the annual cultural fair called '*ukadh* (Hitti 1974: 93). When the Prophet Muhammad (peace be upon him) conquered Mecca, he found inside the Ka'ba several precious things, such as a statue of Hubal, a famous Arabic God at that time (who might be called the God of Mecca), pictures of Jesus and Mary, a wooden dove and two horns of Abraham's ram (Bearman n.d.: 317-322).

Islam encouraged people to preserve property through the creation of *al-waqf*, which means preserving material goods for the benefit of society and to please God. The motive for *al-waqf* can be religious, such as the establishment of mosques, social, such as constructing hospitals or homes for poor people or for students, military, such as supporting armies, or cultural, such as creating schools and universities. Movable objects, such as books, illustrative materials, carpets, pots and religious manuscripts or the Holy Quran itself can also be donated to schools, mosques and homes (Abazah 1981:17).

Al-waqf began during the time of Prophet Mohammad (peace be upon him) and has continued through all Islamic regimes from the Umayyad period until the present day. Currently, all Arab and Muslim countries have ministries of *al-awqāf* (plural of *waqf*), which are responsible for Islamic / Arab cultural property, whether ancient or new, such as Islamic affairs, mosques, Islamic museums and monuments.

From the sixteenth century until the beginning of the twentieth century, Jordan and all Arab countries were under the control of the Ottoman Empire. During that period, there were no institutions or departments to protect the cultural property of the Arabs, except for what was preserved and kept through various collectors, churches and religious purposes, and *al-waqf*. Usually, any precious thing found during the Ottoman period was taken to Istanbul. It was not until 1844 when the Turkish government established a special law that dealt with antiquities and cultural property. It was called the 1844 Turkish Law of Antiquities (Abazah 1981: 21). In the nineteenth century, with the establishment of museums in the Arab world, most *al-waqf* collections and treasures were transferred to these new museums. For instance, extraordinary Islamic manuscripts, textiles, weapons and glass were transferred to the Museum of Islamic Art in Cairo and the Islamic Museum in Jerusalem from *al-waqf* in Cairo and Jerusalem.

At the end of the eighteenth century and the beginning of the nineteenth the Ottoman Empire became weak, with its control over the Arab countries more nominal than real, especially in North Africa. In 1798, Napoleon Bonaparte invaded Egypt. A Commission on Science and Arts was attached to the expedition to survey the area and to document the ancient monuments. The Commission's work attracted the attention not only of Europeans, but also of the local people. This led in 1835 to

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the establishment of the Archaeological Museum of Cairo, which is considered the earliest museum in the Arab world (Muhammad 2002: 38-41). The remainder of North Africa (Algeria, Tunisia, Morocco and Libya) was occupied by different European countries in the nineteenth century. Museums then appeared in these countries as a direct result of colonialism.

Cultural Heritage and the Department of Antiquities

Because of the status of the Holy Land, Palestine and various parts of Jordan received special attention from Christian missionary orders and individuals who wished to study places that were mentioned in the Old and New Testaments. They played a vital role in protecting the Holy Land's cultural heritage by conducting excavations and surveys, by preserving old churches, buildings and movable objects and by documenting many archaeological and heritage sites in the area. They saved and protected objects that formed the collections of the current museums in Palestine and Jordan. Examples of these missions are the Franciscans, who came to Palestine in 1333, the White Fathers, who arrived in Jerusalem in 1878, the Betharamite Fathers, who came to Bethlehem in 1879, and the Dominican Fathers, who established the École Biblique d'Archéologie in 1891. Several expeditions also arrived from Germany in the eighteenth and nineteenth centuries (Sadek 1994: 287-291).

Regarding individuals, Ulrich Jasper Sitzen of Germany and Johann Ludwig Burckhardt of Switzerland carried out surveys in greater Syria, which included Palestine and Jordan, from 1805 to 1807 and 1810 to 1812. Captain C.R. Condor also conducted surveys on the west and east banks of the Jordan River in 1881 (Ibrahim 1973: 3). In 1868, Dr. F. Klein, a Prussian missionary, saved the Mesha Stele, which was found in Dhībān in southern Jordan. He recognized the value of the stele and purchased it from the bedouin. Later, the stele was displayed in the Louvre and is still there.

A Department of Antiquities was established in Palestine in 1920 under the British Mandate. In 1927, a museum was established in Jerusalem to house thousands of archaeological objects that were discovered in nineteenth and twentieth century surveys and excavations. Initially, the museum was located in an Arab-style building. Later, John D. Rockefeller Jr granted two million dollars for constructing a new building and for operating expenses (Sadek 1994: 287-291). The Palestinian Archaeological Museum, as it was known, was opened to the public in 1938. It was one of the largest and richest in the Middle East, representing the history of Palestine from prehistoric times to the late Islamic period. From 1951-1967 the museum was operated by the Jordanian Department of Antiquities.

In 1921, with the establishment of the Transjordan Emirate, the government discussed the matter of how to protect thousands of archaeological sites that were scattered throughout the country. For this reason, in June of the same year, the Minister of Finance sent a memorandum to the Prime Minister asking him to establish a Department of Antiquities (DoA), like the one in Palestine. According to the memorandum, this department would play an important role in protecting archaeological sites from illegal excavation, illicit sales and export. It would also house movable antiquities and collections by establishing museums for this purpose. Consequently, the Department of Antiquities was founded on 27 June 1923 and is considered the earliest cultural organization in Jordan. It aimed to prevent damage to ancient cities in the country and to carry out conservation work and excavation (Mousa 1985: 109). On 15 September 1925, the legislation for the safeguarding of antiquities was enacted as the first Law of Antiquities (Abazah 1981: 31). This law has been amended many times, most recently in 2004.

The DoA was originally located in the Roman city of Jarash. In 1928, when Transjordan broke away from the colonial government in Palestine, the Department was transferred from Jarash to ʻAmmān and Dr Rida Tawfiq, the Turkish philosopher, was appointed as its first director (al-Abedi 1972: 9). Since Jordan was under the British mandate, a British archaeologist, Gerald Lankester Harding, was appointed in 1936 as Chief Curator of Antiquities, a title subsequently changed to Director General of the Department of Antiquities. In 1956, a mission to dismiss all British leaders from the governmental sector was launched in Jordan. King Hussein started with Sir John Bagot Glubb, the British commander of the Jordanian army. In the same year, the British director of the DoA, Lankester Harding, was dismissed and replaced by the first Jordanian director, Dr Abdul Kareem Gharaibeh.

In 1945, Jordan participated effectively in estab-

lishing the Arab League Educational Cultural and Scientific Organisation (ALECSO) to protect cultural property in the Arab world. Jordan also participated in ALECSO conferences, from the first one, held in Damascus in 1947. The major topics dealt with during the conference included the law of antiquities in the Arab world, rescuing endangered archaeological heritage, studying areas which would be destroyed during to the development of cities and towns, establishing museums to house and preserve antiquities, and training personnel in conservation, excavation and museum administration.

From 1948, excavations were conducted by Jordanians and 1950 saw the first issue of the periodical the *Annual of the Department of Antiquities of Jordan* (ADAJ). This journal contains studies and reports of archaeological excavations and surveys conducted in Jordan by Jordanians or foreigners, as well as other archaeological activities. In 1980, the DoA held the first conference on the history and archaeology of Jordan at Oxford University in the United Kingdom. Since that date, this conference has been held every three years. The DoA conferences are published in a special journal called *Studies in the History and Archaeology of Jordan* (SHAJ). The DoA has effectively participated in international exhibitions throughout the world by its loans of objects. For example, the exhibition *Jordan: Treasures from an Ancient Land* was shown in various countries including Britain, France, Tokyo, America and Singapore (Bienkowski 1991).

Museums in Jordan

The use and meaning of the word *mut-ḥaf* in Arabic is different from that of the word "museum" or its equivalent in developed countries. The word *mut-ḥaf* came from the root *tuḥfah*, meaning precious thing. Most Arab people consider museums as places to display precious and ancient objects or traditional costumes. Part of the explanation for this may be that museums in Jordan and the Middle East began because of departments of antiquities and have continued to have a direct connection with them. This idea is mentioned by Carol Malt in her report of a project on museums in Jordan in 1999. She states that one of her first tasks was to define the word museum:

> "Many there regard museum as synonymous with the word antiquities, as in this definition from a Jordanian museum curator: a museum should reflect the old civilizations. When I asked others in the profession the question: what is a museum? I received such answers as: a museum is a place for the old things, for ancient things, things that show us the past and things we don't use anymore" (Malt 2005: viii).

Historically, in 1923, under the British mandate, the first archaeological museum was established in Jarash at the same time as the founding of the Department of Antiquities (Oweis 1994: 171-174). The museum was located in one of the vaults of the Temple of Artemis. It reflects the beginning of interest in establishing a place to house archaeological objects rather than in establishing a museum to display objects for public or for educational purposes. It was a warehouse rather than a museum.

Malt discusses the positive side of colonialism in establishing cultural institutions, noting that Jordan benefited from the expertise of foreign experts in the establishment of their museums. According to her:

> "Although the government may have desired and planned museums throughout the country, it was often private enterprise and foreign support and expertise that initiated them and made them reality. The British have long played an important role in the development of cultural activities. Affiliations with British museums, archaeological institutes, and cultural councils guided the early establishment of museums, such as the Jerash Archaeological Museum and the Jordan Archaeological Museum in Amman" (Malt 1994: xxv).

Henrique Abranches describes the colonial museum as a warehouse rather than a museum. Objects were displayed in a way that caused them to lose their true spirit and the people who created them were treated as unimportant. Specifically in relation to Arab culture, Abranches states that "Arabs have been dispossessed of their own artistic creations and their museums do not reflect the greatness of the Arab peoples. The Arab's cultural identity is smothered when seeking his own essence and originality, and his identification with his past is blurred by colonialism and lingering colonialist attitudes" (Abranches 1983: 19-31).

The true picture is rather more complex: the exportation of antiquities certainly deprived local populations of them, but it ensured their survival and preserved them for study, which in turn led to recognition and local protection. This contributed

to the Arabs themselves recognising and valuing the heritage of their cultures and civilisations, and facilitating in particular the creation of Arab museums and cultural organizations.

However, for three decades from 1923, no new museums were established in Jordan, for various reasons. First, the Emirate was young and the government was concentrating on building the country rather than establishing cultural institutions. Second, there was political, economic and social instability. Third, there was a shortage of archaeologists and a lack of awareness of the role of museums. Finally, foreign archaeologists and their institutions at that time focused their work on Palestine more than Jordan.

Saifur Dar discusses the way in which developing nations focus on building the country rather than creating cultural institutions. According to him, "[Pakistan] is a developing country and as such more attention is being paid to the establishment of industries and communications, development of agriculture and education rather than on purely cultural matters like museums. Besides, in Pakistan, cultural programs have suffered from the political instability, internecine wars, internal disruptions, natural calamities etc." (Dar 1981: 13-26).

After independence in 1946, the British control over the country did not cease completely, as the DoA remained under the British director, Lankester Harding. In 1949, Harding nominated the British architect Austin Harrison, who had designed and built the Palestinian Museum in Jerusalem, to design and build a Jordan Archaeological Museum at ʻAmmān Citadel. The museum, which was completed and opened to the public in 1951 (Balqar 1994: 155-157), was built to reflect the East Bank's history and cultures and to establish a balance with the West Bank museum in Jerusalem, in order to encourage visits to ʻAmmān and the East Bank. The museum was considered the first national museum of Jordan and has played an important role in establishing and developing all archaeology museums in Jordan by supporting them with archaeological collections. The Jordan Archaeological Museum is one of the few in Jordan that was built to be a museum and whose showcases were made to fit the space. It contains objects from the Palaeolithic age to the Ottoman period which have come from archaeological sites in Jordan, some of them from the West Bank before 1967.

During the rest of the 1950s no new museums were built in Jordan. As a result of the unification of the West and East Banks in 1951, the government concentrated on developing the economic situation, industry, education and infrastructure, rather than establishing museums. Also, since the West Bank is particularly rich in religious places, archaeological sites and museums, the government gave little consideration to establishing new museums in the East Bank. However, in 1954, the DoA was enrolled in the UNESCO list of state parties which ratified the 1954 Hague Protocol and Convention for the Protection of Cultural Property in the Event of Armed Conflict (Moftah 2004).

A University Archaeology Museum

Jordan University was established as the first national university in Jordan in 1962. At the same time, an Archaeology Museum was established on the campus with generous support from the Department of Antiquities, which donated the archaeological objects, while the University offered a place to house them (JU 2005: 297). This is a clear indication that Jordan University, like universities in the Middle East and worldwide, played an early role in establishing museums in Jordan. For example, the first university museum and one of the first museums in the Middle East is the Archaeological Museum of the American University of Beirut, which was founded with a collection from Cyprus donated by General Cesnolla, the American Consul in Cyprus, to the newly founded American College in 1867 (Bader 1994: 207-210).

Before the 1967 Arab-Israeli war, with an increase in archaeological activity all over the country, the DoA created two branches in Petra and Irbid, in the south and north of Jordan respectively. As a result, the Petra Archaeological Museum was created inside a Nabataean cave in al-Habis mountain in 1963, while the Irbid Archaeological Museum was created on Tall Irbid in 1966 (DoA 1994: 9). The establishment of these museums reflects the economic and cultural development in Jordan which began in the 1950s, as well as the DoA's policy of protecting archaeological sites, of promoting the awareness of archaeology and heritage and of creating archaeology museums throughout the country.

Meanwhile, Jordan was planning to establish four other museums in the West and East Banks. According to the Seven Year Programme for Economic Development of Jordan 1964-70, "The new

policy of the DoA is to establish local museums in every important antiquity site that is frequently visited by tourists…. The Seven Year Programme calls for the establishment of four others during the first four years. Jerash and Kerak museums are to be established in 1964 and 1965 [in the East Bank]. Hebron and Nablus museums are to be established in 1966 and 1967 [in the West Bank]" (JDB n.d.: 186). Unfortunately, none of these museums was opened during that time, as a result of the war.

In fact, the DoA prepared a project in 1966 to establish a folk museum in the old city of Jerusalem, but because of the war the project was not completed (Abazah 1975: 5). In 1971, the DoA re-launched the idea in ʻAmmān and the Museum of Popular Traditions was established by Mrs Saʻdeyyah al-Tall, the chair of the Heritage Club of Jordan.[1] The DoA provided the building and staff, while Mrs al-Tall, through the Club, raised funds and purchased collections of the costumes, jewellery and weaving of the East and West Banks of Jordan (DoA 1994: 4). This was the first semi-governmental Museum in Jordan with its own budget. It was managed by a committee including al-Tall, the Director General of the DoA and a representative each from the ministries of Culture and Finance (Malt 2002: 28). The Museum is located in one of the vaults of the Amman Roman theatre. In 1975, another Folklore Museum was opened by the DoA in ʻAmmān through the efforts of Hadyieh Abazah and located in the opposite vault of the same theatre (al-Qudah 1994: 165-166). Both museums aim to collect, preserve, document and display the cultural heritage of Jordan in order to increase the cultural awareness and affiliation of the people. Their collections, dating from the nineteenth century to the middle of the twentieth century, represent the traditional life and costumes of the people of Jordan.

At the beginning of the 1970s, the growth of the population and increasing urban and industrial development led to several archaeological and historical sites and monuments in Jordan being damaged or destroyed. As a result, the DoA adopted a new policy to protect such sites around the country. First, it compiled lists of archaeological and historical sites and buildings. Second, the DoA allocated an amount of money from its annual budget to purchase land containing ruins and historical buildings, or adjacent to sites of antiquities (Rida interview, 2005).

Normally, the owner of such land is compensated by the DoA, but the value is often estimated regardless of its archaeological importance. One of these properties was a number of old houses containing Byzantine mosaic floors in Mādabā, 20km south of ʻAmmān. In 1974, to gain publicity and to increase the awareness of Jordanians, the DoA renovated these houses and turned them into the Madaba Museum, which comprised Archaeological and Ethnographical museums, as well as the Old House, representing a traditional village family room of the nineteenth century. His Excellency Prince Hassan officially inaugurated the museum in December 1978.

In 1974 and 1975 the DoA approved, signed and ratified the UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property and the Convention Concerning the Protection of the World Cultural and Natural Heritage. Consequently, in 1976, in order to reduce the large number of antiquities accumulated illicitly and to stem the flow of cultural property leaving the country illegally, the DoA prohibited both dealing in and possessing antiquities. According to Hadyieh Abazah:

> "The DoA cancelled all trading licences, and all dealers were required to hand over to the DoA all registers of antiquities in their possession within two months. The Department bought the important antiquities in the possession of the dealers for a price agreed by the Minister and the dealer" (Abazah 1981: 95).

The 1970s was a decade of growth in all sectors in Jordan and this was reflected in the museums as well. In addition to archaeology and folk museums, several museums were established with new disciplines under various authorities. For instance, the Jordanian military forces established the Martyrs' Museum, while the Ministry of Posts and Communications created a philately museum. In turn, Jordan University, as a result of founding new faculties, established three university museums: the Animal Museum in the Department of Biological Science, ʻAqaba Aquarium and Marine

[1] The Heritage Club of Jordan is a private organisation formed by wealthy Jordanian women to collect traditional objects, costumes and jewellery and to display them in museums.

Science Station on the Red Sea, under the Faculty of Science — which was the first off-campus university museum — (Majdoubeh and Sweiss 1997: 66) and the Insect Museum in the Department of Horticulture and Plant Protection of the Faculty of Agriculture (JU 2005: 602). The private sector also participated in establishing two contemporary art galleries in the Intercontinental Hotel and the Plastic Art Association.

At the end of the 1970s and the beginning of the 1980s, the DoA participated in establishing archaeological museums not only in Jordan, but also in other Arab countries. For example, several archaeological collections were donated to the Abu Dhabi Museum and Kuwait National Museum. In order to market its culture and heritage worldwide, the DoA also loaned several objects to international museums in Britain, America, France and Germany. In cooperation with the Royal Court, it also gifted numerous archaeological objects to presidents, kings, princes and official visitors. This indicates that museums in Jordan played a political role in impressing political leaders who visited the country.

In conclusion, the 1970s marked a basic phase in the development of museums in Jordan, seeing a new diversity in the types of museum, in governance and in concepts. The 1980s may be seen as an extension of the 1970s in terms of the growth of museums. This reflects the development of the economic situation arising from political stability. Many archaeological and tourism projects were started in cooperation with national and international organisations. In 1980, the DoA re-launched the idea of establishing Karak Archaeological Museum, 120km south of ʻAmmān, locating it in the vaulted hall of a Crusader castle. This museum, which was inaugurated by Her Majesty Queen Noor al-Hussein, had been included in the 1964-70 Economic Plan and was to have been established in 1965, but was delayed because of the 1967 war.

The DoA continued its policy of decentralising its museums by establishing local museums in every major city of the country. Accordingly, in 1983, al-Salt Archaeological Museum was established in the city of that name 30km north-west of ʻAmmān to house material excavated in the as-Salṭ and al-Balqā' districts. Four years later, the al-Salt Folklore Museum was established and attached to the Archaeology Museum in a restored villa, built *ca.* 1892. The museum was inaugurated by His Majesty King Hussein during a visit to as-Salṭ city. The DoA, in cooperation with the German Protestant Institute for the Archaeology of the Holy Land, also established the Umm Qais Archaeological Museum in a renovated house on the acropolis of the Umm Qais archaeological site, 120km north of ʻAmmān, in 1987. This museum was also inaugurated by Her Majesty Queen Noor al-Hussein. According to Nazmeyyah Rida:

> "The DoA's policy in establishing archaeological and heritage museums around the country was to activate the role of the DoA's branches in different cities, spreading the awareness of archaeology and heritage everywhere in the country, to house archaeological objects of every city or region in their local museums, and decreasing the pressure on the Jordan Archaeological Museum, the only archaeology museum in Amman with limited facilities and storages" (Rida interview, 2005).

Another important reason was the large number of archaeological objects the DoA purchased in the second half of the 1970s as a result of prohibiting the trading and possession of antiquities — these objects needed many museums around the country to house them. What also facilitated this policy was the nature of the museums. They did not cost the DoA much money, since the archaeological objects, places to house them and employees were available. The DoA also displayed objects in simple showcases, without paying attention to museological issues such as environment, collection management or education.

The DoA, through its policy of supporting other Jordanian ministries and departments in creating their museums, participated in establishing the Numismatics Museum in the Jordan Central Bank. The Museum houses a collection of coins representing those circulating in Jordan from the fourth century BC to the Hashemite Kingdom (DoA 1994: 5).

The 1980s is considered a productive decade in establishing various university museums, as a result of the founding of new universities with new faculties and disciplines. In 1980, Jordan University established the Folklore Museum and attached it to the Department of Sociology, later transferring it to the Archaeology Department (JU 1986: 6-8). The purpose of the Museum is to preserve Jordanian heritage as evidence of the activities of Jordanian society and to provide a resource of Jordan's heritage for the University's students, local and national school

pupils, University visitors and the local community (al-Asad 1990: 1). It houses objects representing the evolution of the traditional life of Jordan from the nineteenth century and illustrates the lifestyle of Jordanian societies in villages and *badia* before the spread of western civilisation (Majdoubeh and Sweiss 2002: 91). The museum displays various objects of material culture and focuses on the representation of traditional agriculture, domestic tools, food preparation and costume.

Yarmouk University in Irbid, in its turn, founded the Museum of Jordanian Heritage with new concepts and perspectives in 1984. The museum has played a unique role in the history of Jordanian museums in general and university museums in particular. This museum has reflected the broad economic and professional climates that have shaped museum developments. This was as a result of the development of concepts and perspectives, of the general evolution in Jordan in the 1970s and 1980s and of the availability of internal and external funding. The museum also understood the need to engage with audiences rather than become wholly consumed by objects and collections. It understood the role of each component of those audiences. The result was not simply a rapid rise in public profile, but a developing role regionally as a cultural centre. Ultimately, its great success has depended upon a staff with vision and energy, which this museum appears to have had at the moment it most needed it.

Mu'tah University in Karak, originally a military establishment, added a civilian wing in 1986. Two years later, the Department of Archaeology and Tourism was founded and affiliated to the Faculty of Arts. Accordingly, when the Archaeology Museum was founded it was affiliated to this Department. The museum aims to support the educational programme and to serve the University community (Malt 2002: 37). As with the archaeology museums in Jordan and Yarmouk Universities, the DoA supported the museum with archaeological collections in 1989 and 1996. The museum has also acquired objects from the DoA's excavations in southern Jordan. Since the date of establishment, however, the Faculty and the University have failed to provide a permanent place to house its collections, which are still located in the Faculty's corridors. The museum should therefore be considered a departmental collection, rather than a museum proper.

From 1987, the DoA, in cooperation with the Oriental Institute at the University of Chicago, started a series of archaeological excavations in Aqaba on the Red Sea in southern Jordan. The expedition discovered the Islamic city of Ayla and hundreds of related archaeological objects, which were exhibited at the Oriental Institute, the DoA and Yarmouk University. From this travelling exhibition, the idea of establishing the Aqaba Archaeological Museum was launched in 1990. The Museum is located in the former house of Sherif Hussein Bin Ali next to the Mamluk castle, which was built at the beginning of the sixteenth century. The Aqaba Archaeology Museum contains archaeological objects from the mid-seventh to twelfth centuries that have been excavated at 'Aqaba and Wādī Rum (Malt 2002: 44f).

In 1995, Āl al-Bait University established the Samarqand Museum and attached it to the Institute of Islamic Arts as a pedagogical, research and academic centre (Sa'id 1997: 28). It was intended to preserve, maintain and enrich the heritage of Islamic civilization (Obaidat 2001: 43-46).

In the mid-nineties, the DoA and the private sector group Friends of Archaeology participated in an international project called "Museums with No Frontiers". This virtual, cyberspace project was launched by the European Commission in order to foster cultural relations among fifteen Mediterranean countries (http://www.discoverislamicart.org). It is an on-line museum of Islamic art which aims to establish a vast transnational museum that presents Islamic works of art, architecture and the archaeological context in which they were created (Najjar 2007). It provides an opportunity to learn about and enjoy the shared cultural heritage of Europe, North Africa and the Middle East in a completely new way. Every country was asked to work on a particular historical period. Thirty five monuments and sites from Jordan connected to the Umayyad, Early Abbasid, Ayyubid, Mamluk and Ottoman periods were included in the database (Naghaway 2007).

In 1999, Jordan witnessed the establishment of the first archaeology museum by the private sector. This was the Numismatic Museum at the Jordan National Bank, which houses the special coin collections of Dr Nayef Qsus.[2] These were collected

[•] Dr. Nayef Qsus is a dentist and one of the most active numismatic collectors in Jordan and the Middle East. He is member of the Royal Numismatic Society in the UK and the American Numismatic Society in the USA. He was awarded the prize of the Royal Numismatic Society in 1996 for his book "Umayyad Coins".

over 40 years and represent the development of numismatics from the Lydian period to modern times. Dr Qsus sold his private collections to the National Bank to establish the museum under the supervision of a committee from the DoA. The museum contains a specialised library on the science of numismatics (Qsus Interview: 2005).

During the 1990s many other museums were founded by the DoA, the government, the private sector and universities. For example, the DoA continued its policy of establishing archaeological museums in every city in Jordan by founding the ʻAjlun Archaeological Museum in the north and Mafraq Archaeological Museum in the east. It also converted the house of King Abdullah the First in Maʻān, southern Jordan, into a historical museum and gave permission to the College of Archaeology at Al Hussein bin Talal University to manage it (Rida interview: 2005). The DoA supported the Ministry of Awqaf and Islamic Affairs in establishing the Abu ʻUbayda Islamic Museum in the Jordan Valley, by supplying Islamic objects.

Despite the severe political and economic instability suffered by the country during this decade, twenty five museums were established in Jordan during the 1990s. This high number was possible because of a number of factors: the majority of these new museums relied on available objects and existing buildings; some were galleries without permanent collections; none of them paid attention to museological issues such as environment, collection management or educational programmes; finally, those affiliated to universities were educational collections rather than true museums. Therefore, one could say that these museums were developed in quantity rather than quality; they concentrated on providing exhibition space and housing objects as warehouses, more than on educating people.

The new millennium started with the construction of a number of semi-and fully-governmental museums. At the beginning of the 1990s, Jordan received a grant from the Japan International Cooperation Agency (JICA) to develop several archaeological and heritage sites. Part of this grant was made to establish a National Museum and to develop other museums in Salṭ, Karak and the Dead Sea area (JICA 2000: 1). Five other institutions were launched: the Dar as-Sarāya, Fīdān, Baptism, Children's and Police museums.

As far as the National Museum is concerned, the idea of establishing such a museum arose in the 1960s. In pursuit of this project, numerous committees were formed by representatives from the Ministry of Tourism and Antiquities, the Ministry of Culture, the National Resources Authority, various Jordanian universities and private sector interests including architects, artists and archaeologists. Over the years, many suggestions have been made concerning concepts, objectives and locations for such a museum (Ibrahim 1991: 1-4), but the idea was not realised due to the lack of experts and funding. The Jordan National Museum is now at last under construction and is expected to be opened in 2009. The Department of Antiquities enacted a temporary law for the museum and added it to the Law of Antiquities.

To conclude, sixty six different museums have been established in Jordan since 1921. The largest category is archaeology museums, which reflects the desire of the DoA to establish a museum at every major archaeological site. Although many private universities have been created, no museums have yet been established on their campuses. Of the 66 museums in Jordan, 59 are governmental and only seven are private.

Museums in Jordan were developed slowly because they are governmental ones. They totally depend on the government budget, which is very low. They also do not benefit from their income; that goes directly to the Ministry of Finance rather than back to the museum. Jordanian museums are not yet interconnected or represented by any official association. There are no museum councils, commissions, or university museum group like the ones in the west. The absence of these organisations has seriously limited the development of museums in Jordan. Such associations promote the interests of collections and museums, and provide umbrella organizations for their implementation (Hill 2005: 68).

Another important reason for this slow development is that as the governmental museums are attached to a department or ministry, they are managed by that department or ministry. Museum staff do not have the right to make decisions in order to develop their museums. This idea was mentioned by Kate Hill in connection with the relations between English local councils and the curators of municipal museums in the nineteenth century. According to her, "the slow development of curatorial authority is reflected in the fact that curators con-

tinued to face conflict with councillors and members of scientific societies" (Hill 2005: 64). Moreover, public museums lack qualified staff. On the one hand, curators and their staff often do not have degrees in museum studies, having attended only general training courses. On the other hand, they are considered employees like those of any other government department and do not participate in the power structure or in the planning and evaluation processes. They do not even have an official job description. The curator carries out every task in the museum, such as administration, research, the curating of exhibitions, collection management, public relations, teaching and tour guiding. Malt adds that:

> "The development of museums in Jordan has been done slowly because there has been a general lack of interest by the people and the power structure in the monuments and relics that are so prevalent in the region. Muslims generally had an attitude of benign neglect for the architectural monuments of previous cultures found in their territories and only began to appreciate and seriously preserve them some fifty years ago. This interest in their heritage also coincides with the surge of interest in museums and private collecting" (Malt 2005: xviii).

Asem Barghouthi, the director of the National Museum project notes that "as a result of lack of awareness of the role of archaeology and heritage, establishing museums in Jordan was not taken seriously by either the government or the general public" (Barghouthi interview, 2005). Another reason is a social one: the problem of habituation and familiarity. This means that the lack of interest in archaeology and heritage comes from the level of habituation around archaeological sites. People think that they know everything about the ruins and there is no need to visit these ruins or museums to see what they see around them every day (al-Hunaiti interview, 2005).

Other factors in the slow development of Jordanian museums are the economic situation, political instability, the Arab-Israeli and Gulf wars, demographic changes and population movement. These issues apply not only in Jordan; they are common in many developing countries. According to Saifur Dar, "museums are institutions of slow growth; this growth is much slower in developing countries than in developed countries. This is as a result of the lack of attention from government, wars, political instability and the lack of cooperation between the government and private sector" (Dar 1989: 13-26).

The situation is different for the private museums in Jordan. According to Malt, Darat al-Funun (or Home of the Arts), which is a private museum, is a successful because of its "funding, staff and leadership. Guaranteed a percentage of profit from the Arab Bank annually, the Dara's programs, record keeping, maintenance, staff salaries, utilities — and all other aspects of its operation — are maintained, and new initiatives can be developed as well. The staff members are qualified, professional, and dedicated. They exude an attitude of helpfulness and competence, and are multilingual" (Malt 2005: 51). The Numismatics Museum at the Jordan National Bank, which is the only private archaeological museum, is another successful example of a private museum in Jordan as a direct result of available funding and staff.

It is notable that the private sector in Jordan has focused on contemporary art galleries, while there is only one private archaeology museum, which was established in 1999 as the result of an individual effort. This may be explained by the fact that establishing archaeological museums is the responsibility of the DoA. Also, the idea of creating non-profit institutions in Jordan, such as museums, is still taking root. It needs motivation from the government by facilitating the laws and regulations and special support from the private sector by making donations to this kind of institution.

The majority of museums in Jordan were not built for their present purposes. Many are located in old buildings or at ancient historical sites, such as monuments, public buildings, castles, theatres and houses. For example, the Petra Archaeological Museum is located in a cave, the Folklore and Popular Tradition Museums are located inside the eastern and western vaults of the Roman theatre in ʻAmmān, while the Irbid Archaeological Museum occupies a renovated Ottoman prison called as-Sarāya. This constitutes a critical problem facing Jordanian museums.

Even those museums housed in purpose-built accommodation fall short of international standards in terms of architecture, planning and controls. They lack necessary museological requirements, such as stability of environment or appropriate facilities for display and storage. Several scientific studies of the environment of Jordanian museums

have examined the extent to which Jordanian museums conform to the recommended measurements and international standards for places in which to preserve valuable collections. They concluded that as a result of poorly equipped museums and high fluctuations in relative humidity and temperature inside museums, archaeological objects and other sensitive materials are under the imminent threat of damage. Other environmental factors have a negative effect on artefacts, particularly light, dust, and micro-organisms, in addition to the human factor (al-Rousan 1998: iii; al-Ghazzawi 2003: viii; Khasawneh 2006: v).

In addition, Jordanian museums face a number of other obstacles:

> "These obstacles are the financial difficulties, the absence of qualified museological professionals, the need for modern technology, absence of coordination between museums and other institutions, inadequate exhibition spaces, lack of complementary activities such as seminars, lectures and educational programs, competition with other forms of entertainment, absence of museum publications, references, and brochures, and lack of public awareness and interest in archaeology and museums" (Rishaidat 1994: 175-181).

These obstacles are not restricted to Jordanian museums; they apply throughout the Middle East (Mershen 1993-1994: 77-98). To overcome them, museums in Jordan need publicity through media, publications, guides and educational programmes. They also need administrative autonomy, the creation of a training centre for museology, financial assistance, the development of special organizations for museums, new ideologies, cooperation among themselves and with schools and universities, and the development of facilities such as new computers technology and software for collection management.

Jordanian museums do not have policies of interaction with local communities and schools. They and other third world museums are facing isolation in the community. To overcome this obstacle, "we need to encourage public, individuals and organisations to become familiar with museums, especially the educational fields. We need to organise field visits to archaeological sites, and enable students to participate in excavations. We have to increase the role of the media to help raise public awareness" (al-Tall 1994: 187-188).

The effectiveness of students' visits to archaeology museums in Jordan was studied and drew a number of conclusions. First, school visits lack comprehensive planning to acquaint students with the significance of archaeology. Second, there is no coordination between the Ministry of Education and the DoA's museums. Finally, school visits are subject to teachers' interpretations; the teachers who conduct the visits do not have sufficient information about the museums or sites they visit. Therefore, such visits are considered as entertainment. Consequently, several recommendations were presented to improve school visits to archaeological museums, such as adding archaeological studies to school curricula, creating educational units in archaeological museums, developing museum facilities, producing educational materials for students and increasing the numbers of television programmes about archaeology and museums (Rida 1994: 183-185).

The communication of Jordanian archaeology museums with surrounding communities, the extent of public interest in museums and the depth of understanding of their importance were studied. This study concluded that "Jordanian museums ... lack ... staff specialized in the field of museums and education [which has] led to the absence of [a] clear framework for an education policy. This is very clear through the severe shortage of activities, presentation techniques, display layout and design, education programs, and educational strategies for school children". This study also notes that the DoA and the Ministry of Education have paid little attention to encouraging interaction between students and museums (Badran 2001). Many recommendations were adopted in this study such as "establishing education departments that include [staff] specialized in museum education, increasing the DOA's [financial] support to its museums... [Furthermore], the Ministry of Education should consider museums as educational institutions and create special programs of collaboration between schools and museums" (Badran 2002: 83-89).

Concerning university archaeology museums and their visitors, those in Jordan — like most university museums in the world — form part of academic departments or institutions and are designed as exhibition facilities for educational purposes. These museums are described in Jordan as "teaching collections". According to Malt, "since their primary purpose is to serve students, they

are properly 'collections' rather than museums" (Malt 2005: xxi). What has been written is correct to some extent, but most university museums are open to the public, even if not in a systematic or organised way.

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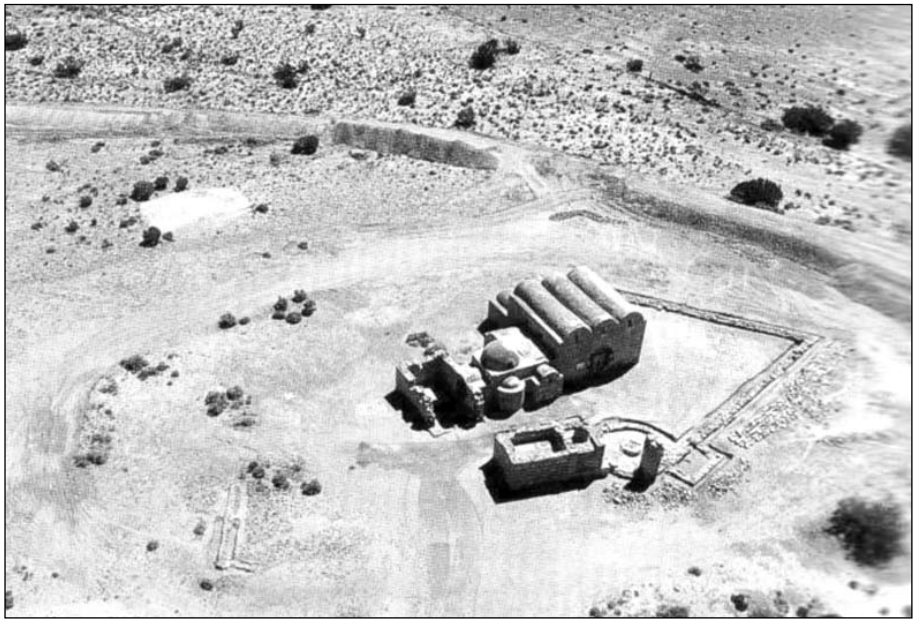
Issues at World Heritage Sites: Petra Case Study

As a non-governmental and non-profit organisation established in 1989, the Petra National Trust (PNT) is one of the organisations responsible for the preservation of the cultural and natural heritage of Petra. PNT does not set policy but works with policy makers in the Jordanian government and other NGOs to achieve its objectives**.**

Petra is one of three sites in Jordan on the UNESCO list of World Heritage Sites. Although surrounded by oil producing countries, Jordan itself has no oil and is therefore forced to look carefully at its other resources and maximise their use in order to sustain development. Tourism has emerged as a key economic driver with antiquities forming the primary component thereof. With the surge of tourism in Jordan, the government is now reviewing its policy for archaeological heritage management to enable it to become the major contributor to the growth and development of the tourism sector and, indeed, the national economy. Until recently, the management of all archaeological sites fell under the jurisdiction of the Department of Antiquities. The Ministry of Tourism is now re-examining its role and that of the Department of Antiquities, and has divided these roles into two groupings: (1) tourism management and services, largely operated by public / private partnerships and (2) archaeological management and research, carried out by the Department of Antiquities. The former gives precedence to tourism-oriented management and the latter to management with conservation at its core. In Jordan the tendency has been to favour the former. How to divide these roles and who is ultimately responsible, is the key question. With a history of lack of co-ordination and observance of each other's roles, the protection / sustainability of this non-renewable resource is being placed at a very serious risk. Those heritage sites labelled as "tourism sites" will now be managed by the Ministry of Tourism, at the helm of a government company composed of public and private sector stakeholders.

Two of the three Jordanian World Heritage Sites, Quṣayr ʻAmra (FIG. 1) and Umm ar-Raṣāṣ (FIG. 2), fall under this new jurisdiction and will be managed by the Ministry of Tourism. Petra is the exception to this new ruling, as it was felt that the site was too large, too complex and too fragile to bring into the fold at this stage. Having said that, the new bye-laws for the Petra Archaeological Park have been amended by the tourism authorities to allow for a similar style of management. The Ministry of Tourism has been assisted in its reorganisation of site management by the USAID-funded programmes known as "AMIR", which developed the National Tourism Strategy between 2004 and 2010, and "SIYAHA" (the Arabic word for tourism), which will implement it. In 2004, the government endorsed the National Tourism Strategy, which made archaeological tourism its mainstay, leaving other types of tourism for later consideration. This was done in the absence of a national strategy for the management and preservation of Jordan's archaeological heritage and herein lies the issue of which organisation should be entrusted with the management of our archaeological heritage: Tourism or Antiquities? The Petra National Trust was minimally involved in these deliberations and was not part of the decision-making process at any of its stages.

Whether at Petra or at other World Heritage Sites, the basic components of site management are similar in essence, but vary according to the size of the site, its location, the proximity of the local community, level of visitation and level of infrastructure and services required. Quṣayr ʻAmra was placed on the UNESCO list of World Heritage sites in 1985.



1. Quṣayr ʻAmra.

2. Umm ar-Raṣāṣ.

It is located in the Azraq Region, approximately 75 kilometres east of ʻAmmān. Only the foundations of the fortress are preserved, but the Quṣayr itself with its three-nave reception hall, al-Ḥammām and extraordinary mural decorations (FIG. 3) still exist. Quṣayr ʻAmra is the best-preserved palatial architectural complex of the Umayyad period and a unique artistic achievement but, to date, it does not have a management and conservation plan. Visitors are left to circulate freely and can take photographs without consideration on the impact of such activities on the site and its paintings. There have been several conservation interventions by the Department of Antiquities and non-Jordanian restoration

3. Mural paintings at Quṣayr ʻAmra.

projects that have proven to be problematic over the years. Additionally, the Quṣayr does not have a nearby local community benefiting from the returns of tourism and, as such, a key factor in site management is removed from the equation.

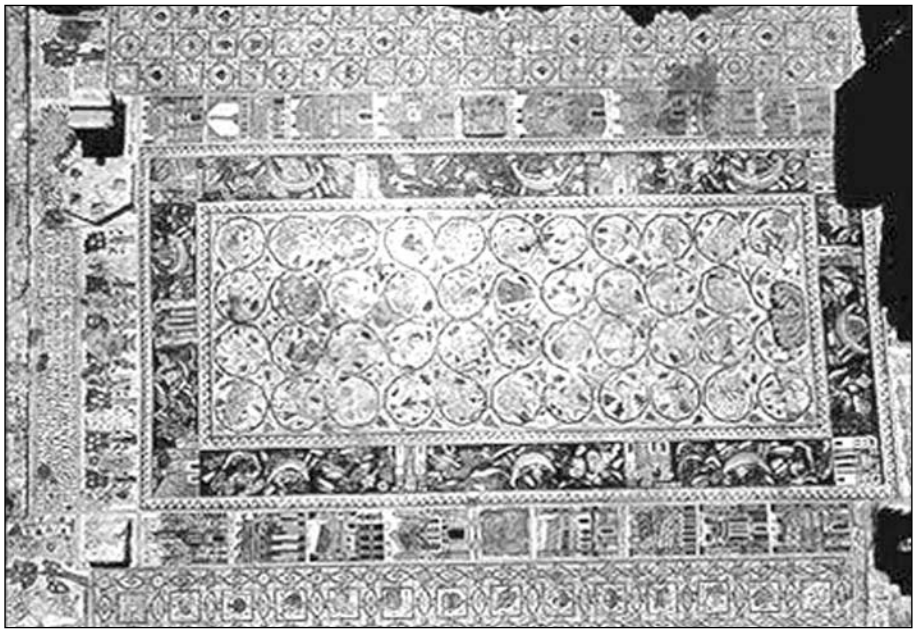
Umm ar-Raṣāṣ, which was added to the UNESCO list in 2004, is located near the Kings' Highway, 30 kilometres south-east of Mādabā. It has archaeological remains from the Roman, Byzantine and early Muslim periods (late third to ninth centuries AD) (FIG. 4). The site has several churches, some with well-preserved mosaic floors; particularly noteworthy is the mosaic floor of the Church of Saint Stephen with its representation of towns in the region (FIG. 5) the square tower is probably the only architectural legacy of the stylite monks, ascetics who spent time in isolation atop a column or tower. A management plan is in the process of being developed, which will hopefully be endorsed by the government on completion. There is a small community in the vicinity of the site and my understanding is that various income-generation projects are in the pipeline. I will not go into details regarding the management issues at either Quṣayr 'Amra or Umm ar-Raṣāṣ, suffice it to say that in essence they are similar to those in my case study of Petra.

Petra was made a UNESCO World Heritage Site in 1985, being listed as a "cultural site". This included the "spine", where the visible archaeology is concentrated (FIG. 6). In 1993, the Jordanian government declared an area of 264 square kilometres — including the "spine" — a National Park, but fell short of incorporating this area within the World Heritage listing and did not provide for a buffer zone. Despite the fact that no development was allowed within the Park, construction continued (FIG. 7) and we now face major problems of construction and urban encroachment within and outside the Park.

The Petra National Park is surrounded by six main urban centres, which form part of the Petra Region and have a total population of around 25,000. Two of these centres are gateways to the Petra Archaeological Park and have a direct impact on it. Much of the land surrounding the Park comes under tribal / customary law, meaning that the tribes consider this land to be their territory. This, as well as privately owned land, is now changing hands in quick succession as a result of land speculation aimed at benefiting from the surge in tourism. The government is likewise allocating major plots of land to various government departments and universities (FIG. 8), all of which are all in visually sensitive locations that directly impact upon the site.

There are obviously numerous stakeholders who have an interest in the region, including:

1. Local communities.
2. Government, including the Department of Antiquities, Ministry of Tourism, Petra Regional Authority, Land Department, Public Security Department and other local authorities.
3. Jordanian and international archaeological missions.
4. Tour operators, investors in tourism, hotel own-



4. Church of Saint Stephen mosaic.

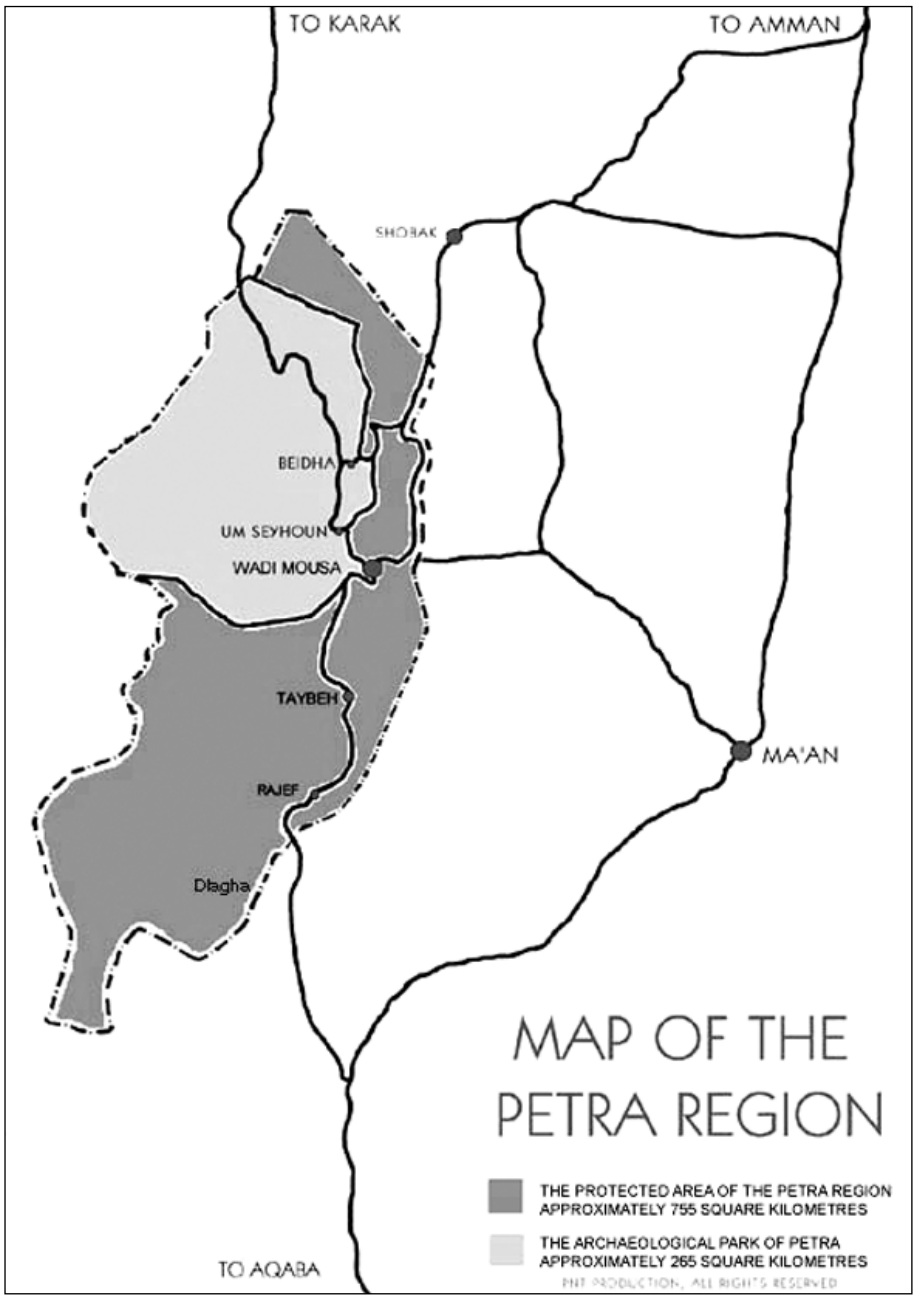
5. The Stylite Tower.

ers and souvenir vendors.
5. Tourists.
6. NGOs working on the socio-economic development of the Petra Region. Petra National Trust, with its mission to protect and preserve.

The differing and often incompatible interests of these groups need to be managed in order to avoid open friction between them, whilst at the same time maintaining the significance and integrity of the site.

Petra's significance was first defined by UNESCO in 1994, despite have been declared a World Heritage Site as long ago as 1985. UNESCO listed the values of the Park under four main headings (FIG. 9); on four occasions between 1996 and 2002 it has been placed on the World Monuments Fund's watch list of 100 Most Endangered Sites.

Well before this time, in 1968, the US National Park Services (NPS) were invited to prepare a master plan for Petra, to guide the use, development, interpretation and protection of the Park. Many of the issues identified in the 1968 NPS plan have now intensified, notably the population explosion. In the absence of zoning and land-use plans until 1996, uncontrolled construction has visibly encroached on the area. The 1968 NPS plan described Wādī Mūsā thus: "At the present time a drive through the village of Wādī Mūsā constitutes an important bonus for Petra visitors. A view of this unusually



6. Petra Region.

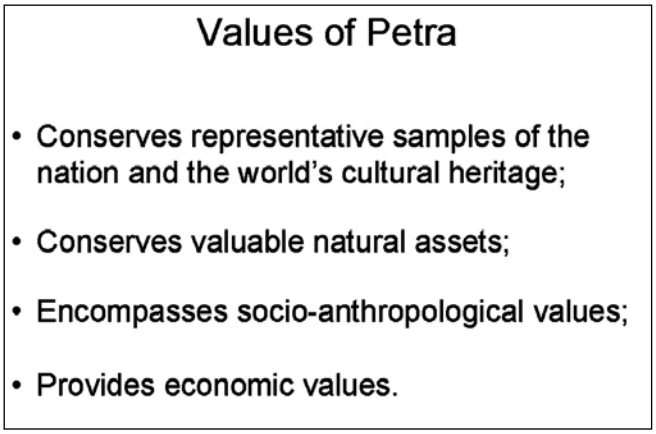
attractive terraced and well watered oasis and its village life is a scene of Jordan which should be kept". This landscape is now obscured by construction. Furthermore, tourism increased from 31,800 visitors in 1966 to 360,000 visitors in 2006. Not too long ago, there was only one large hotel overlooking the Park. Now there are four hotels on the scenic Ṭaybah — Wādī Mūsā road, directly overlooking Petra and an-Nabī Hārūn. They were licensed with profit in mind without regard for their negative visual impact on the site, nor for their location in the rainfall catchment area above the line of natural springs. Inevitably, with the increase of tourism, came the spread of unregulated commercial activities inside and outside the Park. This too has had a negative impact on both its cultural and natural values (FIG. 10).

In response to the impact of growth, the government has invited international institutions to prepare management plans for Petra on no less than four occasions.

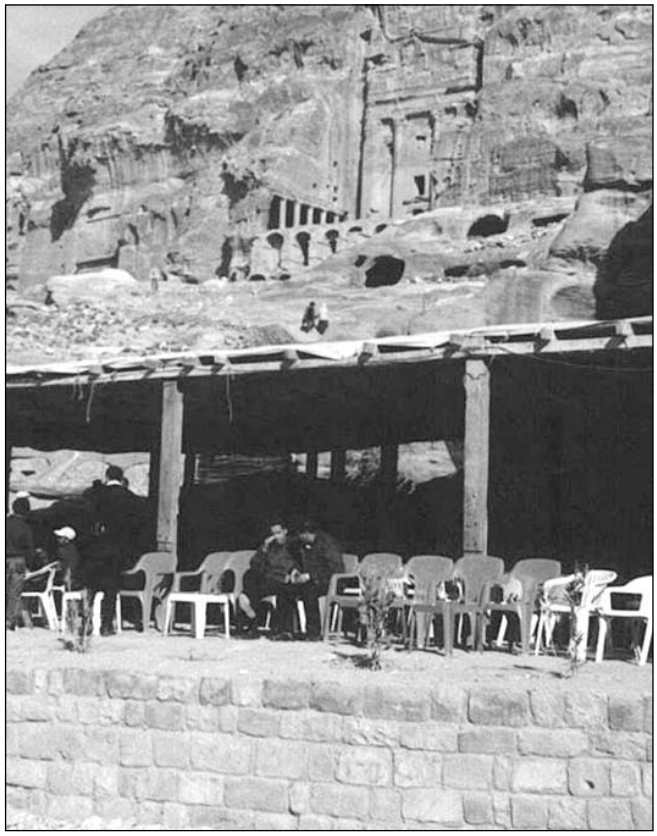
1. 1968 US National Park Services "Master Plan for the Protection and Use of the Petra National Park".

7. Construction within the Archaeological Park: Nabataean Restaurant.

8. Al-Hussein University.



9. Petra values.



10. Concessionaire shops and restaurants obstructing view of monuments.

2. 1994 UNESCO "Petra National Park Management Plan".
3. 1996 US / ICOMOS "Management Analysis and Recommendations for the Petra World Heritage Site".
4. 2000 US National Park Services "Operational Plan".

There is no institutional recollection of the procedures that were followed in the first three plans. Although these included some Jordanian participation, it is clear that there was no systematic stakeholder participation in the identification of the values, major issues and — subsequently — in the formulation or implementation of the recommendations they made. Regretfully, to a greater or lesser extent, this approach has continued to the present day.

The first two studies analysed the management structure at a time when the Ministry of Tourism managed Petra from their headquarters in ʻAmmān. Whereas the Ministry of Tourism was responsible for issuing development licenses, the Department of Antiquities was responsible for the management of the archaeological heritage. With limited staff and poor co-ordination, the management of the entire area continues to be ineffective and most problems, then and now, are a result of this unhappy situation. On the basis of their findings, the NPS and later UNESCO emphasised the need to create an independent single authority that would manage

and co-ordinate all aspects of Park management. The outcome was the Petra Regional Authority (PRA). It was given a mandate to manage an area of 755 square kilometres, including the 264 square kilometre protected area of the Park that remained the responsibility of the Department of Antiquities. The articles of PRA law concentrate mainly on municipal planning. However, in executing these responsibilities, there has been a widespread lack of awareness of the impact that development in the buffer area has on the Park itself (FIG. 11). The issue is, again, a lack of co-ordination between the key government stakeholders and herein lies one of the underlying problems hindering efficient management of the Park. There are still several organisations operating, often independently and frequently with overlapping responsibilities, each with its own direct line of authority leading back to 'Ammān. There is a need to "revisit" all of the objectives of all these organisations, both governmental and non-governmental, and to align their roles within the management system.

It needs to be emphasised that the concept of establishing protected areas to manage cultural heritage sites is still in its infancy in Jordan. As early as 1996, USAID prepared a study entitled "Jordan Parks Policy Project" which acknowledged the need to improve the management of protected areas. It identified the important park policy issues by providing recommendations for a protected area policy and an integrated management system. It investigated several options, but fell short of recommending a specific organisational structure. Had this study been followed up, today Jordan would have had a national strategy for the management of archaeological heritage, and the issues mentioned earlier in this paper would not have arisen as a result of its absence. Subsequently, three different models have been implemented in Petra, Wādī Ramm and the Baptism site, but none have been evaluated and all need to be examined further before the newer models that we are now witnessing are introduced.

11. Al-Hussein University.

The third set of plans was prepared by a site management team from US / ICOMOS in 1996, which also conducted a carrying capacity study. The fourth plan, submitted in 2000, differs from its predecessors in that it constitutes a major step towards the establishment of comprehensive management procedures. However, a number of crucial pre-requisites, essential to the long-term feasibility of the the plan, were not addressed. Once again, it was prepared by a group of specialists from the US / NPS and did not include any local participation until after its submission to the government. Difficult as it may be to co-ordinate, experience with management plan preparation over the past 39 years has taught us that participation of key local stakeholders is essential if the plan is ever to be accepted, let alone implemented.

In conclusion, site management has now been a concern for almost 40 years. In the 1960s, tourism was minimal, being restricted to the most adventurous and hardiest of souls. That policy makers were aware of the wider economic importance of the site, as the region became more accessible, is clearly demonstrated by the number of studies conducted and the projects that resulted from them. There is a basic consensus between the four abovementioned plans regarding the type of management structures and interventions needed for Petra. However, approaches to the implementation of these plans has been fragmented over the years. Instead of adopting a holistic approach to site management and preservation, sub-projects were selected for implementation, which has led to the imbalance we witness today. Petra, like the other World Heritage Sites in Jordan, is the product of innumerable accumulated layers of historical heritage and neglect. These need to be managed and presented in a manner that does not result in further decline because of a lack of coordination between stakeholders and an excessive focus on economic gain. Consolidation of efforts which emphasise the values that set Petra and the other World Heritage Sites apart, using an integrated approach with the participation of all those concerned, will be the quickest and most effective way to achieve the desired result.

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Barsīnia: a Newly-Excavated Archaeological Site in North-Western Jordan

Introduction

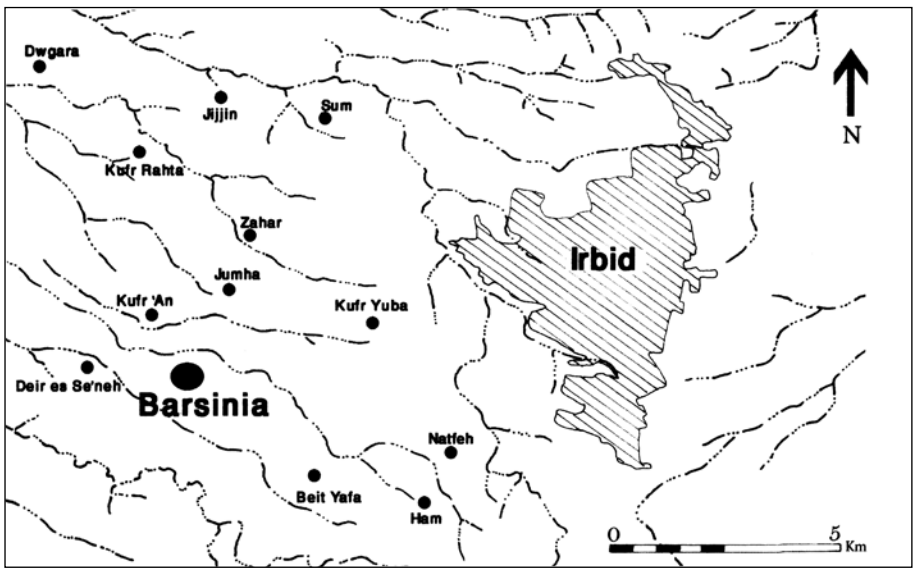
On the basis of the results of a survey carried out in the west Irbid region during September 2005, a number of prominent rural archaeological sites can be recognized. These sites reflect flourishing activity throughout many historical periods. One of the major sites, rich in archaeological remains and continuously occupied from the Early Bronze Age until the Ottoman period, is Barsīnia (El-Khouri *et al*. 2005; Site 18). Excavating these sites was subsequently a priority, as rural sites have received less attention in the literature than urban settlements.

Location

Barsīnia (JADIS 2221030 Barsina) is located in north-western Jordan, 15km west of the modern city of Irbid and 1.5km east of the small village of Dayr as-Si'nah (FIG. 1). The pottery assemblage found at the site during the west Irbid survey and first season of excavation confirmed that it was occupied for more than 4,000 years, from the Early Bronze Age until the last century. It is therefore typical of the rural sites in this region, which were occupied for long periods of time. The site was abandoned about 100 years ago after its inhabitants moved to the nearby village of Dayr as-Si'nah. The name of the Barasneh family, who live at Dayr as-Si'nah today, is most probably derived from Barsīnia. The formation of the rural communities of the region, most of which are ethnically based, will be a topic for future research.

Nature of the Site

Barsīnia covers an area of *ca*. 112,000 square meters (FIG. 2) at an altitude of 512 meters above sea level. The area is domestic in nature, with tombs surrounded by agricultural fields. About 300 meters south of the site are some structures which appear to be connected to it. There is also a rock-cut press, comprising a large rectangular basin more than one meter deep (FIG. 3), and a quarry from which its building stones were cut (FIG. 4). The surveyed



1. Location of Barsīnia.

2. Site of Barsīnia, looking north-east.

3. Press located south of the site.

4. Quarry located south of the site.

also recorded 17 cisterns, a number of caves, some partially walled-in, and traces of buildings within the overall area of the site (FIG. 5).

The settlement demonstrates that rural dwellings were established in the region in ancient times and were also common in the later periods, up to the present day. To date, our main source of information for most of the ancient rural sites in the region comes from archaeological survey. Unfortunately, although survey can provide information about site distribution and an indication of the intensity of occupation throughout the ages, it does not provide sufficiently

5. Aerial view of the site.

detailed information about individual sites.

The landscape around Barsīnia is typical of the Mediterranean highlands that make up most of north-western Jordan. Its ecological zones range from semi-arid to semi-humid. These highlands receive Jordan's highest levels of rainfall, have a generally cool climate and separate the Jordan valley and margins from the plains of the eastern desert. The soil at the site is of the type known as *terra rossa* or red Mediterranean soil (FIG. 6). It is situated in a region that forms part of the Mediterranean climatic zone, the main characteristics of which are winter rain and summer drought. It has a modest rainy season from November to March, followed by five completely rainless summer months between May and September. Winter temperatures average 5 to 10° C.; summer temperatures range between 25 and 30° C. The average annual rainfall is around 600 to 700 millimetres. In general, the climatic and geographical situation of the site is favourable for farming; indeed, the entire region is thought to be capable of yielding crops without irrigation. The plains around the site could be considered as cereal-producing areas.

Barsīnia flourished and reached its peak during the Roman and Byzantine periods. It had direct contact with the large cities of the area, being just 15km south-west of Capitolias, 30km north of Gerasa and 20km east of Pella. It was one of the few sites with evidence for continuous occupation, even during the Hellenistic and Abbasid eras when there was a decline in both the number of sites and the population. Numerous imported objects at the site, especially during the Hellenistic, Roman and Byzantine periods, show that at least some of the inhabitants engaged in activities other than agriculture.

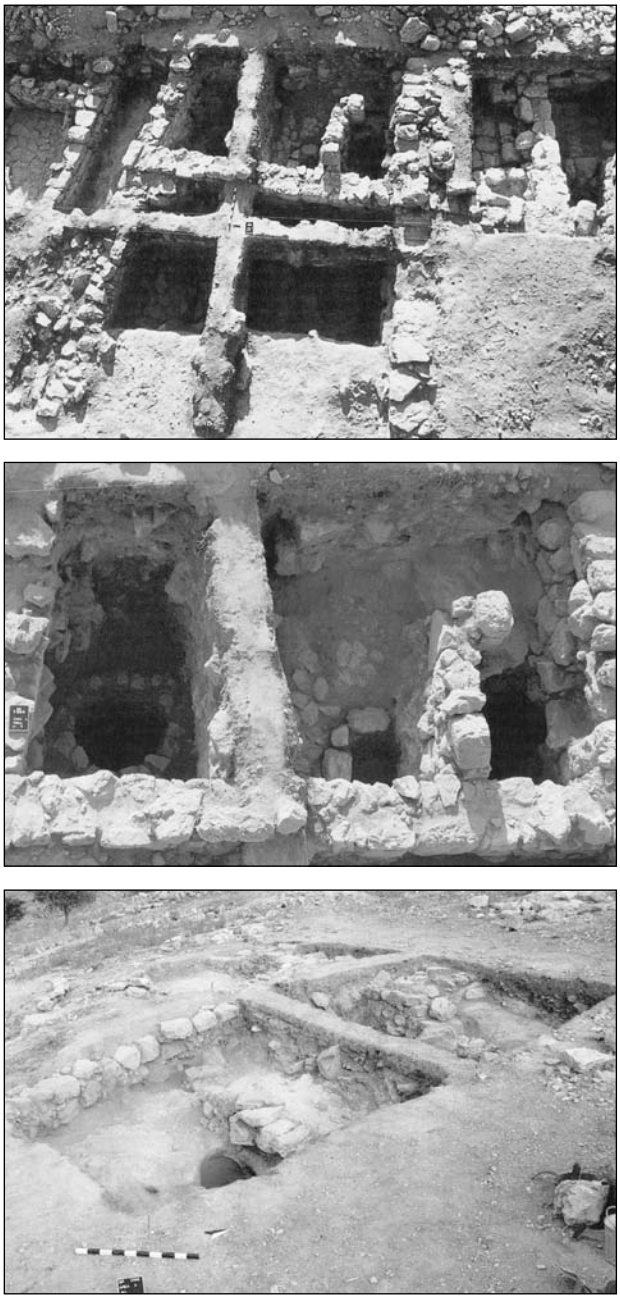
Architectural Remains

The nature of the dwelling houses at the site was revealed during the first season of excavation. The dwelling houses that were partly-excavated (FIG. 7a, b) suggest that several houses were grouped together in a single neighborhood. The architectural remains uncovered so far are of medium quality. The walls are mostly built of large cut and uncut stones. They were re-built in different phases, as demonstrated by the presence of blocked entrances. The upper-most levels of the walls were built of different types of re-used stone and both quality and technique vary. The floors were paved by stone slabs, parts of which were still preserved in some of rooms. However, other floors were destroyed and the stone slabs re-used in blocking entrances and re-building the upper levels of walls.

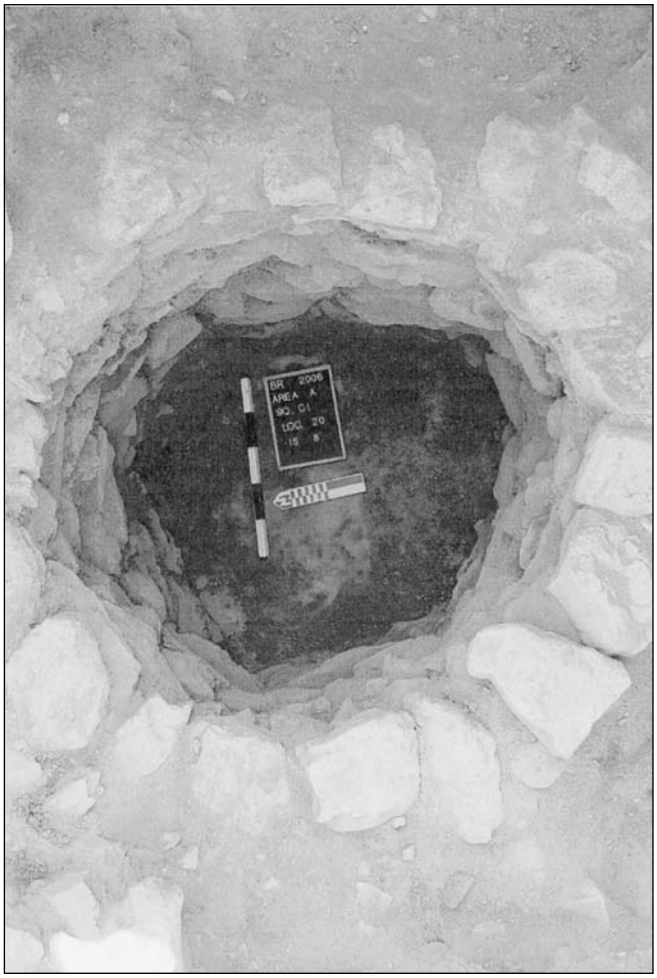
On the basis of the pottery, the site was occupied for a long period of time. Late Byzantine sherds are predominant, but Umayyad sherds were also found in large numbers, as well as late Roman and a few early Roman sherds. Individual Abbasid, Ayyubid / Mamluk, Fatimid, and Ottoman potsherds were also found.

Two test pits were dug down to the bedrock and encountered earlier phases of occupation. These test pits showed that some walls were built earlier than expected. According to pottery readings, the site was occupied from the Early Bronze Age onwards. The most visible period of occupation exposed in the test pits was Hellenistic. Two grain silos (FIG.

6. Agricultural fields around the site.



7a, b, c. Excavated plots in Area A.



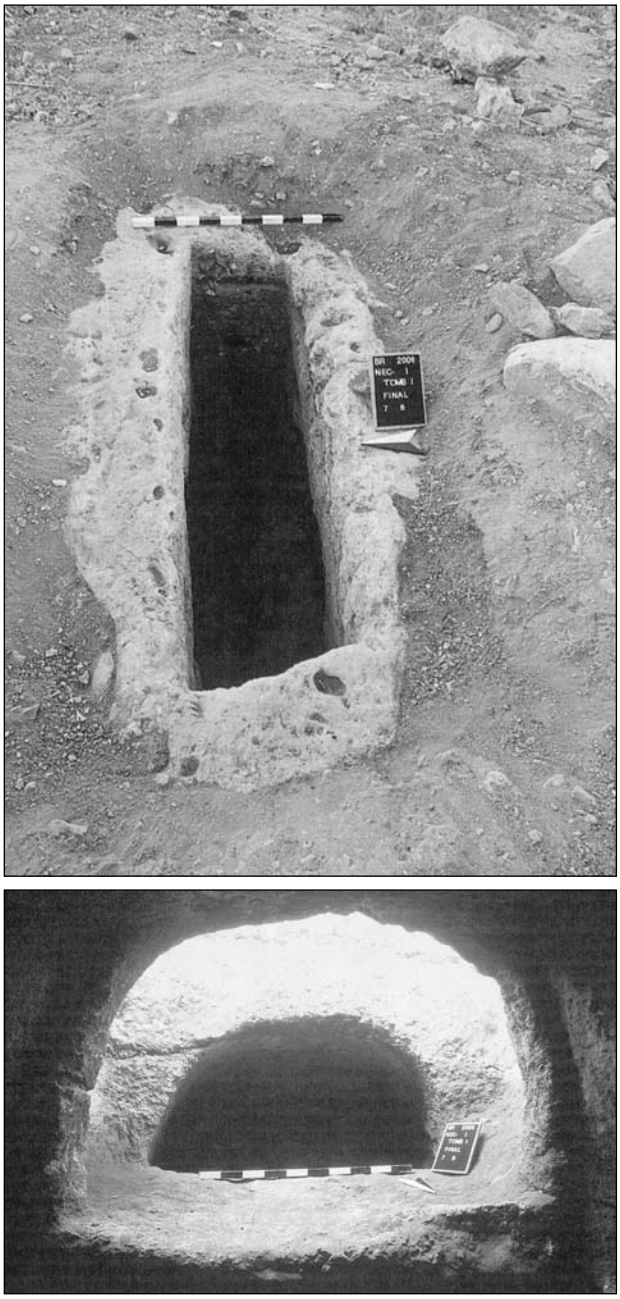
8. Silo in area A.

9. Rhodian stamped amphora handle.

8) and a Rhodian jar handle (FIG. 9) dated to the 2nd century BC were found.

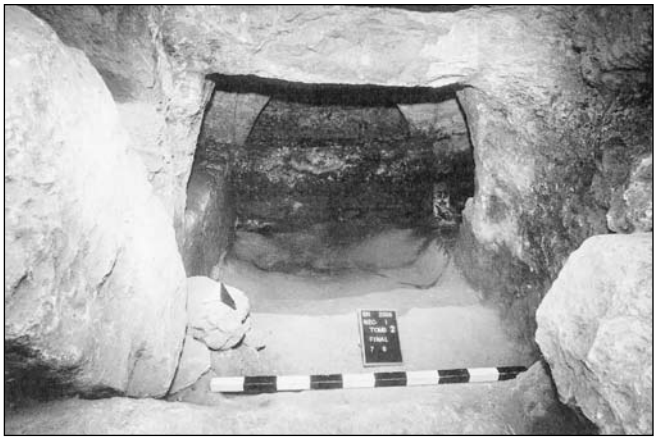
Tombs

Apart from the building remains, tombs are the most obvious monuments at the site and indicate the extent to which the countryside around the cities flourished. Barsīnia was notable for the variety of its tombs. They are indicative of a high standard of living and productive economy, especially during the Hellenistic, Roman and Byzantine periods. They are also good evidence for the presence of wealthy individuals in the countryside. Four different types of tomb have been excavated: a chamber tomb with shaft entrance (FIG. 10a, b), a cave chamber tomb with horizontal entrance (FIG. 11), an individual simple rock-cut tomb (FIG. 12) and

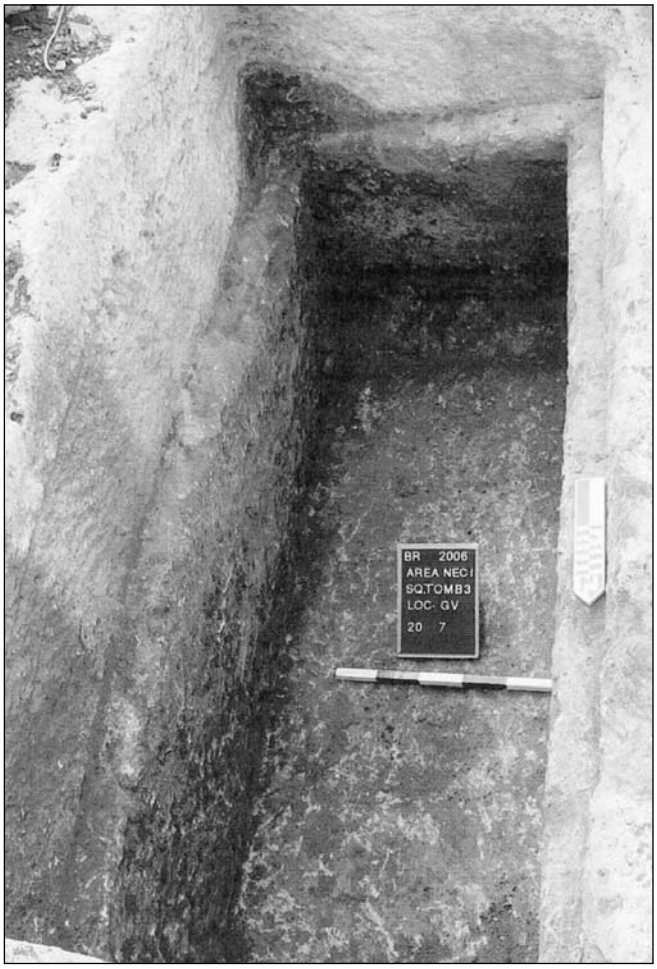


10a, b. Chamber tomb with shaft entrance.

a monumental built-up tomb (FIG. 13). The first three types are recognizable as the most familiar tomb types of the region. The chamber and shaft tombs contained multiple burials cut into the soft limestone. The burials were originally covered with soft limestone slabs. Fragments of these slabs were found inside and outside the tombs. The fourth type is a kind of mausoleum, or tower tomb, and usually served not only as a tomb but also as a cult place. All the tombs contained individual potsherds and



11. Chamber tomb with horizontal entrance.



12. Individual simple rock-cut tomb.

human bones in extremely fragmentary condition. They were in great disorder, owing to looting in recent and perhaps ancient times.

Conclusion

Barsīnia is a very fine example of a prominent rural archaeological site in north-western Jordan. The

13. Monumental built-up tomb.

14. Illegal excavations at the necropolis.

results of the first season of excavation provided a wealth of information about the nature of occupation at the site, especially during the Classical and early Islamic periods. The continuous occupation at the site is evidence for its importance from the Early Bronze Age until about 100 years ago. The quantity of information from the first season of excavation is not enough to permit a detailed reconstruction of the history of the site. However, it clarified the occupational phases and hints at the importance of the site, especially during the Classical and early Islamic periods. This information will encourage further archaeological and ethno-archaeological studies at the site, aimed at clarifying the development of rural settlements in the region from ancient periods to the present.

Recommendations

Soon after the end of the first season of excavation, extensive looting and illegal excavations took place (FIG. 14). Many architectural elements, such as the standing walls, tombs and paved floors were destroyed by the locals (FIG. 15). Small shelters were built over the ruins to facillitate furtive illegal excavation (FIG. 16). The other main risks to the site are a lack of maintenance and the need for conservation of in-situ excavated remains. One hopes that this paper has identified some of the key problems related to site protection and preservation. The site was subjected to destruction and theft even before excavation. It is urgent to highlight the need for guidelines and planning procedures relating to the design and implementation of future projects. It is also necessary to make recommendations for future study, not only at this site but also at other excavated sites in the region.

15. The destroyed built-up tomb, shown previously in FIG 12.

16. Small shelter built by the locals to shield illegal excavations from view.

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Athenodorus of Tarsus and Nabataea: The Date and Circumstances of His Visit to Petra

Athenodorus of Tarsus was certainly not the first Greek to cross the Jordan to visit Petra, but he certainly provided the most treasured and cited eyewitness account of Nabataean society and culture that is extant. Nabataea has always suffered from its lack of firsthand local literary sources, so Strabo's account from the Augustan age is especially to be valued even if it is a product of a somewhat remote outsider. It is true that we lack any detailed information about certain aspects of Nabataean culture, such as their educational system, literature, mythology, and history (Millar 1987: 153), but we have Athenodorus to thank for helping to correct somewhat this situation. His description of Nabataean society is preserved in Strabo's account of the Nabataeans in his *Geography*.

"Petra is always ruled by some king from the royal family; and the king has an administrator (*epitrophos*) one of his companions, who is called "brother" (*adelphos*). It is exceedingly well-governed; at any rate, Athenodorus, a philosopher and companion of mine (*anēr philosophos kai hēmīn hetaīros*), who had been in the city of the Petraeans, used to describe their government with admiration, for he said that he found both many Romans and many other foreigners sojourning there, and that he saw that the foreigners often engaged in lawsuits, both with one another and with the natives, but that none of the natives prosecuted one another, and that they in every way kept peace with one another" (Strabo, *Geography* XVI.4.21 [779]; cf. 4.26 [783]).

Athenodorus' description of Nabataean society as egalitarian, harmonious, sophisticated, and cosmopolitan (cf. 16.4.26 [783]) contrasts sharply with that of the earliest eyewitness account of the Nabataeans centuries earlier by Hieronymus of Cardia in 312/11 BC, who depicts them as completely nomadic, living in tents, and raising camels and sheep (preserved in Diodorus XIX.94; cf. II.48). But as I have argued earlier, there is no reason to interpret this early account literally as an accurate portrayal of Nabataean society, since it appears to represent a highly stylized literary description of them that reflects the stock motifs of traditional Greek ethnography for cultures on the margins of the civilized world (Graf 1990: 52-53). More recently, this interpretation has been supported by Bosworth (2002: 188-191), who notes that Diodorus' details "should provoke disquiet rather than confidence...its literal truth is highly debatable". In spite of these observations, Hieronymus' description of Nabataea as a basically nomadic society in the early Hellenistic period is still regarded as fundamentally correct (cf. Parr 2003: 28), making dramatic the comparison with Athenodorus' report several centuries later that the Nabataeans now inhabit stone houses, enjoy banquets, and conduct themselves peacefully. What remains unclear is the date and circumstances of his visit to Petra in Nabataea. Who was this philosopher and companion of Strabo and when and why did he visit Petra?

The first question can easily be answered. Elsewhere, Strabo provides the essential details. Athenodorus was the son of Sandon from the village of Kana near Tarsus (cf. Welles 1962: 54-56), and the greatly honored teacher of Augustus, Strabo carefully distinguishing him from another Athenodorus of Tarsus, called Cordylion, an earlier contemporary, the librarian at Pergamum, who lived and died in the home of Marcus Cato (Strabo XVI.5.14 [674]), consequently before 46 BC, and therefore a predecessor of Strabo's friend Athenodorus (Cichorius 1922: 279). This Athenodorus of Kana is apparently the same Athenodorus who produced a work *Against Aristotle's Categories* that drew the

attention a century later of L. Annaeus Cornutus, another Stoic philosopher (*fl.* 60 AD; see Hijmans 1975). Athenodorus was the first Stoic to write on Aristotle's *Categories*. How this relates to the reputed rediscovery of the Aristotelian manuscripts in the early first century BC (Strabo 13.1.54 [608-609]; Plutarch, *Sulla* 25) remains controversial (Primavesi 2007; cf. 1997 Habicht 313: "parts of the tradition are fable"). In any case, Athenodorus offered an original and innovative critique of Aristotle's treatise and produced other philosophical writings sometime between 60 and 30 BC (Gottschalk 1987: 1104 n. 131 with 1111-1112). His philosophical reputation obviously gained for him the special status as a counselor of the emperor Augustus and is well documented by Strabo.

Athenodorus as the Tutor of Augustus

What clearly ingratiated Athenodorus to the First Triumvirate was his celebration of their victory at Philippi in 43 BC and ability to speak on any subject at a moment's notice (Plutarch, *Apophthleg*. *Reg*. 207 C). Afterwards, he became the celebrated and honored tutor of Octavian and appears to have remained in Rome in this capacity till after Augustus' return from Actium, during which time he perhaps served as a procurator in Sicily (*Apophthleg*. 207B as emended by Cichorius 1922: 280; cf. Bowersock 1965: 39 n. 2). His loyalty to Augustus is symbolized in the story of how he snuck into the palace of the Emperor dressed as an old woman with a sword hidden under his cloak to demonstrate to the emperor his lax security and consequent vulnerability (Dio. 56.343.2). In addition to his philosophical scholarly contributions, he produced a treatise *On the Ocean* that reflected the ideas of Posidonius (Strabo 1.1.9 [6]), a history of Tarsus called O*n the Fatherland* (Stephanus of Byzantium, s.v. *Agchialē*), and a work addressed to Octavia, Augustus' sister (Plutarch, *Publicola* 17), enhancing no doubt his position in the imperial court. In essence, in spite of the fragmentary remains of his career and activities, Athenodorus of Tarsus was hardly a minor figure, even if the precise details of his life can be pieced together only with some uncertainty (Von Arnim 1896; Hense 1907; Cichorius 1922: 279-282; Philippson 1931; Grimal 1945-46; Goulet 1994; Steinmetz 1994; Dueck 2000: 10-11). But our focus is only the date and circumstances of his visit to Petra, and certain possibilities can be eliminated and the time of the event more narrowly defined.

According to Strabo, in the early days of the Principate, Athenodorus, now an old man, begged Augustus to allow him to return to his home city of Tarsus, and the emperor granted his request. As he started to leave, he cautioned Augustus that when he became angry he should say or do nothing before repeating the alphabet. This seemingly trivial advice purportedly led Augustus to seize his hand and detain him for a whole year longer rather than do without his services (Plutarch, *Apophleg* 207C). Eventually, when he returned to Tarsus, with Augustus' authority to set his home city in order, he confronted Mark Antony's previously appointed governor Boethus, and when Athenodorus' efforts to reform the city failed, he exiled Boethus and his supporters. There was an immediate negative reaction. The rabble in the city ridiculed him, leaving graffiti on the walls that called him a stinky old man. They even smeared their excrement on his walls and door. Athenodorus countered their derogatory actions and words with a graffito of his own: "Thunder for the old". Eventually, the city was set in order and later Nestor, the teacher of Octavia's son Marcellus, replaced Athenodorus as governor of Tarsus (Strabo 14.5.14 [674-675]). Since Marcellus died in 23 BC, Athenodorus' rule at Tarsus must be squeezed into the time around 28-23 BC, precisely when Aelius Gallus' Arabian campaign took place and the context in which his description of Nabataean Petra appears in Strabo. According to tradition in a treatise on old men, he died in his native city of Tarsus at the ripe old age of 82 (Pseudo-Lucian, *Macrobioi* 21, 23). If we postulate a birth of Athenodorus in the first decade of the first century BC (Grimal 1945: 269) or even a decade later (Philippson 1931: 52), he was clearly too old and preoccupied to have visited Petra in the reign of Augustus. When then did Athenodorus and Strabo meet and become companions?

Athenodorus and Strabo

If we know little about Athenodorus' early career, we also know very little about Strabo's background, whose autobiography is submerged within his account. It is generally assumed that he was born several decades after Athenodorus, sometime around 64 BC (Dueck 2000: 2). Strabo was educated by a string of Greeks — Aristodemenus of Nysa, Xenarchus of Seleucia, and Tyrannion of Amisus — all Peripatetic philosophers from Asia Minor

(Roseman 2005: 28). The first was an old man at the time, and the instructor of Pompey's children in Rome (14.1.48 [650]), the second was a friend of Augustus (14.5.4 [670]), and the third a captive from Rome's war against Mithridates who lived in Rome after 67 BC (12.3.16 [548] with Dueck 2000: 9-10). It is then clear that Strabo must have studied in Rome sometime in the late 40s and early 30s, when he was in his twenties. Strabo first appears at Rome shortly before Caesar's assassination (12.6.2 [568]; but cf. Clarke 1997:101), then again in 35 BC (6.2.6 [273]), in 29/28 BC (10.5.3 [485]), and afterwards from 20 to at least 7 BC or even longer, representing perhaps three or four visits to Rome (Dueck 2000: 85-106). It is then probably sometime between 45 and 28 BC at Rome when Strabo encountered and became friends with Athenodarus. It is only much later that Strabo joined his friend Aelius Gallus, the Egyptian prefect, with whom he traveled throughout Egypt and Ethiopia.

Although it is precisely in the context of Aelius Gallus' campaign in 26/25 BC that Strabo mentions his relationship with Athenodorus, Katherine Clarke has observed that Strabo has a tendency to telescope events and relationships into a narrow time-frame (1997). The typical Strabo phrases of "shortly before us" and "recently" stretch from Pompey's campaign against the pirates to events as late as 6 BC in the reign in Augustus (Pothecary 1997). This enormous time-span raises questions about the precise dates of Strabo in the construction of his work. As Clarke notes, such expressions often refer to the contemporary intellectual life of Asia Minor into which Strabo wants to place himself (1997: 102-107). As a result, precise dates, past and present, are difficult to determine in Strabo. What is being reflected is rather Strabo's intellectual milieu in this terminology. So when Strabo says that Athenodorus was his friend and companion, we are not compelled to think of the Augustan era. Strabo lived well into the reign of Tiberius, long after Athenodarus was dead, buried, and honored as a "hero" at his home city at Tarsus (Clarke 1997). In sum, although Athenodarus' observations about Nabataean society are embedded within Strabo's account of Aelius Gallus' expedition into South Arabia and connected with the Nabataean administrator Syllaios, the visit of Athenodarus to Petra must have been decades earlier. As the known facts suggest, it rather appears that if Athenodarus shared his knowledge of the Nabataeans with Strabo, it was when their paths first crossed in Rome in the late 40s BC (Dueck 2000: 10-11 with 189 n. 33 for discussion). The time and circumstances of his visit to Nabataea remains unknown. As Glen Bowersock so incisively put it, "One is left to wonder when or why Athenodorus was in Petra" (1965: 39 n. 2).

The Early Career of Athenodorus

Where was Athenodorus in the period before he met Strabo in the 40s BC? The first clue lies in the letters of Cicero, that fierce defender of the traditional Roman Republic. In a passage where he declares Pompey the "best man who ever existed", he follows it with praise for Athenodorus of Tarsus for his sayings about the nobility of birth and the nobility of worth" (*Ad. fam.* III. 7.5). It was written by Cicero from Laodicea in February of 50 BC as he was returning from Cilicia, where he served as proconsul in 51-50 BC. He had supported Pompey's great eastern expedition of 67 BC to reduce the stronghold of the Cilician pirates and was now receiving his reward. In another letter, six years later from his home in Arpinum, he wrote Athenodorus at Rome and asked him to send him Posidonius' work on "duty and expediency" and when it did not arrive he wrote Appius Claudius Pulcher at Rome and asked him to remind Athenodorus of his request, but later in the same month of November told him not to stir the philosopher as Athenodorus had already sent an excellent memorandum about Posidonius' thought on the subject (*Ad Atticus* 16.11.4). Appius Claudius Pulcher had been governor of Cilicia in 53-51, just before Cicero, and was devoted to Pompey as well, marrying off his daughter to Pompey's son Gnaeus in 54 BC (Anderson 1963 9; Seager 135 n. 66). The circle of Pompey's powerful Roman friends then included not only Cicero, but Appius Claudius Pulcher, and probably Athenodorus.

The academic origins of Athenodorus are now clear. He was the main source and depository of Posidonius, the former head of the academic school at Rhodes, with whom Cicero had studied philosophy in 79-77 BC. Posidonius of Apamea in Syria was one of the grand figures of the Hellenistic world — a polymath, more than a philosopher, a scientist, ethnographer, mathematician, and theologian, but an explorer as well. Born in 135 BC, he traveled in the 90s broadly in the West, visiting Gaul, Spain, North Africa, Sicily and Greece (Kidd 1999: 35-38, 53-56). In 87 BC, he was in Rome,

as leader of a diplomatic visit from Rhodes, where he probably encountered the young Pompey for the first time (Plutarch, *Marius* 45.7 = T 28 Kidd 1999). If Athenodorus was born in ca. 95 BC, he may have studied with Posidonius about the same time as Cicero and it is possible that this is when they formed a friendly relationship.

Pompey and Posidonius

Strabo describes the relations between Pompey and Posidonius as extremely close, and the comparison between Alexander and Aristotle immediately leaps to mind. According to Strabo, "it is said that Pompey, upon arriving at Rhodes on his expedition against the pirates (immediately thereafter he was to set out against both Mithridates and the tribes which extended as far as the Caspian Sea), happened to attend one of the lectures of Posidonius, and that when he went out he asked Posidonius whether he had orders to give, and that Poseidonius replied: 'Be brave and preeminent over others.' Add to this that among other works he wrote also the history of Pompey". (11.1.6 [492] = cf. T35-39 Kidd 1999). Pompey returned to Rhodes to visit Posidonius again after his victory over Mithridates (Pliny, *NH* 7.112), and once again after the eastern expedition, to hear Posidonius lecture, but this time he found him seriously ill. When a visit with the philosopher finally was arranged, Pompey expressed his disappointment that he would not hear him lecture, to which Posidonius replied, pain could not prohibit him from lecturing to such a great man as Pompey, and he then produced an oration about moral good from his bed (T38 Kidd = Plutarch, *Pompey* 42). It seems likely that Pompey encountered Athenodorus on at least one of these visits. At any rate, Athenodorus turns up at Rome in the late 50s, and his work on the "Nobility" (*Peri eugeneias*) is already being cited by Cicero by 50 BC (*ad familiares* III.7.5), who later employs him in 44 BC as a collaborator for the third book of his *De officiis*. Afterwards, as we discussed above, he served as one of the tutors of the young Octavian and later as an advisor to him in the newly formed Principate. In essence, he was in Rome as far as we can determine from 50 to about 25 BC, prohibiting or at least making unlikely his visit to Nabataea during this time. In the previous period, Athenodorus was at Rhodes as a student of Posidonius and probably also serving as his successor as a member of the Rhodian academy. When Posidonius died in 51 BC (Kidd 1999: 5), Rhodes was reaffirming its allegiance to Rome, and this must be when Athenodorus left Rhodes for Rome as Posidonius successor (Moretti 1976). It appears then that the only appropriate time for his visit to Petra is sometime between 63 and 50 BC.

In my opinion, it is Pompey's Eastern Campaign between 67 and 62 BC, where we should focus for a context of Athenodorus' observations about Nabataea. Pompey's annexation of Syria in 63 BC, and intervention into Judaean and Nabataean affairs is well known. Although the last event recorded in Posidonius history is dated to 86 BC, in a visit he made to Rome during his tour of the western Mediterranean, there is no reason to believe that his History stopped at this point (cf. Ruschenbusch 1993). There is nothing chronological about his work, as the few references to any sequential order in the more than 300 fragments of his lost work attest (Malitz 1983). Moreover, the allusion in Strabo to a work of Posidonius on Pompey suggests, there must be a continuation of his historical work into the 60s BC, whether as part of his general history or as a separate treatise. Although he may have met the young Pompey when he visited Rome in 86 BC, it is more than likely that his enthusiasm for Pompey began with the eastern expedition. As far as I am aware, only two proposals have been made for any extant fragments of his work continuing after 86 BC. The first was by Arthur Darby Nock in 1959 and the second by Strasburger in 1965. They can be briefly summarized, but perhaps best in regard to the chronology of Pompey's campaign.

1. Strasburger observed that Plutrarch's description on the origins and spread of piracy and its final suppression by Pompey may be derived from Posidonios' *History*. Of particular interest was Pompey's humane treatment of the 20,000 prisoners captured during his victory over the pirates. Rather than execution, they were settled on land in Cilicia and Greece — "breaking with a long tradition of Roman behavior towards enemies considered as criminals" (1965: 51). According to Plutarch, "Pompey never entertained the idea of putting them to death. Instead he reflected that by nature man neither is nor becomes a wild or unsocial creature; it is rather the case that the habit of vice makes him something by nature he is not, and on the other hand, he can be made civilized again by precept and example, and by the change of place and occupa-

tion. In fact, even wild beasts given a measure of gentle treatment, lose their savage and intractable qualities" (*Pom.* 28). Where did such lofty philosophical ideas come from? As Strasburger notes, it is "tempting to assume that an exchange of ideas with the Stoic philosopher of Rhodes had its share in Pompey's decision on the lot of the pirates, which was humane and at the same time politically far-sighted, and was followed by his large-scale and lasting organization of the eastern world in the same spirit" (1965: 51). Strasburger's suspicion that Pompey's humane solution after his victory should be credited to the influence of Posidonios may be correct, but even he was forced to admit "the sources say nothing about this". Nevertheless, Arnaldo Momigliano agreed with Strasburger's suggestion that Posidonius admired Roman politicians like Pompey who had shown moderation and turned away from the displays of brutal power seen in Rome's treatment of Carthage and Greece in the previous century (Momigliano 1975: 22-49).

2. It has been suspected that the sketch of Jewish history with which Tacitus opened the fifth book of his *Histories* may well have had a forerunner in Posidonius History. Nock suspected Strabo preserved Posidonios account in his section on Judaea, where he says the most prevalent and creditable reports indicate that the ancestors of the priests of Jerusalem were Egyptians, and that Moses was a rebel Egyptian priest who migrated to Jerusalem because of his aversion to representing the Divine God in images. Strabo adds that his descendants were a superstitious and tyrannical people, who in his day were bands of robbers, who disturbed even neighboring Syria and Phoenicia. He indicates that tyrants ruled Jerusalem "now", evidently alluding to the Hasmonean dynasts Hyrcanus and Aristobulus of the time of Pompey (16.2.32-40 [760-763]; cf. Bellemore 1999). Nock therefore suggested the Jewish segment was derived from Posidonius' discussion of Pompey's expedition. Jacoby also proposed that Posidonius remarks were from his History, but assigned them to the occasion of a clash between the Hasmoneans and the waning power of the Seleucids (*FgrH* 264 F6, Kom, 47) and this has been recently been designated as the siege on Jerusalem by Antiochus VII Sidetes in 135/4 BC (Berthelot 2003: 161; cf. Posidonius F 278 Kidd and Shahar 2005: 245). But Strabo does place the Jewish account in the context of Pompey's visit to Jerusalem and Nock's view cannot be totally dismissed.

Both of these proposals, whether correct of not, emphasize the cultural and philosophical dimensions of Pompey's mission. Unfortunately, Pompey's eastern campaign has been viewed traditionally only as a military and political campaign — to rid the sea of pirates, to depose the troublesome Mithridates king of Pontus, and annex the unstable territories in the region. But very early in Pompey's career, Plutarch says Pompey's peers were struck with his similarity in looks to Alexander and gave him the name "Alexander" (*Pompey* 2). If this seems like a *post eventu* characterization, a fragment from Sallust's *Histories* renders support for Pompey's early admiration and attempt to emulate Alexander the Great: "from his early manhood, being influenced by the flattery of his admirers, [Pompey] believed he would be the equal of king Alexander, what is more he sought to rival his deeds and his plans" (3.84 = McGushin 1992: 39). There is then no reason to not perceive Pompey's relationship to Posidonius as comparable to that of Alexander the Great and Aristotle, and that his eastern expedition also had cultural and intellectual dimensions (see Leach 1978: s.v. 'Alexander'). After all, Pompey's title of *Magnus* and tendency to imitate Alexander the Great dates back to the time of his first triumph in 81 BC (Plutarch, *Pompey* 14; Seager 1979: 11-12), almost two decades earlier. Nor should Pompey's interest in Posidonus be merely regarded as curiosity and incidental.

Why it has been difficult to recapture this cultural aspect of Pompey's enterprise is that such elements only emerge sporadically in the later literary tradition. Some appear in Pliny's *Natural History*, but it takes some effort to weld them into a unity and suggest that Pompey's program emulated Alexander the Great's same scientific objective, with Pompey assembling scholars and scientists to record his penetration of the eastern world, like Alexander before him and Napoleon's entrance to Egypt more than a millennium and a half later.

For Alexander's Calisthenes, we have instead Pompey's Theophanes of Mytilene, who had vigorously opposed the pro-Mithridates faction of his city, and seized Pompey's arrival in the East in 67 BC to advance his own future, by becoming his counselor and historian (Anderson 1963: 34-41). After his campaign, Pompey returned to Mytilene, where

he arranged a festival in honor of Theophanes . In the process, Theophanes earned his citizenship by being the historian and propagandist of Pompey's eastern exploits. At least four honorific inscriptions of Theophanes are known from Mytilene (Robert 1969), the most recent discovered in 1992, signaling his importance as a politician before Pompey's arrival (Anastasiadis and Souris 1992). Afterwards, he followed Pompey to Rome, where his activities are recorded until 48 BC, when he returned to Mytilene with Pompey. Of his great work on Pompey, virtually nothing survives. Jacoby records only seven fragments, five from Strabo, and all dealing with geography, ethnography or fauna in the lands visited by Pompey (*FGrH* 2B no. 188). The only inkling we receive of his reputation as a historian is preserved by Plutarch, who observes that, according to Theophanes, Mithridates' correspondence found by Pompey contained letters incriminating the Pontic king of poisonings and lascivious letters to the wives of Roman legates. According to Plutarch, most authorities dismiss these purported letters as malicious inventions to discredit Pompey's enemies (Plutarch, *Pompey* 37).

Pompey's commander Marcus Terentius Varro, who served with him during his campaign against Sertortius in Spain, was chosen to lead again in the war against the Pirates and Mithridates. A noted legalist, there are also suggestions that his scholarly pursuits included interests in exploration and trade. Pliny notes that Alexander the Great had found that the waters of the Caspian were sweet to drink, and that Varro reported not only was it true, but conveyed some of the water to Pompey who was in Armenia at the time to confirm the fact (Pliny, *NH* VI.19.51). Varro furthermore advised Pompey that it was only a seven days journey from India into Bactria, and that Indian merchandise could be conveyed to Pontus in 5 days (*NH* VI 19.52).

In addition, included in Pompey's retinue during the campaign were also a number of Greek freedmen, whose counsel and expertise were important to the expedition. Among these was Demetrius from Gadara in the Syrian Decapolis, a rather pretentious and enterprising figure, who amassed a fortune from Pompey's eastern campaign, and even purchased prize territories in the suburbs of Rome before he returned. Why Pompey favored him and what role he played during the campaign are never described (Seager 1979: 54). Another freedman, Cn. Pompeius Lenaeus, a slave from Athens, was a companion of Pompey on all his campaigns (Anderson 1963: 62-63). As a grammarian and scholar, he must have handled Pompey's correspondence and helped write his speeches. At Pontus, when the archives of Mithridates were found, Pompey charged Lenaeus with the task of preparing a Latin edition of the medical books of the king (Pliny *NH* XV.5-7). Lenaeus also mentioned a Pontic plant known locally as *scordotis* which was described in the books in the king's own handwriting, and since among the plants mentioned it had many purposes it served as an antidote for various poisons, so he called it *Mithridatium* (*NH* XXV.26.62). All of this was probably derived from the books of Crateuas, the personal physician of Mithridates VI of Pontus, who was a botanist. Fragments of his treatises on herbs and root-cutting were known to Pliny (*NH* XXV.4.8), and he was responsible also for ascribing another plant to Mithridates, calling it *mithridatia* (Pliny, NH XXV.26.62). In his books, he adopted the method of painting a likeness of the various plants he found alongside his descriptions (XXV.8.4), and copies of his drawings are known as late as the sixth century AD. This botanical interest helps explain Pliny's observation that it was Pompey who introduced trees to accompany captives in the triumphal processions at Rome (XII.54.111-112).

As with Alexander the Great, Pompey's great eastern expedition did not lack a company of cultural scholars, historians, explorers, and scientists. What is missing is an ethnographer and geographer, someone with a scientific perspective, like Eratosthenes or Agatharchides. Pompey's admiration of Posidonius would make him an ideal candidate, and as we have seen, Pompey, visited the great Stoic philosopher periodically before, during and after his eastern campaign. Pompey surely knew and appreciated Posidonius' reputation for exploration and ethnography (Müller 1993; Alfonso-Núnez 1994), and we can imagine he made inquiry and consulted with him about the new world emerging for Rome in the East. But Posidonius was now in his 70s and sickly, hardly able to join Pompey's scholarly entourage. However, this would not prevent the Rhodian academician from sending some of his finest students with the commander for his enterprise. If this were the case, Athenodorus would have been a prime candidate. Of course, Pompey was prevented from visiting Nabataea, forced to return back to Rome from Jerusalem (Bellemore 2000: 123), but

his commanders and administrators in the East did made several attempts to bring Nabataea under the Roman aegis (Sartre 1979; Hackl, Jenni and Schneider 2003: 40-42 and 111-114). If their expeditions also embraced Pompey's cultural program, it is possible that Athenodorus' continued Posidonius' program for exploration and ethnographic inquiry, managing a visit to Petra in Nabataea with other Romans. Of course, actual proof is lacking, but the scenario scenario depicted here at least seems reasonable and appropriate to what is known about the period. Whatever the case may be, Athenodorus' account of the advanced state of Nabataea must be placed between 63 and 50 BC, a generation before the Augustan era. The period after 50 BC for his visit to Petra seems precluded by his tenure and activities at Rome.

As a consequence, the advanced state of Nabataea he describes must be dated a generation earlier than it was previously thought. This means the widespread assumption that Petra's development rose only sharply under Roman auspices in the Augustan era, when Nabataea was transformed into a civic state after supposedly centuries of nomadism, must be revised. Recent discoveries already are pointing in that direction. The new Milan papyrus (*P. Mil. Vogl.* VIII.109) of the early third century BC preserving a reference in the epigrams of Posidippus to a Nabataean king and his powerful Arab cavalry force in the reign of Ptolemy II Philadlephus (284-286 BC) suggests already a well organized state in the early Hellenistic era centuries earlier (Graf 2006). Moreover, we know an envoy from Priene in Western Asia Minor was sent to Alexandria in Egypt and "Petra in Arabia" in 129 BC (Hiller von Gaertringen 1906: 82-91: No. 108, Kol. 5167-168 = Hackl *et al.* 2003: 126-127), and that a Han Chinese envoy probably became aware of Petra at approximately the same time (Graf 1996). These sources suggest that the Nabataeans had a well-established urban state at Petra before the hypothesized dramatic transition in the first century BC. Although the archaeological record offers now only minimal support for these literary and epigraphic finds of the Hellenistic era (cf. Graf, Bedal and Schmid 2005), Athenodorus' description of Nabataean culture in the period between 63 to 50BC must now be moved into closer proximity with this testimony. As the impressive accumulating literary sources suggest, archaeological evidence, even when unequivocal, never tells the full story.

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Imperial Transitions and Peasant Society in Middle and Late Islamic Jordan[1]

"I received a letter from the Qadi of Adhri'at, sent from 'Ajlūn on his return home. In it he said 'everyone from the village is going back, as it is now safe, since Timur and his forces have finished their pillaging and have finally withdrawn. No one stayed in Adhri'at this whole time, while Timur's men stole all the grain stored in the wells and our supplies and goods. Many people in the region perished. Take, for example, the village of Ḥubrāṣ, where 450 people were massacred. And in another village 51, and in yet another all the sheep and goats and plow animals were taken away' (Transmitted by Ibn Qadi Shuhba 1997: 181; translation mine).

Ibn Ḥijjī, a Damascene scholar, was home visiting family in Ḥisbān the spring of 1401, when he received this letter from a colleague based in northern Jordan. The Syrian historian leads us to believe that temporary abandonment of the village was one way the people of Adhri'at survived the Timurid invasion; it took them several years to fully recover, but they did return to their village and rebuild (Ibn Ḥijjī 2003: 498).

Many people "crossed Jordan" in the Middle and Late Islamic periods, which correspond, for the purpose of this paper, to the thirteenth through early twentieth centuries AD. They came and went, their presence fortunately not always as damaging as the events of 803AH/1401AD. In the Mamluk period these included Egyptian troops and officials of the state (primarily managers of *iqṭā'āt* and *awqāf*), as well as Muslim pilgrims (such as Ibn Battuta, during his "Holy Land tour" of 1330-1332[2]), taking full advantage of increased security and imperial improvements in transportation infrastructure. In the Ottoman era, particularly during the Tanẓīmāt-inspired land reforms of the 1860s, tax collectors and Palestinian and Syrian merchants came to Jordan with the intent to stay for a while, and pilgrims from neighboring regions made frequent visits to local Ṣūfī shrines and passed through en route to the Ḥijāz, as the imperial state reasserted itself on Jordanian soil. Throughout the political, military, and economic upheavals that often accompanied these movements of people, and particularly during the Mamluk-Ottoman transition of the fifteenth and sixteenth centuries, Jordanian village culture demonstrated a remarkable resilience.

This resilience is amply documented historically and anthropologically. Let us consider first family names. Jordanian *nasab(s)* are a staple of Syrian biographical dictionaries, *waqfiyyāt*, and chronicles of the late fourteenth and fifteenth centuries, indicating the degree to which the peoples of Transjordan participated in the cultural, intellectual, economic, and indeed political life of the time in southern Syria. To cite examples from northern Jordan, Malkawis and Hubrasis made academic careers in Damascus, Jerusalem, and Cairo and were active in Ṣūfī organizations outside their home towns.[3] Most notably, these networks were active

[1] We would like to express our thanks to Dr. Fawwaz al-Khraysheh of the Jordanian Department of Antiquities and Muhammad 'Abdallah al-Mubaydin, General Director of the Endowments Ministry for their cooperation and assistance in the "mosques" project of the 2006 field season. We are also grateful to ACOR and the Municipalities of al-Kafārāt and al-Shoulla for supporting our project. For published reports on the NJP, see Walker 2005 and 2007a-c; Walker and Kenney 2006; and Walker *et al*. 2008.

[2] In Jordan he visited the shrines of Abū 'Ubayda ibn al-Jarrāḥ and Mu'ādh ibn Jabal, both Companions of the Prophet who died in Jordan during the Conquests (Ibn Battuta n.d.: 45). Of course, Jordan was an important religious corridor, as the principle ḥajj route from Damascus to Mecca ran through its interior; its security was of importance to the imperial state.

[3] The complex meanings of *nasab(*s) in the Mamluk period is considered in Ayalon 1975. For examples of entries of *'ulama* with Jordanian *nasab(*s) found in contemporary biographical dictionaries, see Ghawanmeh 1982: 169-200. For a full discussion of this topic, see Walker 2008.

during the periods of greatest political turmoil.

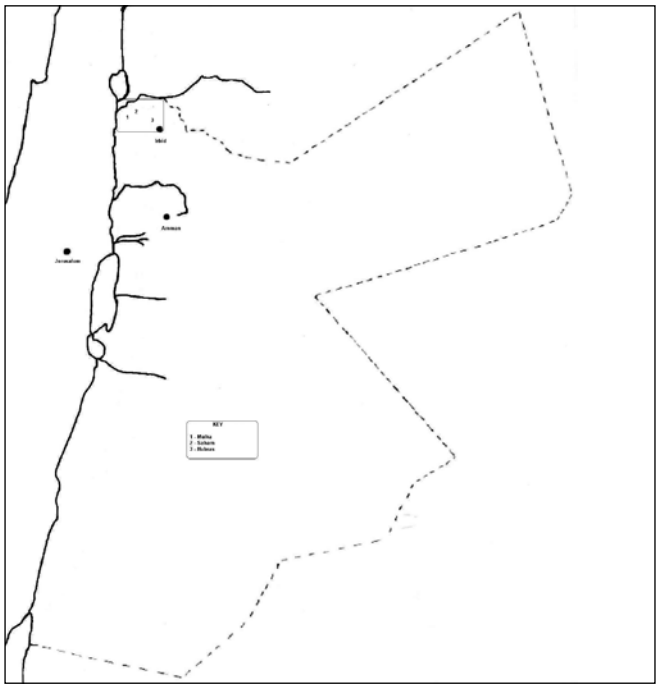
An analysis of economic documents of the late Mamluk period is particularly informative about the strength of local communities in the face of financial collapse. The results of recent research on the economic challenges to the Mamluk state suggest that a fluid administrative structure, combined with political instability (characteristic of Mamluk political culture), resulted in a large degree of local autonomy (Walker 2003). To cite one specific example, the collapse of the feudal *iqṭā'* system of land tenure in the late fourteenth century pushed the Mamluk state to the verge of bankruptcy. To solve its financial problems, much state land in Jordan was transformed into *awqāf* (religious endowments) by the sultan and Jordanian farmers, which had the effect of giving *waqf* managers a freer hand in managing local farmland for profit, while also creating a new landed, "middle-class" among Jordanians. This process promised some degree of financial solvency and short-term security, particularly for local land-owners, as well as support for the mosques that provided important community services, such as public education (Walker 2004 and forthcoming). Moreover, contemporaries credited the creation of endowed rural estates for helping local communities survive the worst of famines during this period (al-Maqrizi 1994: 53).

Archaeological data on rural settlement in the late Mamluk period is harder to interpret. The apparent abatement in large, permanent settlements in the fifteenth century was long attributed to demographic decline, the result of armed conflict and climate change. A more recent, revisionist understanding of the demographic transformations that accompanied the collapse of the Mamluk order posits, rather, economic reorientation (disappearance of large markets and imports) and dispersion of larger towns to smaller villages and hamlets (Johns 1998). The results of archaeological surveys in the plains of central and southern Jordan may indicate such a shift of settlement; however, it is far from clear that this is the pattern for the hill country of the north, where historical sources suggest greater continuity of settlement (Walker 2004).

The Northern Jordan Project

It was with an eye to fleshing out the structure and character of traditional Jordanian society during this "twilight of the Middle Ages", and to compare the settlement history of northern Jordan to the central and southern plains, that the Northern Jordan Project was launched in 2003. The NJP is a multidisciplinary exploration of the history of rural society, agriculture, and the physical environment of northern Jordan from Irbid to the Yarmøk River, with a focus on the Mamluk and Ottoman periods (FIG. 1). This region was chosen because there have been fewer surveys there, and practically no excavations, devoted to these time periods, and the region is richly documented historically (if one casts a wide enough net). Rather than the more traditional large-scale surveys of most regional projects, the units of study each season for NJP are individual villages — excavating and surveying in "living" villages — and their hinterlands.

In terms of methodology, the project is heavily historical. While making use of the chronicles and travelers' accounts that are common to archaeological projects of historical periods, we further engage economic and legal documents that are largely located in the medieval archives of Cairo (unpublished, in hand-written chancellery Arabic, and in manuscript, often scroll, form), as well as government offices in 'Ammān and Irbid.[4] These



1. Map of Study Area – the Northern Jordan Project.

[4] The principle archives used are located in Cairo (Wizārat al-Awqāf and Dār al-Wathā'iq) and 'Ammān (the Documents and Microfilm Archive of the University of 'Ammān Library). In addition, this project has consulted government documents of the late Ottoman and Mandate periods in the Department of Land Surveys in 'Ammān, as well as the archives of the Wizārat al-Awqāf in Irbid.

include *waqfiyyāt*, *Shari'a* court documents (from Jerusalem), and legal texts for the Mamluk period, and tax and land registers and court *sijill*s (from 'Ajlūn) for the Ottoman, as well as non-economic documents that include biographical dictionaries, memoirs, and letters. This historical research is done independently of the archaeological fieldwork but informs the archaeology as appropriate.

2003 Season – Malkā (Walker 2005)

The inaugural season in 2003 was based in the village of Malkā, located about eight kilometers east of Umm Qays and one of the largest villages in the region today. I will quickly summarize the results of that season relevant to the topic at hand. One of the most important market towns in northern Jordan in the middle ages, Malkā was selected for a systematic survey largely because of an important, previously unknown document: a *waqfiyyah* of the Mamluk Sulṭān Barqūq, dated 796AH/1393AD, in which the village, formerly the personal estate of the sultan, was endowed in its entirety to finance the sultan's large *madrasah* complex in Cairo (FIG. 2 - Walker 2004: 130, 2005: 71). As elsewhere in the country, this particular sultan made an effort to bring potentially lucrative farmland under his direct control as a *waqf* manager in order to consolidate assets, better manage the land, and revive local industries.

This particular *waqfiyyah* describes an export-oriented economy based on olive oil production, much like Malkā has today — a productive industry that had, nonetheless, been neglected, as some groves had been at that point abandoned, according to the document, and a few of the presses no longer working. Survey that season identified physical evidence of such presses. As was typical for the region, underground caves were frequently modified to serve as industrial-scale olive presses (Schumacher 1897: 180).[5] Cave 12 functioned in this manner in the fourteenth century, according to ceramic evidence. On the basis of recent calcu-

2. Law school of Mamluk Sulṭān Barqūq in Cairo (left), financially supported by the agricultural fields and orchards of Malka village in Jordan (right).

[5] The same kinds of installations were used as early as the Hellenistic period (Sagiv and Kloner 1996: 276-277).

lations, if all six press levers were functioning in this period, and the six hectares of nearby groves planted in olives, the press could have produced some 13,000-27,000 liters of olive oil annually, of which 10,000 would have been surplus to the village's needs. Such a surplus could have generated a profit, in fourteenth-century currency, of 440 dinars annually, the equivalent of 1/3 of an average shipment of Spanish olive oil to Alexandria in 1405 (Walker 2007d: 192-193).

Malkā continued to be a productive and fairly affluent village through the fifteenth and sixteenth centuries, which differentiates the village from others in the central and southern plains (Walker 2004: 130-131). In fact, sherding and a review of historical sources suggest that the village retained its importance as an agricultural center over the Mamluk-Ottoman transition and throughout the Ottoman period. Although Malkā declined in population after the sixteenth century, it was never abandoned. Its revival in the nineteenth century was the combined results of the local application of Tandhīmāt-inspired legislation and the arrival of an 'Irāqī shaykh of the Qadariyya Order, who is buried in a cemetery associated with his shrine (*maqām*) in the heart of the modern village. Members of Shaykh Omar's family were among the first to register land, in Malkā and Ḥuwwāra, with the Ottoman authorities in the 1880s, using their newly gained political capital to provide public education and health care in the region, in the absence of state-run facilities (Walker 2007c; Mundy and Smith 2007: 201).

The "Mosques Project" of the 2006 Season

The second season of the NJP in 2006 consisted of a surface survey, combined with ethnography, in the village of Saḥam and excavation in two fields in Ḥubrāṣ, a medieval mosque (subjected to a brief architectural survey in 2003 — Walker 2005: 76-77) and a Mandate-period farmhouse (Walker 2007a, 2007b; Walker *et al* 2008). The potential of places of worship and pilgrimage to illuminate the physical and functional development of villages was demonstrated for us vividly at Malkā. Therefore one of the goals of the 2006 season was to better understand the origins of the historical mosques of Saḥam and Ḥubrāṣ (Walker and Kenney 2006). It is in the development of their local religious institutions that the autonomy of Jordanian villages in the Mamluk and Ottoman periods is most apparent.

Ḥubrāṣ

Nestled in the rolling hills and olive groves above Wādī Ḥubrāṣ, some sixteen kilometers northwest of Irbid, is the village of Ḥubrāṣ. In the fourteenth century, it was one of largest villages in Jordan, hosting an important farmers' market, as well as home to many successful '*ulama*. In the sixteenth century, it had two mosques and three *zāwiyyah*(s) (shrine-ṣūfī complexes). Its fortunes changed over the course of the nineteenth century. Burckhardt, who visited the village in 1812, described Ḥubrāṣ as one of the largest in al-Kafārāt (Burckhardt 1822: 269). By the time Schumacher arrived in 1889, he found a relatively impoverished village with twenty to thirty "huts" incorporating caves, the residents of sharecroppers (Steuernagel 1926: 155);[6] less than ten years later, on a second visit, he reported a village of forty huts and some 150 residents (Schumacher 1897: 182-183), a situation that had little changed during Steuernagel's survey of 1914 (Steuernagel 1926: 155).[7] The village experienced its real growth during the Mandate period, when stone farmhouses were built further to the south (FIG. 3). Remains of that village still stand today, surrounding two historical mosques, one built in the prayer hall of the other (FIG. 4). Together they may represent the oldest, continuously used Muslim sanctuary in the country, documenting a history of congregational worship for over 1300 years. For this reason, and its very fragile condition, we are raising money for its restoration.

The original, Umayyad-period, mosque sits at the center of the historical village, now largely abandoned (FIG. 5). It was a small, nearly square

[6] The village land, largely planted in olives, as today, was first registered with Ottoman authorities in December, 1876, one of the first villages to be registered in Jordan during the Tandhīmāt. The owners were from the village of al-Rāfid (Mundy and Smith 2007: 79).

[7] The available written sources are silent about the reasons for the changing fortunes of Ḥubrāṣ in the 19th century, reflected in a marked depopulation of the village. It is likely, though, that the Christian community described by Burckhardt migrated, as Keraki Christians did for Mādabā in the same period, and it took time for the village to recover demographically and economically (see Burkhardt 1822: 269 for reference to "Greek Christian families" at Ḥubrāṣ).

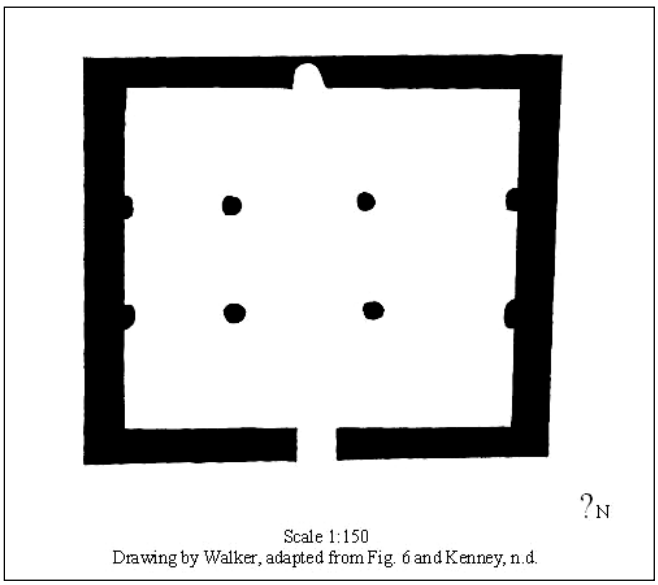
3. "Old Ḥubrāṣ" with historical mosques in its center.

4. Ḥubrāṣ mosque of the British Mandate period (left) built inside courtyard of medieval mosque (Umayyad *miḥrāb* visible to right).

building (ca. 12-15m),[8] with a roof supported by columns (either Late Byzantine or Umayyad in date[9] — personal communication, Ms. Maria Elena Ronza) and, likely, engaged pillars; a floor covered in a simple but beautiful black and white mosaic pavement, made of large (3 x 4cm) limestone and

[8] The dimensions of the original mosque were indicated by breaks in the masonry of the Mamluk construction: one nearly halfway across the *qibla* wall and the other in the original doorway on the north wall, facing the *miḥrāb* and blocked with roughly hewn blocks, apparently during the 13th-century expansion and reconfiguration of the sanctuary. Two building phases are indicated by the style of construction and correspond to these breaks in the masonry of the north and south (*qibla*) walls. Type I (Umayyad) masonry consists of an equal combination of large (75-100cm on each side), well dressed (some nearly ashlar cut and possibly reused) and medium-sized (50-75cm on each side), less finely dressed limestone blocks, incorporating the natural bedrock and dry-laid. Type II (Mamluk) masonry represents a combination of smaller (25-50cm) blocks of limestone and basalt with chinkstones and earth mortar (Kenney, n.d.).

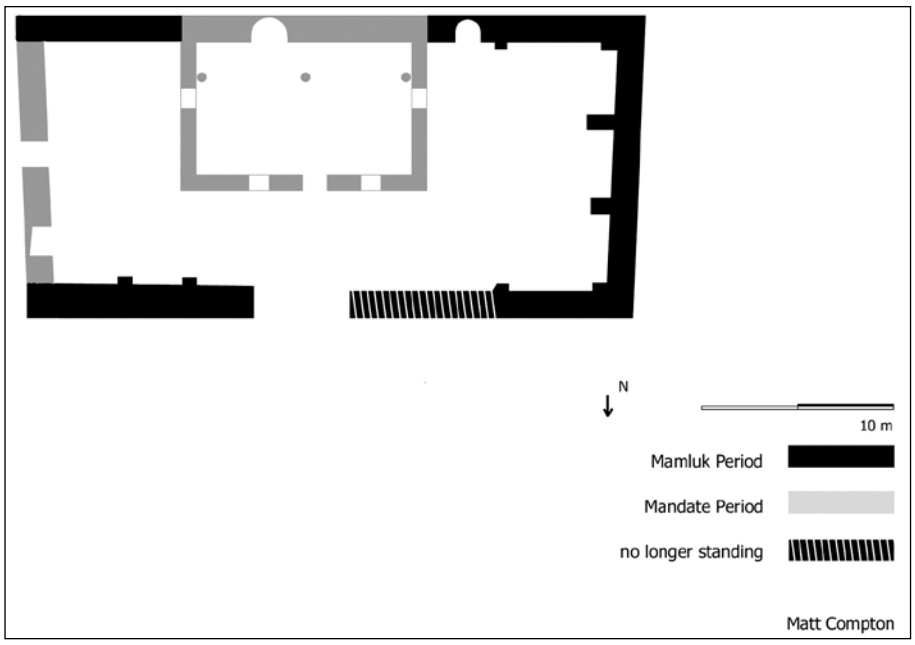
[9] The Early Islamic mosque was built directly on bedrock. Excavation has thus far yielded no clear evidence that the sanctuary occupies the site of an earlier church or represents reuse of one, as claimed in earlier surveys (Mittmann 1970: 25). During the Mamluk extension of the sanctuary, relief panels of a basalt sarcophagus were incorporated, face-in, into the walls. Thus, the basalt columns, capitals, bases, and panels, if Late Byzantine in date, were likely removed from the pre-Islamic ruins that surrounded the building site at the time and that are visible in the vicinity even today.



5. Preliminary floor plan of Umayyad mosque at Ḥubrāṣ, based on architectural analysis.

basalt tesserae; and a single *miḥrāb*, 42cm deep at the base and flush with the *qibla* wall at its back. The floor plan is comparable to other early Islamic mosques in rural Jordan and Palestine: as at Umm al-Walīd. Qaṣr al-Ḥallābāt, al-Qasṭal, and Khān az-Zabīb, the interior of the original mosque at Ḥubrāṣ was organized by a system of columns and engaged pillars, likely arranged in two arcades running parallel to the *qibla* wall (Almagro 1992: 352, fig.1). Of these, the mosques of al-Qasṭal and al-Hallābāt were also floored in large-tesserae mosaics (Tisserand 2005: 49). As for the roofing system of the Ḥubrāṣ mosque, it is not yet possible to describe it with any certainty, but it may have been either vaults or domelets, supported by columns and pillars (Kenney n.d.).

By the thirteenth century the village had out grown this small sanctuary and extended it to the east by some 15 meters, added at least one and maybe two more *miḥrāb*(s), a limestone paved floor, and a system of engaged piers (replacing the engaged pillars and in combination with the columns) to support a cross-vault (FIG. 6). The walls were covered in a lime plaster mixed with wood ash;[10] we promptly sent two plaster samples for C14 analysis, which confirmed a date between 1220-1300AD. An architectural inscription further supports this Mamluk date: according to an inscription on the minaret (now gone but transcribed by Schumacher in the 1880s and a Yarmouk University team in the 1980s), the Mamluk sultan Qalawūn had a minaret added to this mosque in 686/1287 (Schumacher 1897: 183; Ghawanmeh 1986: 59; Obeidat 1996: 22; Meinecke 1992: 65, entry 43). It is not clear whether the minaret was contemporary with or slightly later than the enlarged mosque, however. In plan and construction, the Mamluk mosque belongs to a koïne of medieval mosques in the Irbid and ʻAjlūn regions (Walker 2005: 76). We have found no evidence of the second mosque mentioned in the sixteenth-century tax registers.



6. Floor plan of Mamluk mosque at Ḥubrāṣ, with 20th-century sanctuary indicated, based on extant remains.

[10] The use of ash in wall plaster in also documented for the Umayyad mosque in the ʻAmmān Citadel (Almagro 1995: 273).

There is some evidence that the medieval mosque remained in use through the nineteenth century, a practice also identified in ʻAjlūn and as-Salṭ (Rogan 1999: 36-37). Schumacher (1897: 183; Steuernagel 1926: 156) briefly describes a mosque, information about which was given by the village's *khaṭīb* upon his visit to the site; whether the preacher was serving this particular mosque is not clear. However, in the early twentieth century Steuernagel describes it as a "beautiful old mosque" now "unfortunately decayed" but with its free-standing minaret retaining a height of twelve meters and capped with the characteristic Ottoman pointed turret (Schumacher 1897: 155-156). According to village memory, the mosque belonged in the late nineteenth century to a larger religious complex, which included the burial place (*maqām*) of one Shaykh Abdulraḥmān al-Ḥubrāṣī. Excavation in 2006 of Square A.3, adjacent to the medieval mosque on its eastern face, produced a flagstone pavement constructed with reused pavers, likely removed from an exterior courtyard to the north of the medieval mosque (FIG. 7). Our initial interpretation of this pavement adjacent to the mosque was that it formed part of a late Ottoman complex that contained a public fountain / *sabīl*, given the large numbers of jar stoppers excavated there and information gleaned from interviews with local residents, but this is far from certain.

In 1931 the medieval ruins were no longer usable, so the village financed the building of new mosque inside the ruins of the medieval sanctuary.[11] It was a small, square, closed mosque (6 x 10m), with a single *miḥrāb* and covered by a dirt and thatch roof (FIG. 8). The structure of the interior supporting arches and the exterior staircase of basalt, built into the repaired *qibla* wall, are part of an architectural tradition that is common to the Mandate period in northern Jordan (FIG. 9). The remaining space of the medieval sanctuary was put to use as a *kuttāb* until 1965, when a new village school was built. The smaller sanctuary was used for Friday prayer until 1969, when the minaret collapsed and made the building unsafe. At that point the village asked, through official channels, that a committee be formed to raise money for its restoration; the Endowments Ministry suggested that, given the poor condition of the structure (the roof had caved in a while ago, and the minaret had collapsed) that a new mosque be built directly in front of the old one, with official support.[12] The village decided, instead, to build a new one in the modern neighborhood to the northwest. Only at this point was the mosque finally abandoned, the last call to

7. Flagstone pavement outside and to east of Ḥubrāṣ mosques, view to west.

[11] This information was obtained through interviews with elderly residents of the Ḥubrāṣ community (June 2006). See Walker *et al*. 2008 for a preliminary report.

[12] Letter from Ḥubrāṣ village to Wizārat al-Awqāf, now in the Ministry's Kafr Sūm office, registry #8-63-594, dated November 11, 1969.

8. Interior of Mandate-era mosque, Ḥubrāṣ. Note the low-spring arches and remnants of thatch roof.

9. Exterior staircase of early 20th-century mosque at Ḥubrāṣ – exterior of *qibla* wall.

prayer being heard in 1970. Later that year a paved road was built in old Ḥubrāṣ, and the minaret and remains of the exterior courtyards, as well as many of the farmhouses surrounding it, removed in the process.

Saḥam

The second of our villages in the mosque project, Saḥam, lies close to the Jordanian-Syrian border, 22km NW of Irbid. It becomes historically visible only in the 19th century, in Ottoman documents that record its land, farmhouses, and residents. The original village stood on the hill overlooking the Wādī Saḥam and along the slopes to its approach. Land here was first registered with the Ottoman state in 1880 by local farmers and sold two months later to the new governor of ʻAjlūn, Rifatlu Tahir Badr Khan, a Kurd recently arrived from Damascus (Fischbach 2000: 188-190); land continued to be leased by absentee landowners to local residents as late as 1329H/1911AD (Abu al-Shaʻr 1995: 355). Schumacher, in his eyewitness account of this period, describes a rather impoverished village of 80 stone dwellings, and numerous domestically

used caves, housing some 400 residents. Its humble appearance aside, it was the principle settlement of al-Kafārāt District in the late 19th century and was benefiting at the time from capital improvements by the ʻAjlūnī governor mentioned above, who invested in olive groves and built the village *maḍāfah* (guest house). At the time of Schumacher's visit, the village already had a public springhouse, which watered the gardens of the wadi below, as well as, he suggests, a mosque (Schumacher 1897: 179-180).[13]

The old mosque at the approach to the Wādī Saḥam was the heart of the Ottoman village. The local community pulled together its resources to build this mosque, as well as that of the public fountain (*sabīl*), for which masons from Safed were hired.[14] The mosque — in terms of its construction, floor plan, and architectural motifs — belongs squarely in the classic styles of the architecture of rural Palestine and Jordan in the Late Ottoman period. The exterior of the *qibla* wall is dominated by a bull's-eye window, which occupies the space above the *miḥrāb* (FIG. 10); close parallels can be found in late nineteenth-century domestic architecture, the so-called "throne villages", of Palestine (Amiry 2002: 46, fig. 1 — the house of Abu Qutaysh). In its interior, the mosque is a cross-vaulted sanctuary with a single interior *miḥrāb* (FIG. 11), a form frequently found in the Irbid region in this period (al-ʻAwdat 2005); prayers were held indoors during the rainy winter months and in the courtyard outside, which was equipped with its own *miḥrāb*, during the rest of the year. As at Ḥubrāṣ, this mosque was part of a larger ritual complex that included the *imām's* house (which also served as the village school for many years), as well as a cemetery centered on the *maqām*, no longer standing, of one ʻIzz al-Din Tahir Beg Badr Khan, "a holy man from Turkey", according to local oral sources; whether this "Badr Khan" was the very governor described above is a strong possibility. Although the cemetery went out of use as early as the 1940s (with the expansion of the village), the mosque was maintained for Qur'anic instruction well into the 1960s and for Friday worship until 1976. The subsequent history of this mosque is a beautiful example of local initiative in building and retaining religious spaces.

Likely built in the 1880s, it served the village until 1976, when the building was no longer structurally sound and the local *waqf* office decided to close it. A road was constructed at this time that destroyed the complex to the west of the mosque; three new mosques were eventually built to replace the old one, as new homes were built on the hill above the wadi and along the main road. The village protested the closing of the old mosque and asked repeatedly for monies for its reconstruction.[15] In 1984 the *awqāf* Ministry replastered the interior, and then closed the mosque for good, citing structural weaknesses. There are still popular calls today to reopen the mosque, as it was an important part of the village's history.

(a)

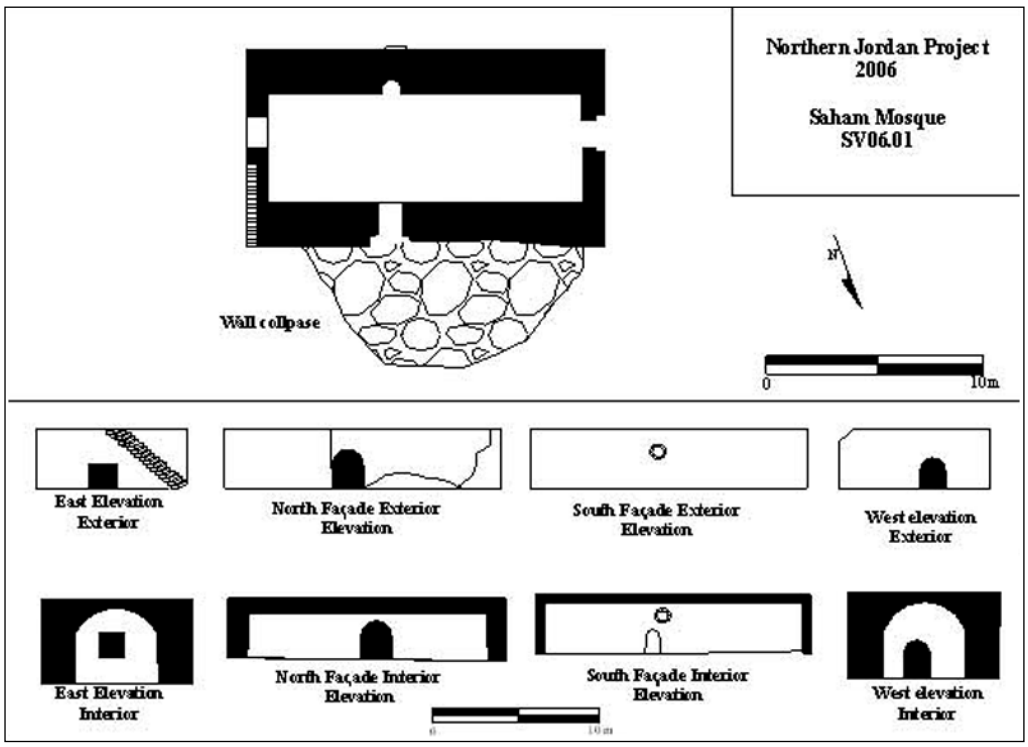
(b)

10. Bull's-eye windows of Old Saḥam *sabīl* (a) and mosque (b) compared. The *sabīl* may be the springhouse described by Schumacher in his report of 1897, although residents of the village today claim it was constructed in the 1920s.

[13] According to his account, Saḥam had no mayor but only a *khaṭīb*, who was one of the few literate members of the village. Although a mosque is not described or mentioned specifically, the presence of a preacher suggests that there was, indeed, one in this period.

[14] This information was obtained through ethnographic interviews of villager elders (June 2006).

[15] Several letters exchanged between representatives of Saḥam village and Wizārat al-Awqāf, Kafr Sūm office, from 1966.



11. Floor plan of Saḥam mosque, late 19th-century.

Conclusions

One lesson to be learned from this kind of reading of Jordanian history for the Middle and Late Islamic periods is that the fate of local villages was not necessarily tied to that of the imperial state. Local society demonstrated a great deal of autonomy, during the most secure times, and resilience, during the least stable. In spite of the armed conflicts and political chaos that rocked the Jordanian countryside in the late fourteenth and fifteenth centuries, as well as the "benign neglect" of the Ottoman state so often described for the seventeenth through mid-nineteenth centuries, villages in certain regions of Jordan survived quite well on their own. The longevity of mosque use, and local initiative in their maintenance, bears witness to this fact. Thus, historically the collapse of the imperial state did not necessarily result in rural decline in all parts of the country.

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Within-Room Spatial Analysis of Activity Areas at Late Neolithic Ṭabaqat al-Būma, Wādī Ziqlāp, al-Kūra, Jordan

Introduction

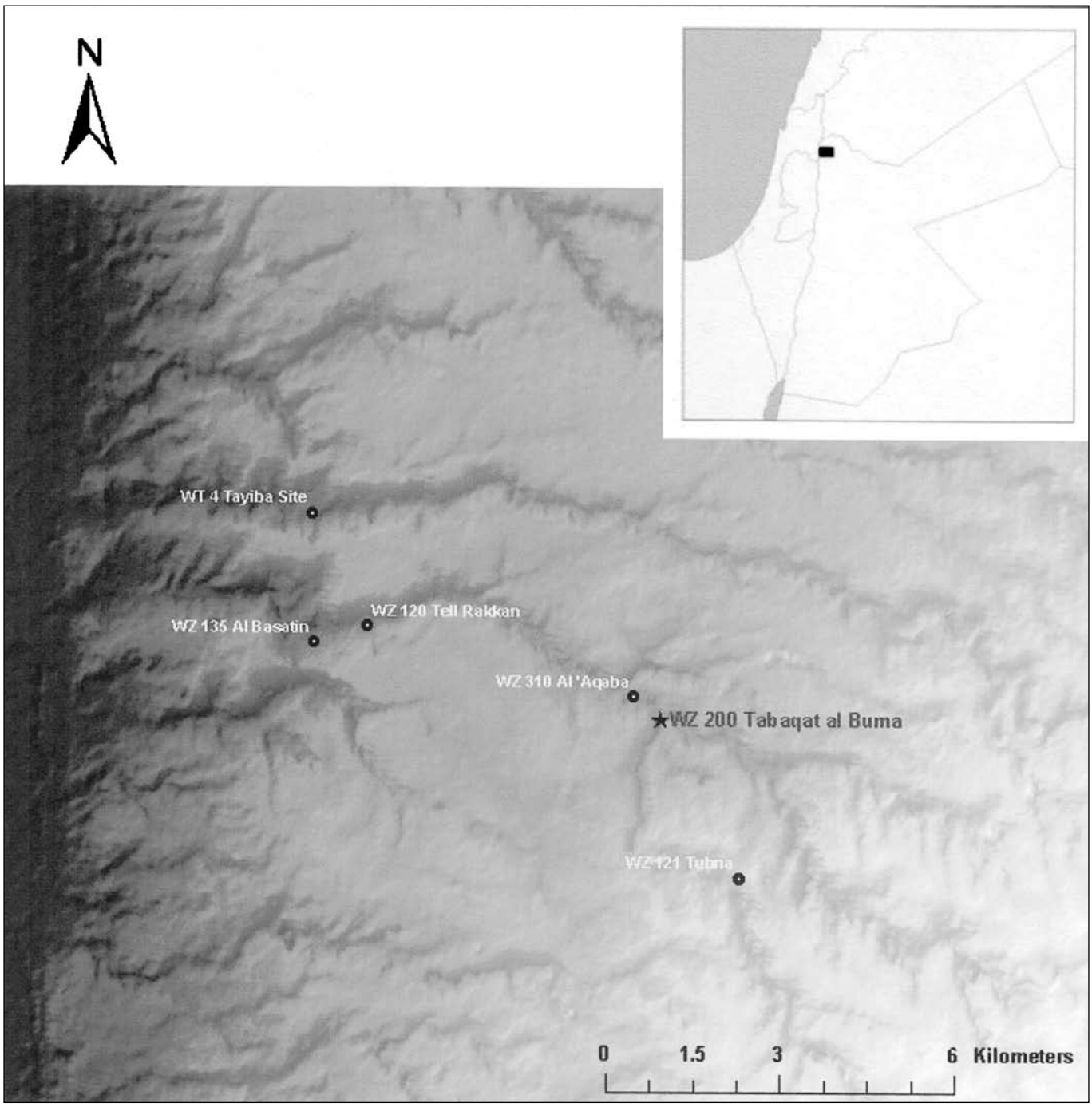
The organization of domestic space in the ancient Levant has become a topic of great interest to Near Eastern archaeologists, and much excellent recent work has been focused on intra-site architectural and artifactual spatial patterning (Banning and Chazan 2006; Gibbs *et al*. 2002). However, relatively little attention has been given to the organization of space within individual living areas, especially for individual living surfaces at prehistoric sites. Typically, the only data readily available for such studies are the placements of major architectural features such as walls, doors, hearths, grinding querns and slabs, and windows. The assignation of function to architectural features is a bias-laden process, however, and arguments about the internal designation of within-room spaces are rarely made without some other contextual data. In general, researchers support such architecturally based hypotheses with the spatial patterning of larger artifact types, such as handstones, flaked lithic artifacts and debitage, animal bone and pottery, but these data are themselves problematic. The spatial patterning of these larger-sized artifacts is more likely to be affected by site formation processes (Brooks and Yellen 1987). Therefore, their location as recorded during archaeological recovery may be very different from where they were initially deposited (LaMotta and Schiffer 1997).

The spatial patterning of micro-artifacts, commonly defined as any human-produced debris smaller than about half a centimeter, may more directly reflect ancient activity areas (Hodder and Cessford 2004). Formation processes may have less impact on their spatial patterning, and they may remain closer to where they were deposited than larger artifacts (Baker 1978; Fladmark 1982; Hayden and Cannon 1983; LaMotta and Schiffer 1997; Rosen 1993). Micro-artifacts are also more likely to be deposited close to where the activities that produced them were located. Therefore, significant quantities of micro-artifacts with differing proportions of micro-artifact types should accrue where certain activities or suites of activities were routinely performed. Finally, although micro-archaeology was once considered to be tedious and time-consuming, new sampling strategies and study methodologies make these types of small sized artifacts quite easy to analyze (For more detail see Ullah and Banning n.d.).

Case Study

This paper describes the results of new sampling and spatial analysis methods applied to micro-archaeological deposits recovered from a single living floor from the Late Neolithic site of Ṭabaqat al-Būma, excavated from 1987-1992 by the University of Toronto's Wādī Ziqlāp Project (Banning 1995, 1996; Banning *et al*. 1994; Banning and Siggers 1997; Blackham 1997; Kadowaki 2007). The location of Wādī Ziqlāp in northern Jordan, the location of Ṭabaqat al-Būma within the project area and the locations of some of the other major nearby Neolithic and Chalcolithic sites are shown in Figure 1.

The Late Neolithic in northern Jordan is characterized by a major shift in settlement patterns and technology. In Wādī Ziqlāp, settlement changed dramatically between the Pre-Pottery Neolithic (PPN), when people lived in villages in which houses were tightly clustered, and the Pottery Neolithic (PN) where people lived in dispersed small farmsteads, each with few houses (Banning *et al*. 1994). In the Late Neolithic coarse-ware pottery becomes common. Although most often these are plain-wares, incised, painted and burnished deco-



1. The location of Ṭabaqat al-Būma in northern Jordan, and other important nearby Pre-Pottery Neolithic, Late Neolithic, and Chalcolithic sites.

rations are also found (Banning *et al*. 2004). Flint cores from the period are mainly amorphous; the bulk of debitage comprises flakes and angular shatter. Non-formal retouched flakes make up the majority of lithic tools recovered from Late Neolithic sites in Wādī Ziqlāp (Banning and Siggers 1997). Sickle elements, the main formalized tool class, are made on both flakes and blades and are denticulated and highly retouched (Kadowaki 2005).

Ṭabaqat al-Būma was occupied in four distinct architectural phases from ca. 7700 to 6200 cal BP. It probably never housed more than three households, or around 20 people. Although some architecture from previous phases was visible during the later phases, and although the buildings may have been reused for other purposes, each building was

probably only occupied as a living space during the phase in which it was built. Although much of the site was intact, some parts had been obviously disturbed.

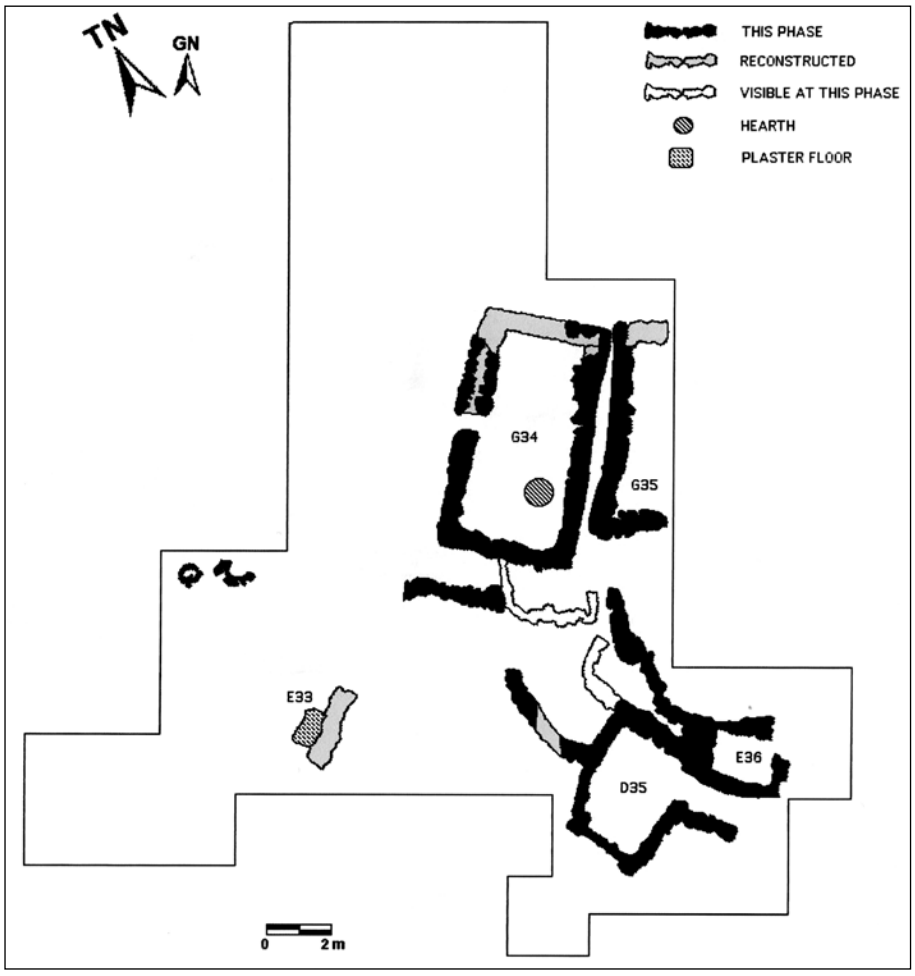
Sampling and Labwork

Many of the intact parts of living surfaces identified in houses at the site were sampled for micro-refuse. Structure G34 was chosen for this first analysis because it is a comparatively large room with a large section of intact floor that had been (fairly) securely sealed by layers of clay and fill. The structure belongs to the LN3 phase (originally designated Phase 2, (Blackham 1997)), which means it dates roughly to the interval between 5700 and 5330 cal. BP (Banning 2007) (see FIG. 2). The G34 floor was sampled for micro-artifacts using a grid of 50 by 50 centimeter square. All sediment from 2-3cm. above the floor and from in between cobbles of the floor was collected from each grid square. The heavy fraction of each sample was removed by flotation and size-sorted through a series of nested sieves.

The 1.4-2 mm. size-class was chosen as our micro-refuse sample; many analysts counted artifacts from 3cm^2 sub-samples from each grid square. We tracked the analysis history of each analyst and removed data collected by analysts who were consistently marking counts very different from the mean. The mean density per grid square of each micro-artifact type was then calculated as a cluster sample. Macro-artifacts, defined as any artifact larger than half a centimeter, from each grid square were also sorted, counted, and described. In addition, several attributes were recorded for the macro-sized lithic artifacts. Density per grid square of each macro-artifact type was then calculated from these raw counts.

Density Surface Interpolation

These density data were inputted into a database and, using GRASS GIS (GRASS Development Team 2007), were spatially associated with the center of each grid cell. Using regularized spline-tension interpolation (Mitasova and Mitas 1993),



2. Plan of architecture extant during phase LN3 at Ṭabaqat al-Būma, showing the room G34 in its context with contemporary structures (after Blackham 1997).

a series of 'density probability surfaces' were created from the grid square density data. Essentially, this process uses the data from each known point and 'fills the gaps' between them on the basis of an adjustable mathematical curve, which also accounts for the values of squares in the neighborhood of each point. The resulting maps are visually pleasing and much easier to interpret than a coarse-grained grid of density numbers.

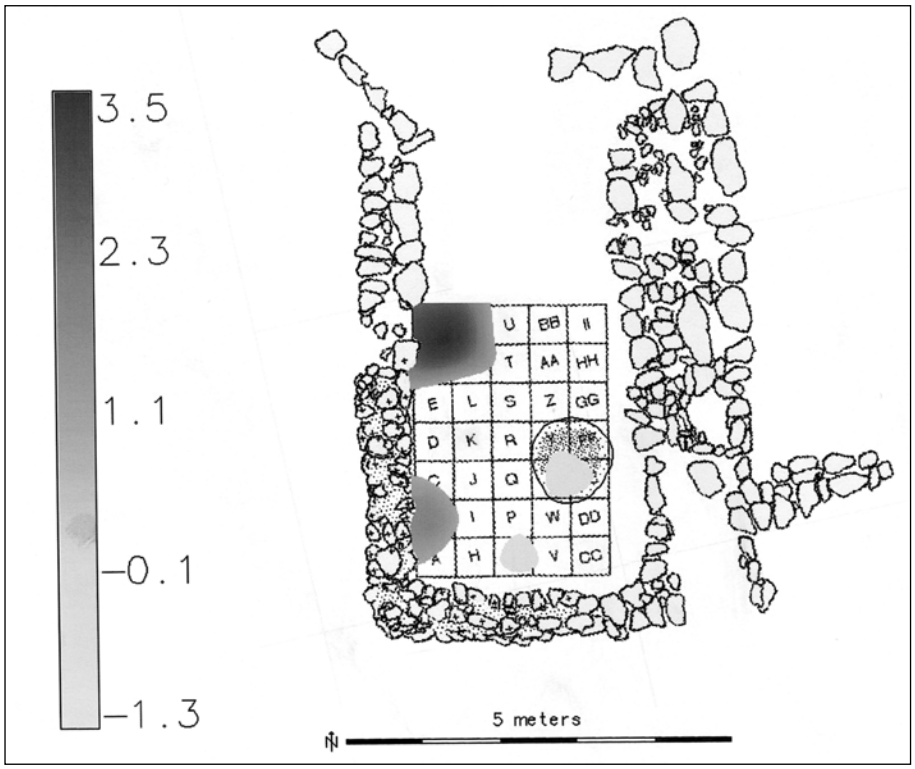
These maps, however, only show the raw density of the different micro- and macro-artifact classes, which are not standardized and therefore difficult to compare. Therefore, each map was converted, using map algebra, into Z-score units away from the mean, thereby facilitating inter-map comparison. These Z-score maps are then re-colored to highlight densities that are more than one standard deviation away from the mean. This distinguishes areas that have artifact densities that are *significantly* dense or *significantly* sparse from areas with average densities of artifacts. The artifact deposits in significantly dense patches likely result from de-facto refuse left very near to where they were originally deposited, whereas artifacts deposited in areas with average density values are more likely to have been secondarily deposited and are therefore more likely to constitute background 'noise' associated with formation processes (see FIG. 3).

Cluster Analysis

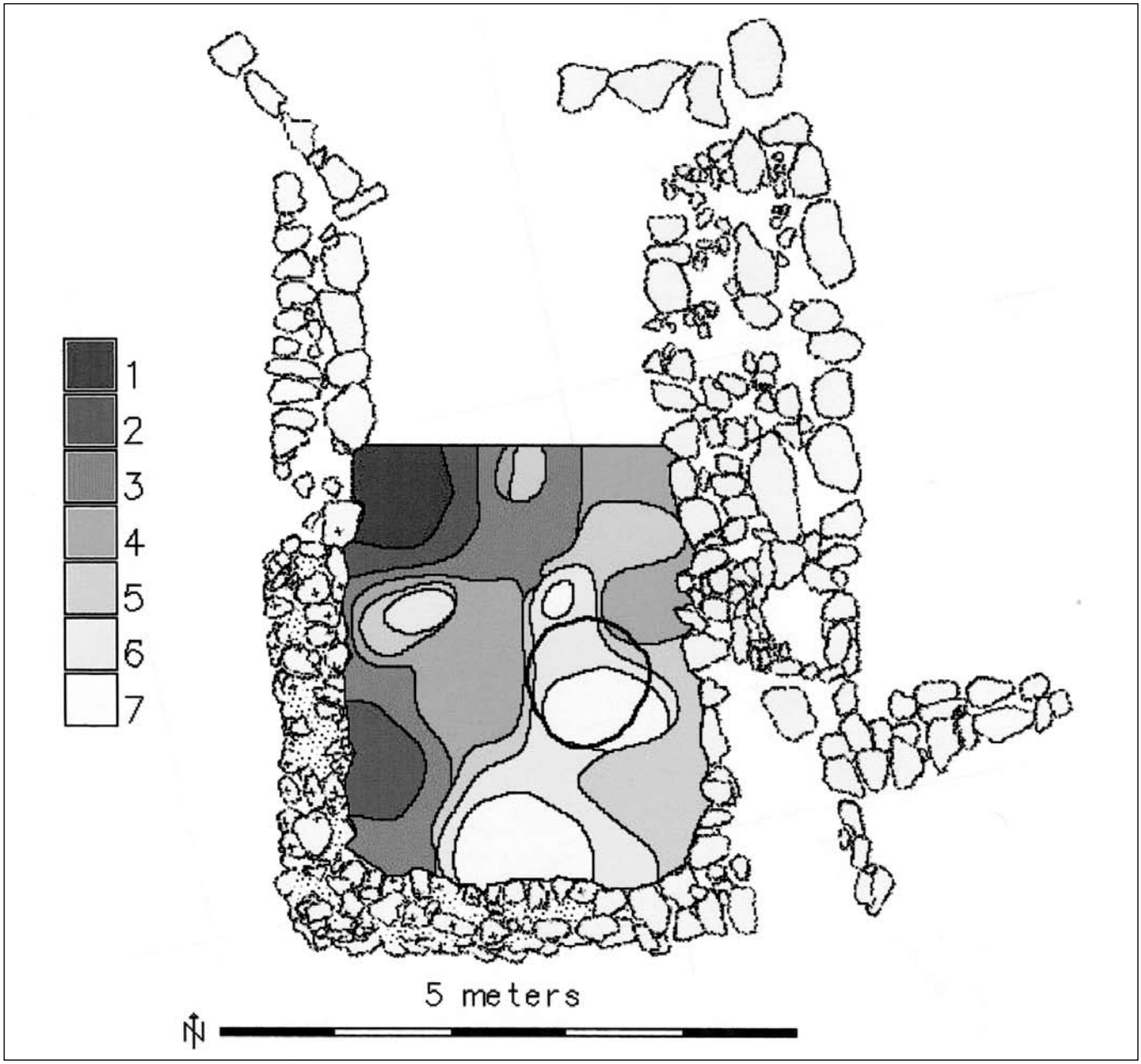
Although the Z-score standardized maps make it easier to compare the density distributions of the different macro- and micro-artifact classes, the sheer number of dimensions that could be compared makes it functionally impossible to compare all of them visually. Fortunately, this procedure can be automated with cluster classification routines developed for use with multiband satellite imagery (Lillesand *et al*. 2004).

This process entails three stages. First, a series of artifact density maps are 'stacked' like layers of transparencies to make a multiband image. Then software — Multispec (Purdue Research Foundation 2006) — is used to perform an unsupervised classification of the stack of maps, which compares the spectral 'signatures' from each band at each pixel of the image and classifies all pixels with similar signatures into clusters (FIG. 4). The artifact composition of each resulting cluster indicates the relative importance of specific artifact classes in the areas defined by the cluster's boundaries (FIG. 5).

In order to ensure that this type of cluster analysis produces the meaningful results, it is important to constrain the number of layers used in each classification process. In this study, micro-artifact density maps are analyzed separately from macro-artifact density maps. In addition, several other lithic



3. Example of a Z-score transformed density map, showing the density distribution of flint micro-debris. The map has been clipped at one standard deviation away from the mean to reflect areas of significantly high or low density.



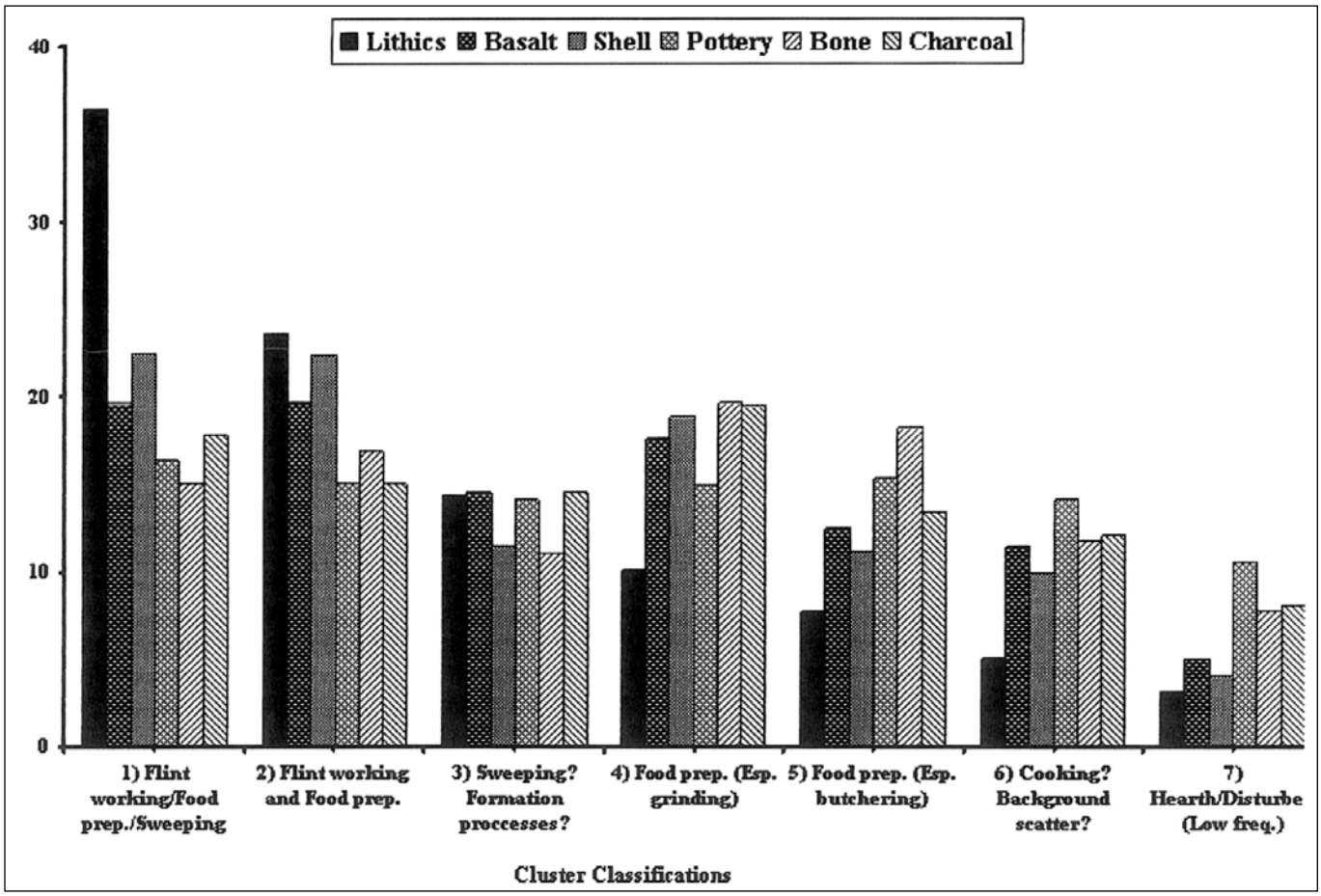
4. Example of the results of cluster classification, showing a spatial representation of the seven cluster solution for micro-refuse artifact types. The artifact types are: lithics, basalt, shell, pottery, bone and charcoal. The cluster classes are: (1) flint working / food prep. / sweeping, (2) flint working and food prep., (3) sweeping (?) and formation proccesses (?), (4) food prep. (esp. grinding), (5) food prep. (esp. butchering), (6) cooking (?) and background scatter (?), and (7) hearth / disturbed (low freq.).

attributes were also analyzed independently.

Results

Architectural study revealed three features: a plastered hearth, the threshold of what was most probably the house's main doorway, and small anomaly on one wall that may indicate the presence of a window. Some initial hypotheses can be generated from these data. Food preparation probably took place near the hearth, refuse was probably swept out of the door, and activities needing natural light probably took place near the door and window. These hypotheses are extremely tentative and generalized, however, and no further conclusions can be drawn based on these architectural analyses alone.

Summary visual analysis of the Z-score transformed artifact density maps yields some further

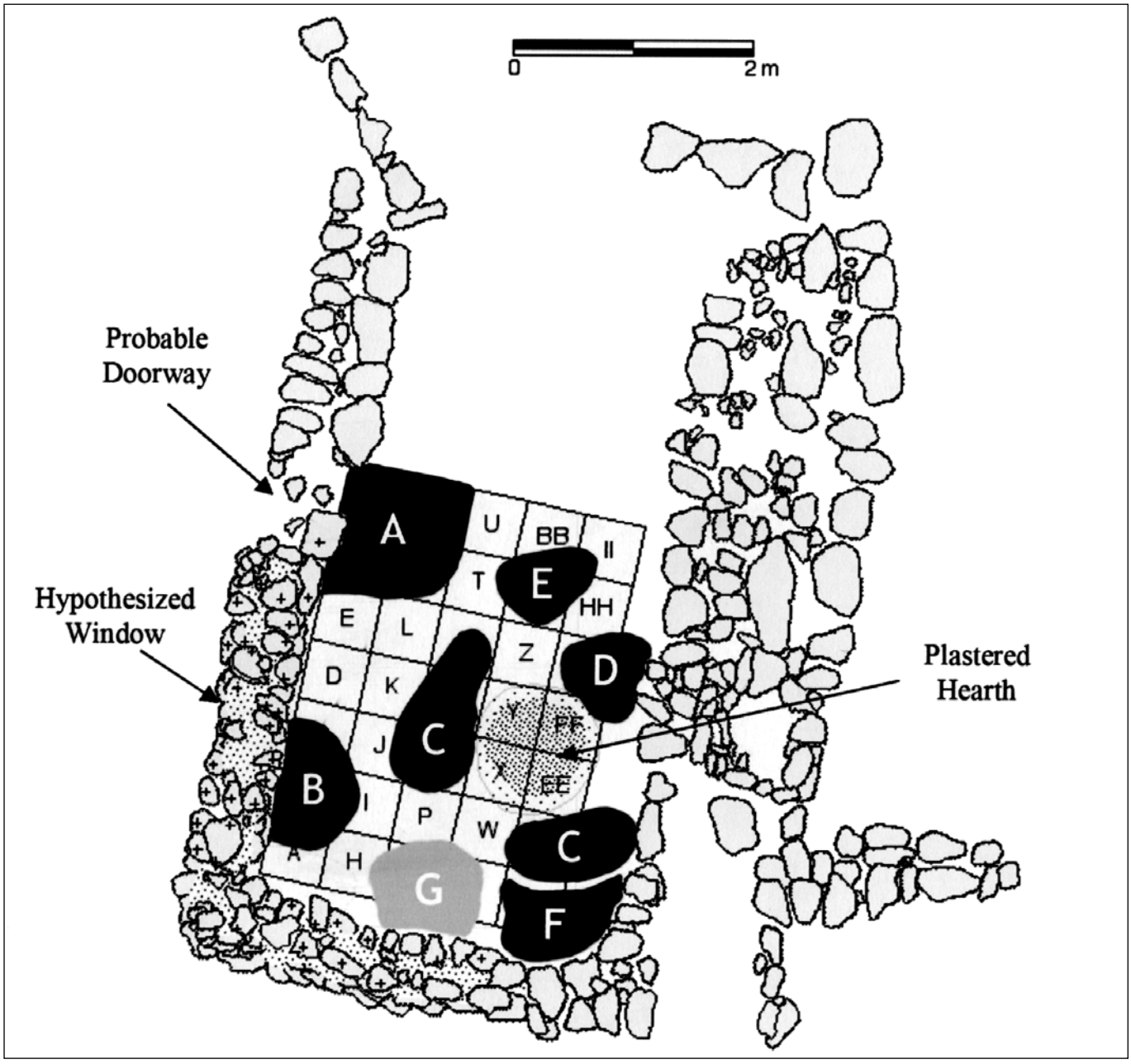


5. Example of a cluster composition graph, displaying the cluster compositions for the seven cluster solution for the micro-refuse cluster solution mapped in figure 4.

trends. There are discrepancies between the distribution of similar artifact types between size classes, especially chipped stone debitage and pottery. Importantly, this indicates that the presence of high amounts of micro-debitage and micro-pottery are not the result of *in situ* fragmentation of the larger sized artifacts. Many of the significantly dense areas surround the hearth and concentrate under the hypothesized window and near the door. Interestingly, there also seems to be a major concentration of burned artifacts just to the north of the hearth and an interesting spot along the south wall with very low amount of chipped stone chunks, but a high concentration of complete flakes of very similar length.

These trends are further quantified by the results of the cluster analysis. Seven distinct clusters of micro-artifact, eight clusters of macro-artifact and five clusters of lithic artifact were identified. The probable depositional characteristics of each cluster type can then be hypothesized based on the spatial distribution, artifact composition and proximity to the identified architectural features of each cluster.

The final hypotheses about the organization of internal space in room G34 at Ṭabaqat al-Būma are mapped in Figure. 6. These hypotheses take the results of the architectural analysis, the Z-score mapping analyses and the cluster analyses into account. The first area identified (A) seems to be where people manufactured and / or used flint tools. They may also have cached those tools in this area, and probably used or manufactured groundstone implements here as well. Additionally, it seems that rubbish from the rest of the floor was swept towards and out of what was most likely a doorway. Therefore, this seems to be an area where several different types of activities occurred, probably because of the abundance of natural light and the ease of access to both outdoor and indoor spaces. The second area (B) seems to be a place where people also manufactured and / or used flint tools and ground-



6. Map of final hypotheses of activity areas and architectural features: (A) flint tool manufacture / use, tool caching, groundstone manufacture / use and sweeping, (B) flint tool manufacture / use, groundstone manufacture / use and shellfish processing, (C) processing of animal remains, grinding and cooking, (D) shellfish processing, grinding and cooking, (E) provisional discard of hearth debris, (F) flint flake storage / provisional discard, and (G) highly disturbed area.

stone. In addition, people also seemed to be processing shellfish in this area. That these activities would also have benefited from extra natural light adds some support to the hypothesis that the anomaly in the portion of the wall at this location is the remains of a window. The third area (C) is a disjointed cluster to the west and south of the hearth, where people seemed to have preferentially processed animal remains, and where they processed — perhaps by grinding or pounding with basalt implements — and then cooked various foodstuffs. The fourth area (D) is to the north-east of the hearth, and seems also to have been where people not only also ground / processed and cooked foodstuffs, but additionally was another location where they processed shellfish. Both of these areas are located near to the plaster hearth, lending some credence to the initial hypothesis that the hearth was

the center of food processing and cooking. Next is an area (E), just adjacent to area D to the north of the hearth. This seems to have been used for provisional discard of hearth debris. An abundance of large burnt lithic debris in this location indicates that the central hearth may have also been used to heat treat flints. Additionally, significant quantities of burned macro-sized bone and pottery were found here. These artifact types are probably detritus related to cooking that were secondarily deposited in this area, which is between the hearth and the doorway — thereby making it easier to finally dispose of cooled hearth debris. The final identified activity area (F) is in the south-east corner of the house, and seems to have been used for flint flake storage or provisional discard. A highly disturbed location (G) was also identified and is characterized by low densities of artifacts, but high densities of intrusive eco-facts such as freshwater snail shell and uncarbonized botanics. The artifact deposition in all other areas was most probably the result of cultural or natural formation processes. These can be considered areas where activities that left no significant residues were performed, where large furnishings may have been placed, or where everyday cleaning significantly decreased the quantities of even the small-sized artifacts.

Conclusions

This study provides evidence that the people of Late Neolithic Ṭabaqat al-Būma performed many activities inside their houses. Unsurprisingly, they organized these activities with respect to the architecture of the building and with a regard for the practicality of performing activities in appropriate locations. Specifically, they performed food preparation near the hearth, and even seemed to prefer particular areas around the hearth for these activities. They preferred to manufacture or use stone tools in areas with abundant natural light and where they had easy access to outdoor spaces. People cleaned out their hearth periodically, provisionally discarding hearth refuse in the house, perhaps to sort through the ashes for reusable items such as heat-treated flints or burned bones, before discarding the ashes outside. People also swept the house, probably on a regular basis, and directed the debris out of what was most probably the main doorway.

Architectural analysis alone cannot yield such detailed interpretations about the use of internal space with any sort of confidence. The spatial distribution of larger-sized artifacts can help to increase the complexity and accuracy of these types of hypotheses, but is itself plagued by errors due to the predisposition of macro-artifacts towards post-depositional disturbance by site formation processes. The addition of a spatial analysis of micro-artifacts, which are much less likely to have been significantly displaced since deposition, helps greatly to identify and characterize ancient activity areas and yield hypotheses about within-room use of space that are otherwise unattainable. Indeed, these conclusions were only made possible by detailed study of the distribution of artifacts of different size classes through proper sampling procedures and a new, efficient, analysis with GIS.

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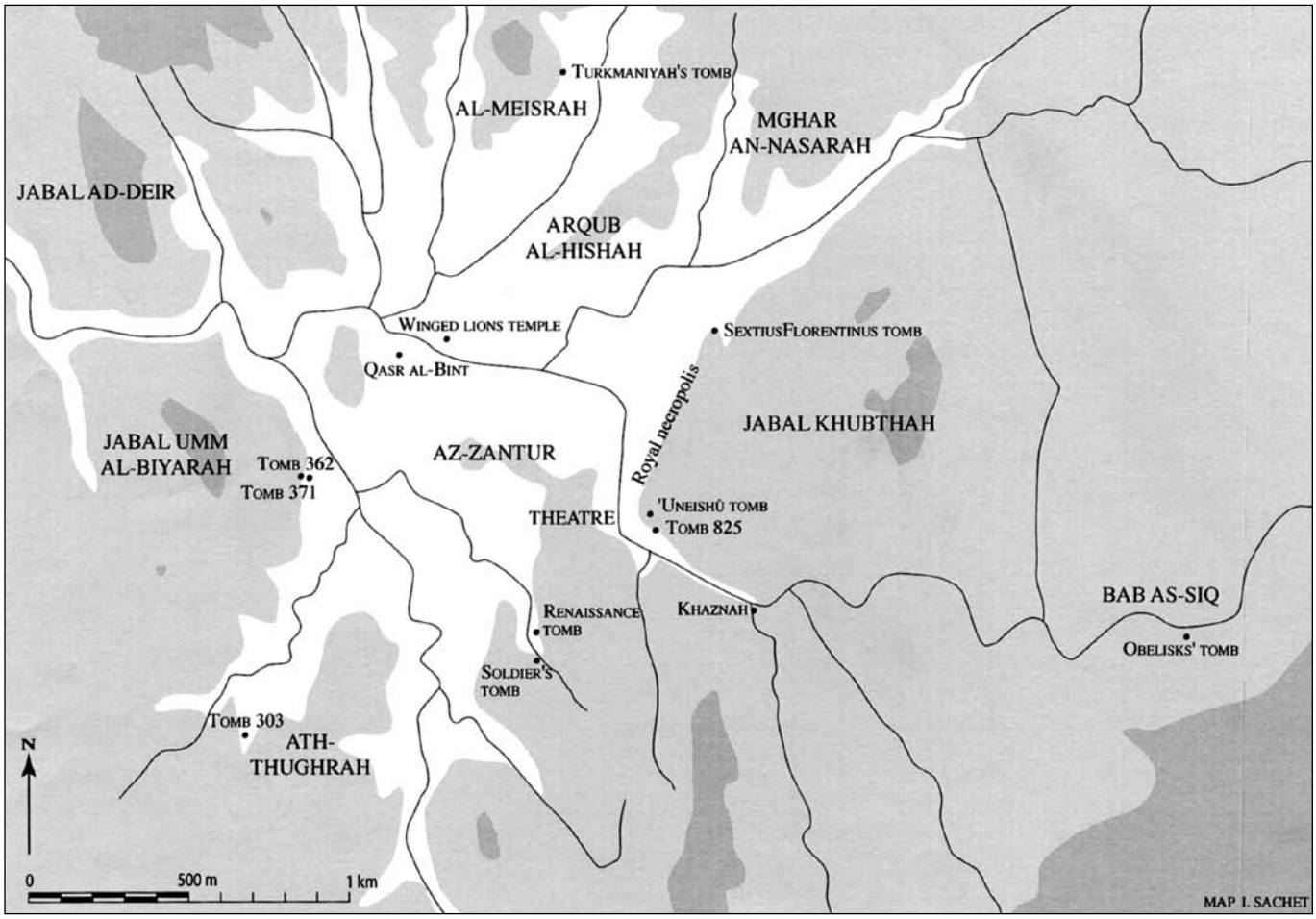
Refreshing and Perfuming the Dead: Nabataean Funerary Libations

The city of Petra, capital of the Nabataeans, is surrounded by mountains (FIG. 1)[1]. Vast necropolises have been dug into these mountains: at least 1179 rock-cut tombs, including 628 tombs with a decorated façade[2]. The tombs with a decorated façade were used by the wealthiest Nabataeans for burying their dead in family chamber tombs[3]. Poor people used common tombs: pit-tombs or shaft-tombs. The sepulchre was of great importance to the Nabataeans and they conceived it as a "house of eternity" (*bt 'lm'* in Nabataean) which is the name given to the tomb in a Nabataean inscription[4]. No

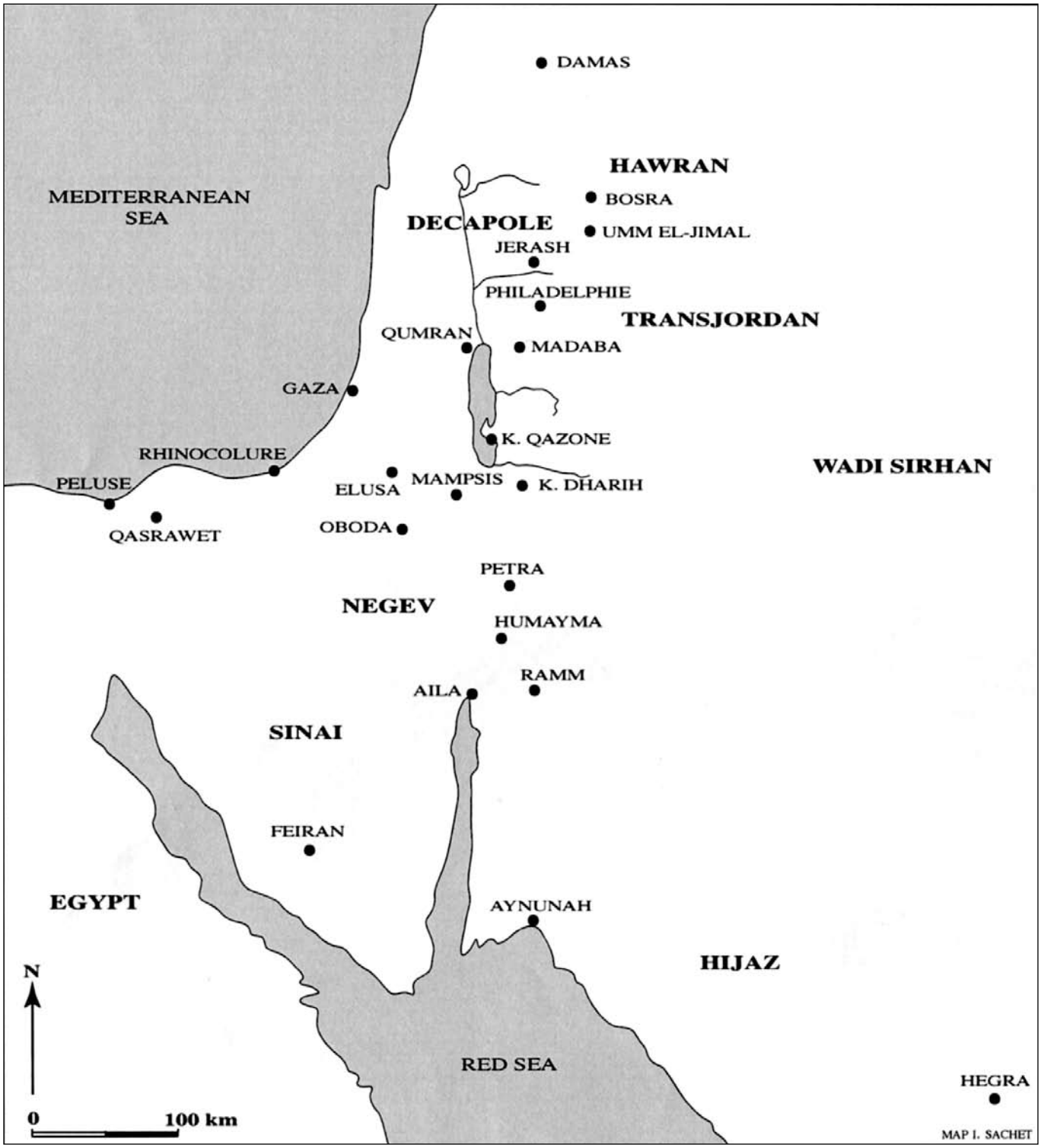


1. The site of Petra.

[1] would like to thank Robert Hawley who kindly read and corrected my English; mistakes are my own.
[2] For these statistics, cf Nehmé 2003: 157.
[3] Sachet 2005.
[4] Negev 1971b.

doubt, elite tombs with a façade were built with eternity in mind.

The lack of Nabataean texts of a religious nature prevents us from reconstructing the beliefs of their society in detail, especially those concerning death, but archaeological remains do provide us with some clues. In Nabataea (FIG. 2), numerous temples and sanctuaries attest to the religiosity of the population. In these buildings, they worshipped a pantheon of gods inspired by North Arabia, Syria



2. Major cities of the Roman Near East with main sites of Arabia Petraea.

and Egypt[5]. The funerary inscriptions of Madā'in Ṣāliḥ show how deeply the gods, and especially Dushara, were concerned with protecting the tomb. The gods were called upon to ensure the safety of the dead: "And may Dushara and Manutu and her Qaysha curse anyone who sells this tomb"[6].

In funerary contexts, religion is everywhere and the plan of the tomb is organized according to specific funerary rituals. Libations were part of these rituals. This paper is concerned with those archaeological remains from Nabataean sites which help to determine some of the actions performed inside and around the chamber tombs, both when the body was being buried and after interment, when people visited the tomb.

Historical Context

In the ancient Near East, libations were practiced in a variety of ways according to the periods and communities concerned. The longevity of libation rites in the Near East is well demonstrated by the difficulties encountered by the Judaean Yahwist priests of the first century BC when they tried to put an end to the feeding and refreshing of the dead in funerary customs in Judaea. They fought fiercely against these well-established local funerary practices[7], but despite their prohibition such practices were still active during the first century BC and first century AD. The feeding of the dead by means of food offerings placed in the tomb is well-known from archaeological discoveries in Judaean tombs. Archaeological material, including drinking vessels and *unguentaria*, is abundant in the tombs of that period [8] and shows the importance of drink and perfume offerings made to the dead.

Libations are better known from classical sources, i.e. Greek and Roman texts and epigraphy, and also classical iconography, sculpture and painting on vases[9]. For the ancient Greeks, a libation was a sacrifice consisting of a liquid offered to the gods (*σπουδή)* or to the deceased (χοή). In both Greece and Rome[10], festivities honouring the dead were planned according to a cultic calendar and were associated with banquets and sacrifices. Greek funerary libations included water, milk, honey and sometimes wine[11]. In the Roman world, perfumed oils were additonally poured on the tombs: ceramic and glass bottles of perfume have been found on many tombs in Pompeii[12].

Although no written source describes libations in a Nabataean funerary context, they are described in a domestic context. According to Strabo, Nabataeans poured libations on the roofs of their houses:

ἥλιον τιμῶσιν ἐπὶ τοῦ δώματος ἱδρυσάμενοι βωμόν, σπένδοντες ἐν αὐτῷ καθ' ἡμέραν καὶ λιβανωτίζοντες

A particular cult to the sun was made by the Nabataeans, they erected altars to it on the roofs of their houses, and, there, they honoured it everyday by pouring libations and burning incense [13]

Archaeological remains are therefore the only source of information concerning libations in Nabataean tombs, but these require careful analysis. Pottery vessels of various sorts were used as containers for different liquids and have been found in the tombs: jugs, cups, *unguentaria*, etc. Equipment for pouring and distributing liquids are found in the tombs, especially holes and canalisations. Banquet rooms built in funerary complexes also provide indirect evidence for libations, since they were places of eating and drinking. These vessels and installations all suggest that liquids were used in Nabataean funerary contexts. We propose here to examine critically the evidence for drinking and sprinkling of liquids in funerary contexts.

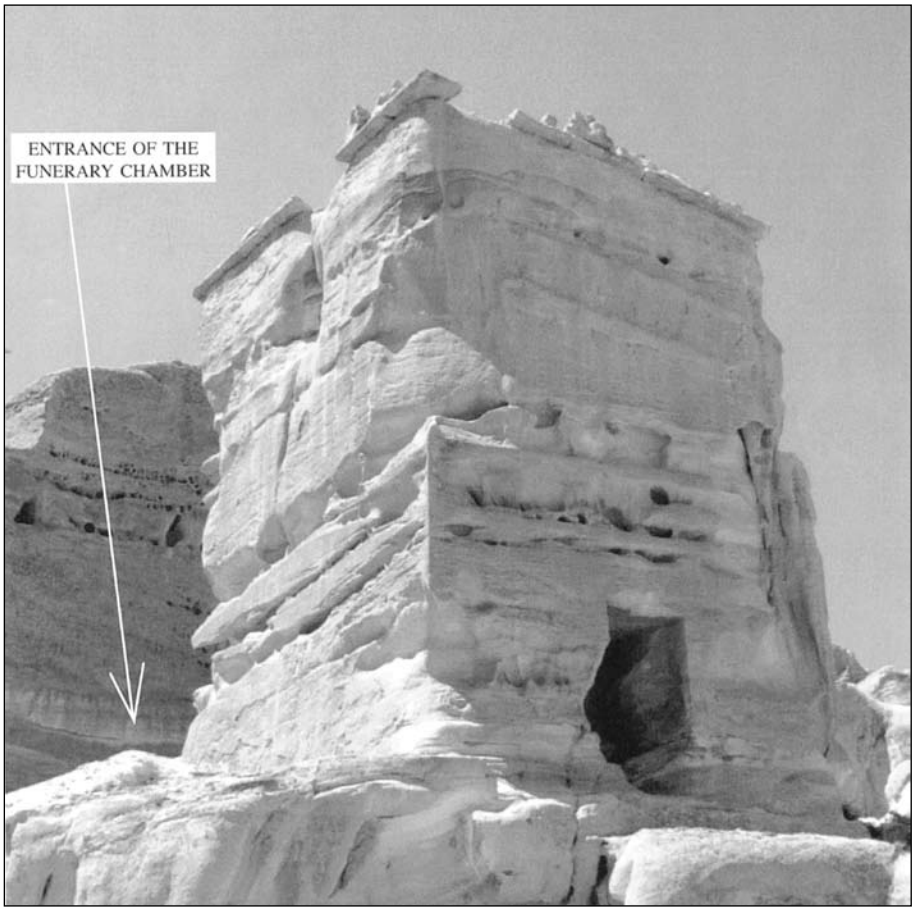
The Pottery: Containers for Liquids in the Tombs

Containers designed for water and other liquids have been found in Nabataean tombs, sometimes in large quantities[14]. We can assume that these containers were filled with water or other liquids. Even if they were empty, vases could have been used symbolically as a substitute for an offering. These deposits were made by the living for the dead during a ceremony at the time of a burial or, possibly, after it. Vases were also used by people who vis-

[5] Healey 2001: 181.
[6] Healey 1993: 115, inscription H2 on tomb IGN 22.
[7] Bloch-Smith 1992: 126-132.
[8] Hachlili 2005: 484-485.
[9] For example, a libation scene on a vase from the painter of Argos in the Louvre Museum, no G 236 (c. 480-470BC).
[10] Scheid 2005: 193-200.
[11] Homer, *Odyssey*, XI, 20-50; Aeschylus, *The Persians*, 608-623. Aeschylus describes Atossa's libation at Darius' tomb, probably made according to the Greek rituals.
[12] Ovide, *Fastes*, III.561; Van Andringa, Lepetz 2008: 1158.
[13] Strabo, *Geographica*, 16.4: 26.
[14] For example, in the North Ridge tombs 1 and 2: Bikai, Perry 2001.

ited the tomb after a funeral. For example, during a banquet, people may have poured some of their drinks to the dead. They may have used their glass or cup to drink to and commemorate the dead and then left the container there. We can distinguish two kinds of deposit attesting to two different kinds of gesture. First, pots found in a sealed tomb could have been deposited at the time of the initial burial or when the tomb was reopened for a subsequent burial. Second, pots found above a tomb were more likely to have been left there by people who came to commemorate the deceased.

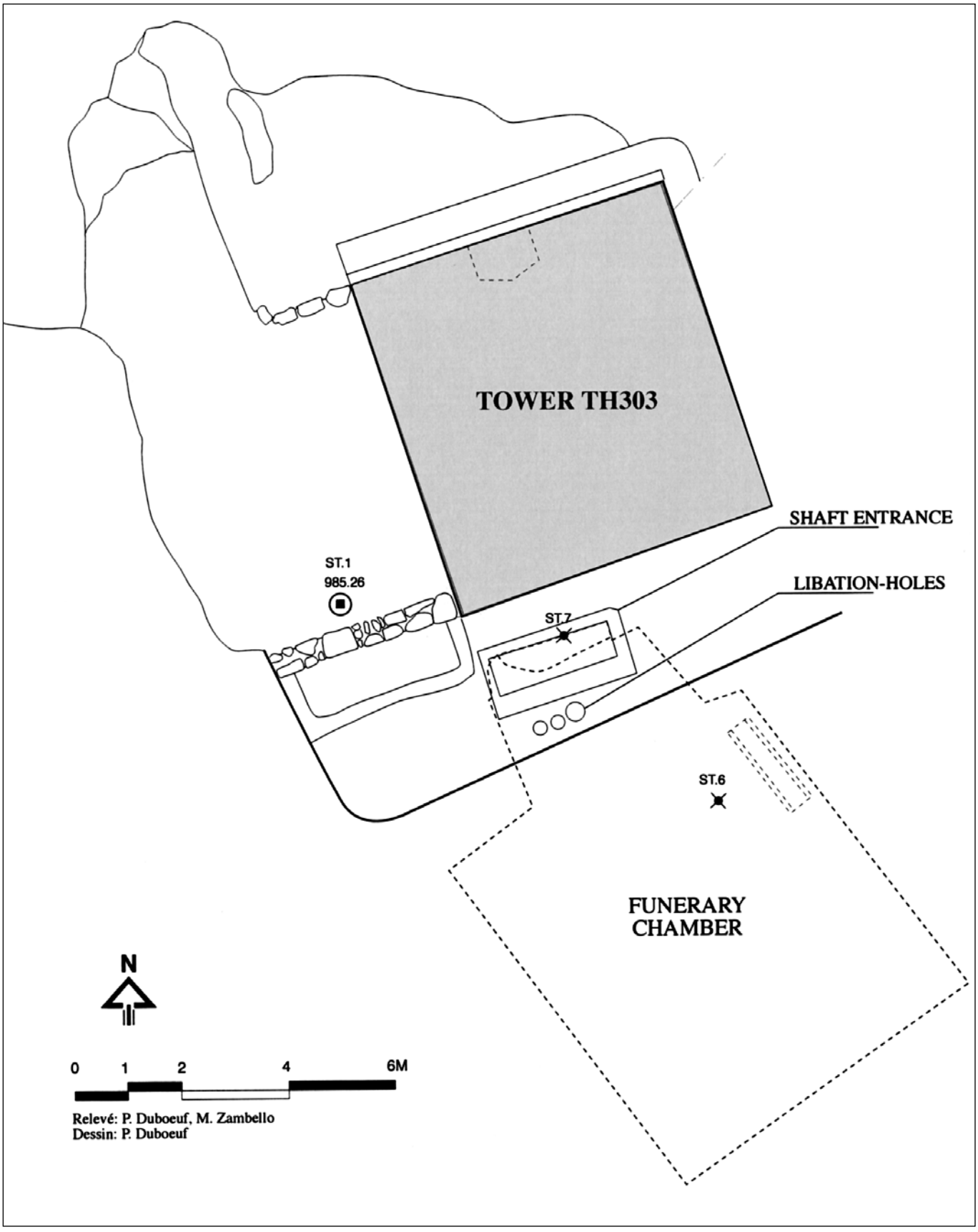
Tower-tomb 303 from ath-Thughrah in Petra (FIGS. 3-4) was excavated in December 2006[15]. A rock-cut chamber of ca. 40 square meters was excavated at the base of a monolithic tower; access to the chamber was probably through a shaft. The bones of about 50 individuals were piled in the north-west corner of the chamber[16]. According to the pottery found in the same context, these bones are probably of individuals dating to the main phase of occupation. The main occupation was a family one and took place between the end of the second century BC and the second / fourth century AD. After its abandonment, most likely during the fourth century AD, the chamber progressively filled with sand. Generally, ancient robbers were primarily interested in jewellery, not pottery. The pottery was left inside the tomb, sometimes broken during the cleaning or looting of the tomb. Such was the case in Tomb 303: human bones were piled up in a corner of the room by people who came there to clean or rob the tomb. Few sherds were found in the chamber, i.e. only three complete pots and a few sherds, mostly *unguentaria*. A unique piece of gold jewellery, a drop-shaped pendant, escaped these visits. Two plates and a cooking-pot from the last phase of occupation were found intact on the rock surface (FIGS. 5-6). The pottery from inside the tomb sheds light on the funerary deposits associated with



3. Tower-tomb 303 in ath-Thughrah necropolis.

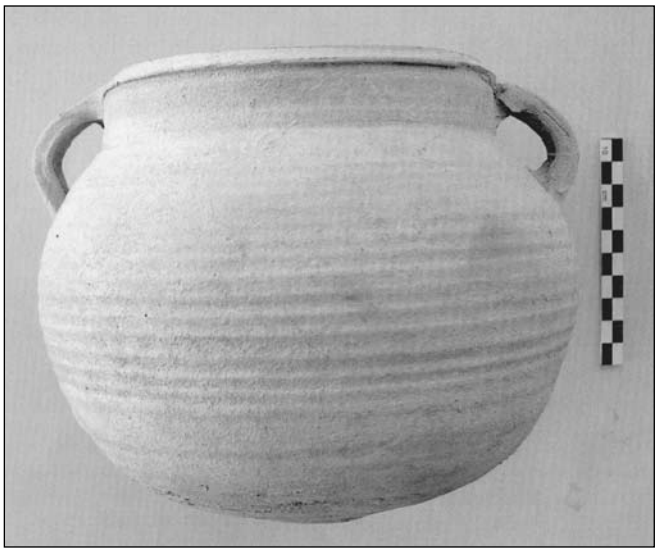
[15] Excavation conducted by the author, under the direction of Christian Augé, director of the French mission in Petra. The numbering of the tombs is after Brünnow, Domaszewski 1904.

[16] An anthropological study of the bones is being prepared by Nathalie Delhopital (Ph.D. dissertation, in the Université de Bordeaux 1). The final publishing of the excavation by Isabelle Sachet is in preparation.



4. Funerary complex of Tower-tomb 303 in ath-Thughrah necropolis (Drawing P. Duboeuf).

5. Nabataean plate found intact on the rock surface within Tower-tomb 303.



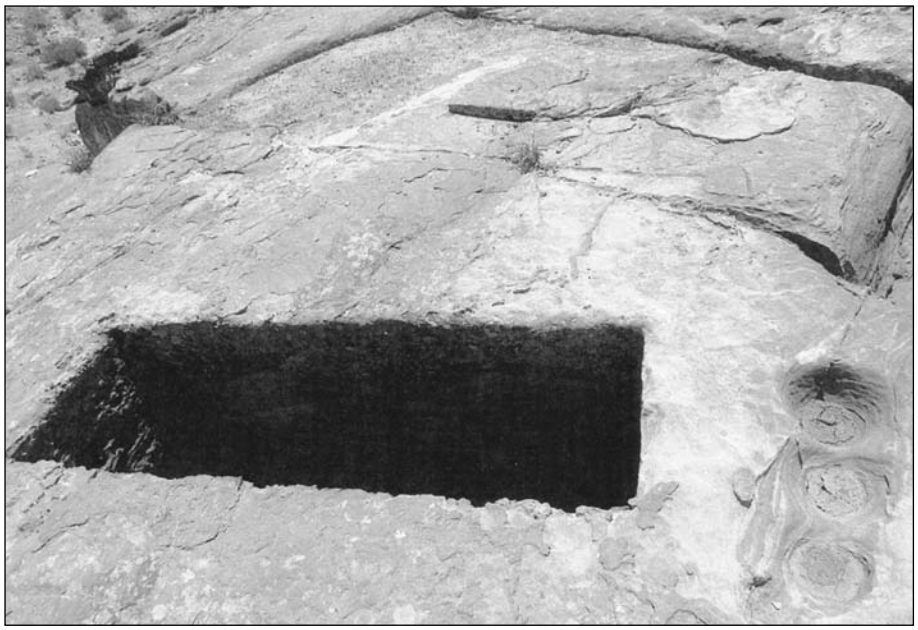
6. Cooking-pot found intact on the rock surface within Tower-tomb 303.

successive inhumations. As the chamber was sealed with large stone slabs, it was rarely reopened, probably only for new inhumations. Certainly, funerary deposits only seem to have been made on these occasions, when a new body was buried.

8. Libation holes in front of a shaft-tomb in Nasarah necropolis.

In contrast to the very limited amount of pottery found inside the chamber, a large quantity of broken pots were found above the tomb and around its access shaft. The surface ceramic finds were most likely brought to the tomb by people who came to visit it, probably to commemorate their dead. The wide range of different drinking (jugs, juglets, cups, goblets) and eating (cooking-pots, boiling-pots) vessels found above Tomb 303 could even indicate that banquets were held there.

Judging from the ceramic material found in Tomb 303, there is limited evidence for the observation of rituals inside the tomb, perhaps because of the difficulty of accessing the funerary chamber. Food and drink were deposited on two plates and in a cooking-pot, and oils contained in *unguentaria* were poured out, but it was uncommon for such



7. Libation holes in front of a shaft-tomb in Umm al-Biyārah necropolis.

rites to be observed there. More intense ritual activity took place above the tomb, where people most likely commemorated their dead.

Pouring Liquids into Libation Holes

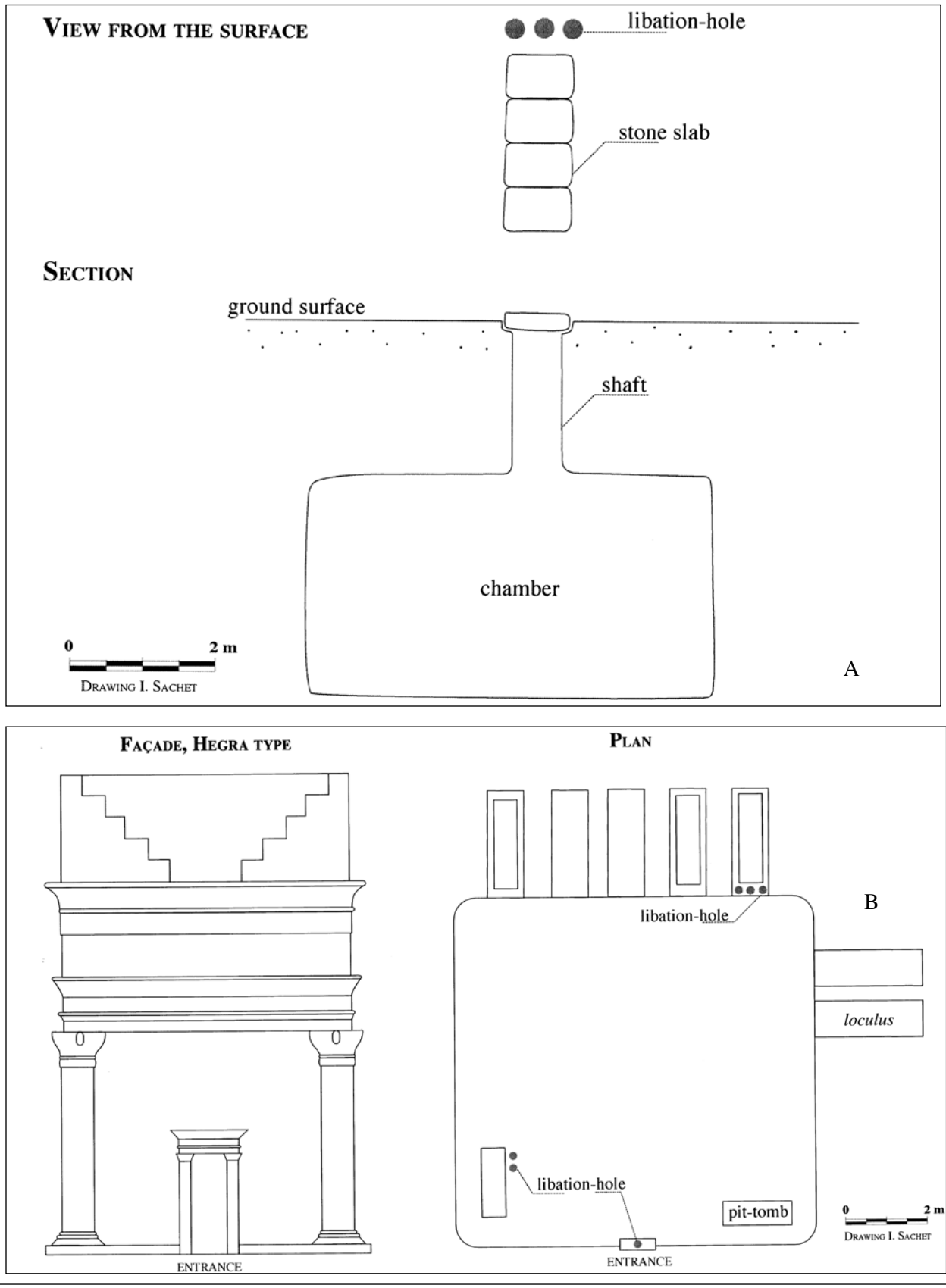
In Petra, circular holes dug into the rock are often associated with tombs. These holes are known as "libation holes" and are interpreted as receptacles for libations and other liquid offerings made to the deceased. We will examine a few examples of these libation holes. In the Nabataean Kingdom, libation holes are found only at Petra and, furthermore, only in funerary contexts. Typically, three of them are grouped together inside or outside a sepulchral chamber, on one side of a rectangular pit-tomb or on one side of the entrance to a shaft-tomb (FIG. 4). In a façade tomb, typically one libation hole, but sometimes as many as two or three, were cut inside the funerary chamber, on one side of a pit-tomb or a *loculus*, or outside the funerary chamber on the threshold (TABLE 1; FIGS. 9a-b).

The semi-circular shape of the libation holes is consistent with receiving liquid offerings and one of them, in the al-Khaznah tomb, is associated with a canalisation to collect water. It is nevertheless possible that, sometimes, liquids were not poured directly into the holes themselves but into bowls or plates which were then put in the holes. Nabataean

TABLE 1. List of libation holes in the monumental tombs of Petra [17]

Area	Tomb	Location of the libation - holes	Location with respect to the funerary chamber	Number of libation-holes
Entrance of the Sīq	Khaznah, nr 62	Threshold of the main chamber	Outside	1
Entrance of the Sīq	Khaznah, nr 62	Threshold of the right chamber	Outside	1
Bāb as-Sīq	Triclinium-tomb nr 34	Left of the door	Outside	2
Al-Khubthah	Urn-tomb, nr 772	*Loculus*, left	Inside	1
Al-Khubthah	Urn tomb, nr 772	*Loculus*, right	Inside	1
Al-Khubthah	Corinthian-tomb, nr 766	*Loculus*, bottom	Inside	3
Al-Khubthah	Sextius Florentinus tomb, nr 763	Threshold	Outside	2
Wādī Farasa	Broken pediment tomb, nr 228	Chamber ground	Inside	1
Umm al-Biyārah	Nr 362	Pit-tomb with *nefesh*	Inside	3
Umm al-Biyārah	Nr 371	Pit-tomb	Inside	2
Umm al-Biyārah	Nr 375	Pit-tomb	Inside	2
Meisrah	Nr 476	*Loculus*, left	Inside	1
Meisrah	Nr 620	Chamber ground	Inside	1
Meisrah	Turkmaniyyah tomb, nr 633	Pit-tomb, bottom	Inside	3
Meisrah	Turkmaniyyah tomb, nr 633	Pit-tomb, left	Inside	2

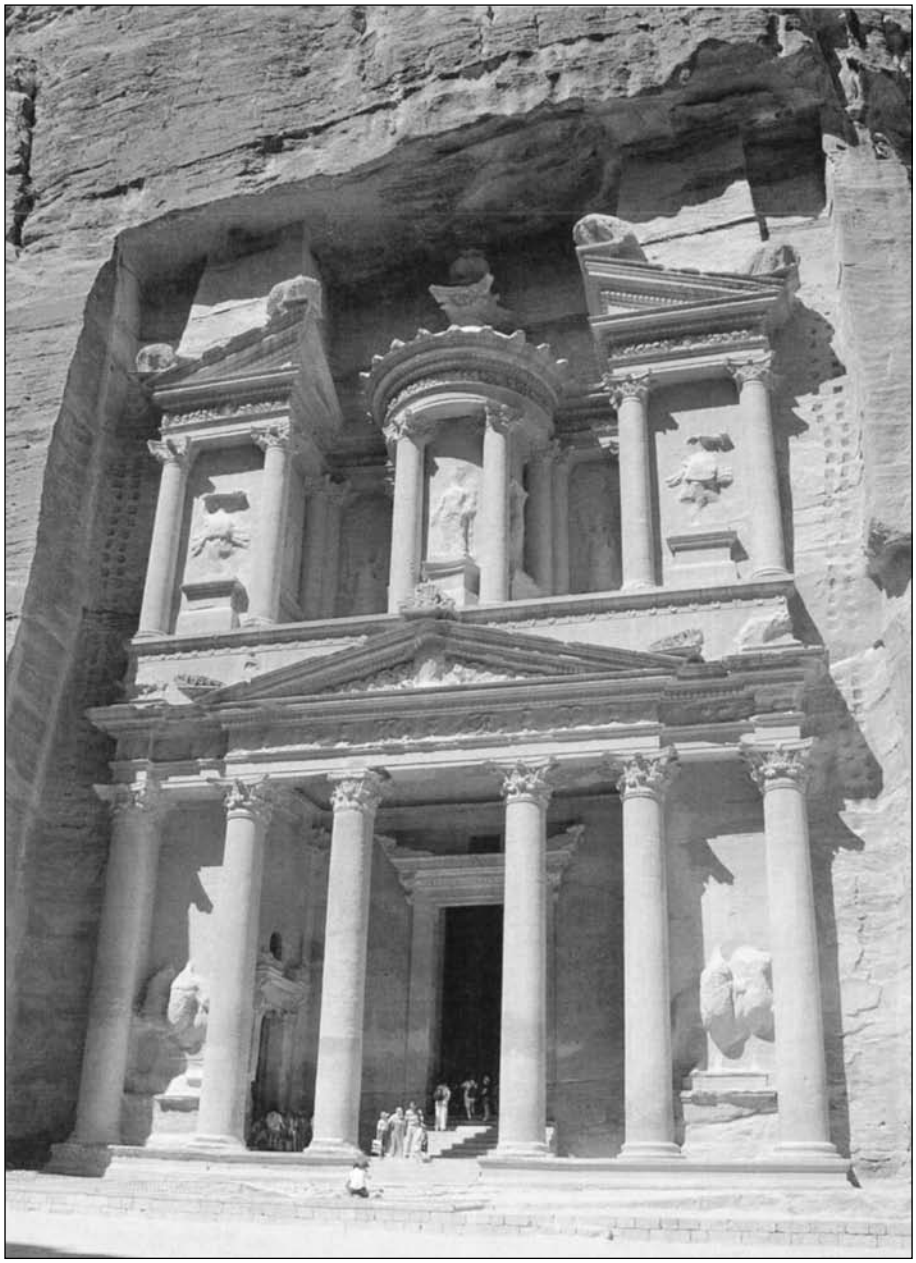
[17] Data derived from field investigations made by the author (Ph.D. research: Sachet 2006).



9. Possible locations for libation holes in Nabataean tombs. A: Chamber-tomb with shaft access. B: Façade-tomb with door access.

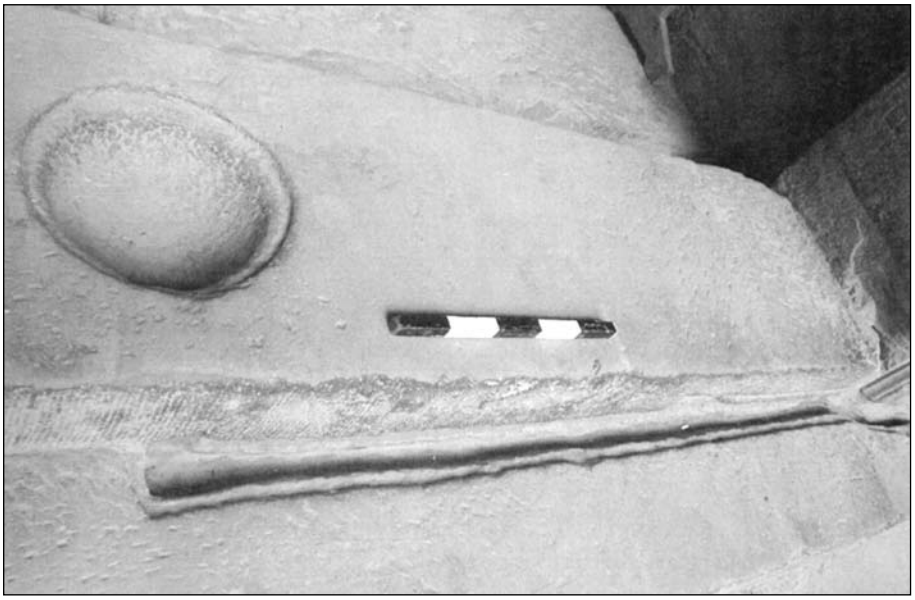
plates and bowls with no ring base needed support if they were not to topple over, and libation holes may have been used in this way. A large libation hole, linked with canalisation to a basin, was cut on the threshold of the al-Khaznah tomb (FIGS. 10-11). In this case, liquids may have been poured directly into the libation hole and were thus conveyed to the basin immediately after having been poured.

What were the places chosen for the cutting of libation holes in tombs? On the basis of several surveys of the necropolises of Petra[18], many libation holes have been noticed above shaft-tomb entrances. For example, at Tomb 303 from ath-Thughrah, three libation-holes were cut above the tomb chamber and alongside its access shaft (FIG. 4). At this location, libation holes were cut outside, not inside, the tomb chamber. Here, access to the chamber was especially difficult, being a 3m. shaft closed by large, heavy stone slabs. We can suppose that people did not open the shaft each time they wanted to make an offering to their dead. Thus, libation holes may have been cut above the chamber tomb if the access to the tomb itself was difficult, such as when



10. Façade of the al-Khaznah tomb.

[18] We would like here to thank Christian Augé, director of the French archaeological mission in Petra, for his support.



11. Libation hole cut into the al-Khaznah threshold and associated canalisation.

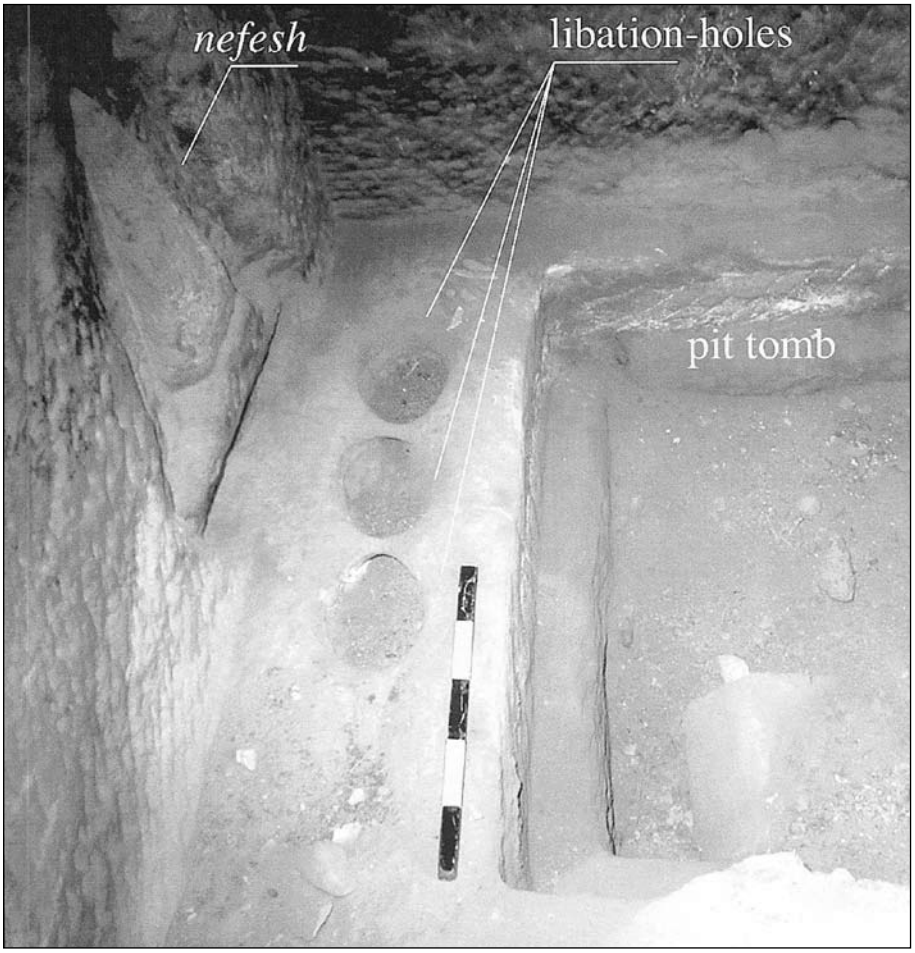
access was gained through a shaft.

So far, no excavated shaft-tomb has yielded a libation hole cut inside the funerary chamber. Naturally, it has not been possible to survey all shaft-tombs in Petra because they are filled with sand and access is difficult. Therefore, new excavations should reveal more information. Indeed, libation holes cut inside the chamber are always found in funerary chambers to which access was through a door rather than a shaft. At Umm al-Biyārah, access to chamber-tomb nr 362 was through a door. Three libation holes were cut on the small side of a pit-tomb inside the chamber (FIG. 12). A *nefesh*, or triangular motive used to symbolise the deceased among the Nabataeans, was carved above the libation-holes. People who poured libations in the tomb were thus commemorating not only the body of the deceased in the pit-tomb, but also the memory of the deceased as illustrated by the *nefesh*. In fact, we note that libation holes are always cut in places that the living can reach easily. They are cut inside the chamber if the entrance was through a door and outside the tomb if access was too difficult.

The libation hole of the al-Khaznah tomb is a unique case. As we have seen, it is associated with a canalisation and a basin, as well as being far larger than other libation holes. Furthermore, its location is not consistent with our theory about the location of libation holes, as it has been cut outside the funerary chamber even though access to the chamber was straightforward and through a door. According to our theory, the libation hole should ought to have been cut inside the chamber itself. Let us consider possible reasons for this exception. First, the al-Khaznah tomb was a royal one made for a Nabataean king, probably Aretas IV (9BC - 40AD)[19]. The funerary chamber was closed by a large double-door which was probably shut for most of the time, and the number of persons authorised to enter the chamber was probably restricted. We have no evidence for the ritual behaviour that occured inside the royal chamber, which would certainly have been restricted to the high priests and royal family. On the other hand, we do know that libations were poured outside the chamber, in front of the tomb door. Thus, access to the libation hole was possible for a greater number of people, indicating that the rituals practiced here were performed by a larger community than the rituals practiced inside the tomb. The al-Khaznah tomb is located at the main entrance to the city of Petra. All visitors would have been able to admire this tomb and, perhaps, make their libations to the dead Nabataean monarch before they came into the city. A key point is that the libation hole of the al-Khaznah tomb could be an important clue in reconstructing a public ritual dedicated to a Nabataean monarch. A libation hole was also cut into the threshold of the Sextius Florentinus tomb. It is not impossible that a public cult was established also established in Petra for the Roman legate.

At Petra, libations were poured into holes cut

[19] Stewart 2003: 194.



12. Libation holes and *nefesh* from Tomb 362 in Umm al-Biyārah.

above individual burials and at the entrances to collective burial chambers. Thus, a single libation could have been offered to one or to several persons. Was it dedicated to the deceased, to the gods, or both? Unfortunately, no inscription allows us to address this question. Archaeological installations in Pompeii give some information about the recipient of the libations. In many tombs at the Porte Nocera necropolis, a canalisation was built between the ground surface and the cinerary urn. Thus, dedicants could come and honour the deceased with their libations whose remains came into actual contact with the oils[20]. At Pompeii, there is no doubt that libations were for the deceased. Regarding Nabataean individual tombs, we have no evidence to indicate that liquids were conveyed into the grave. Individual tombs are not well-studied, nor are they well-preserved in Nabataea, but none of the stone slabs which were used to seal tombs have any holes which would indicate an intention to sprinkle the body with libations. Instead, Nabataeans libations were poured on the ground in front of the tomb, perhaps for both the gods and the dead.

Drinking and the Funerary Banquets

Banquets were part of the funerary cult in Petra. Banqueting rooms associated with tombs are numerous at the site and the abundance of pottery that is found around the tombs is a testimony to the activities that occurred in the necropolises. In M'eisrah necropolis, a banqueting room, *smk'*, is mentioned by the inscription of the Turkmaniyah tomb one of the installations inside the funerary complex[21]. The funerary complex, including the banquet room, was sacred and placed under the protection of the god Dûsharâ:

This tomb and the large burial-chamber within (…) and triclinium-garden (?) (…) and all the rest

[20] Van Andringa, Lepetz 2008: 1144, fig. 8.

[21] See the study of the term *smk'* by Healey 1993: 240.

of the property which is in these places are sacred and dedicated to Dushara (…)[22].

Unfortunately, the banqueting room of the Turkmaniyah complex is not preserved, but other funerary complexes are preserved in Petra and include both a tomb and a *triclinium*. According to D. Tarrier (1988), about 25% of the banqueting rooms in Petra were reserved for funerary meals[23], e.g. the Soldier Tomb (nr 239), whose main parts are dated to the middle of the first century AD[24]. In Wådπ Farasa, the Soldier Tomb and banqueting room nr 235 are part of the same building. Access from the *triclinium* to the tomb was possible through a peristyle courtyard[25]. It is possible that the banquet room was not only used for funerary meals, but it is part of an architectural complex dedicated to the dead which was initially planned for that purpose.

Funerary meals were an occasion for people to eat and drink together. People attending a banquet in the *triclinium* would have had a view of the façade of the Soldier tomb through the window. The rituals that took place in the banqueting rooms are unknown. No text explicitly describes a Nabataean funerary banquet. Royal Nabataean banquets, however, are mentioned by Strabo and Tacitus:

The king holds many drinking-bouts in magnificent style, but no one drinks more than eleven cupfuls, each time using a different golden cup[26].

A special ritual may have existed to commemorate the dead during a banquet. Did people pour the contents of a cup on the floor or did they drink from it? As they were celebrating in a building complex dedicated to the dead, people may have made some gesture of that kind to commemorate the dead.

What Liquids were Poured?

Is it possible to determine what liquids were poured into the vases placed with the dead or into the libation holes, or what people drank during funerary meals?

In the *Odyssey*, Odysseus made libations to the dead and poured wine into a square hole that he dug in the ground[27]. The import of wine to Petra is attested to by Rhodian amphorae stamps from as early as the second half of the third century BC[28]. Excavations have also deomonstrated the presence of wine presses in the Petra area[29]. Furthermore, Nabataean plates found in domestic as well as funerary contexts are often considered to be drinking cups[30]. Piles of Nabataean plates were found above Nabataean tombs in the cemetery of Mampsis in the Negev where the archaeologist interpreted them as the remains of funerary meals[31]. Although we lack conclusive evidence, it is not improbable that grape wine was used in funerary rituals and drunk during commemorative ceremonies for the dead.

One can also consider whether blood sacrifices were made before banquets and whether animal blood was used for libations? According to the *Suda*, a Greek encyclopedic lexicon compiled by the end of the 10th century AD, the god Ares was representated in Petra by a quadrangular black stone placed upon a golden base. Victims were sacrified to the god and their blood was poured on the stone[32]. Thus, bloody sacrifices are known in Petra from later written sources, but archaeological evidence from funerary contexts is limited. A small rectangular monument built in front of the main tomb of the site of Khirbat adh-Dharīḥ has been interpreted as a sacrificial table[33], but as no bones were found around it the function of this monument remains unclear. Meat was probably eaten during funerary banquets but it must be admitted that we do not know how the animals were slaughtered or if their blood was used as an offering.

Water is certainly the most common and easiest liquid to obtain. Refreshment of the dead and the quenching of their thirst are familiar themes in the Classical periods. In Calabra, a text was engraved on a golden leaf in the Hipponion necropolis. It recounts the path followed by souls on their way to the city of Hades and how they stopped to drink the water of a fountain that made them forget their lives on earth[34]. Arabic sources also refer to water

[22] Healey 1993: 238-239. In the Turkmaniyah tomb, the banquet room should be associated with a garden. J. Healey proposed translating the terms *gnt smk'* by triclinium-garden.
[23] Tarrier 1988: 99.
[24] Schmid, Barnasse 2004: 340. The Soldier tomb was formerly called "the Roman Soldier tomb" but Schmid showed that the soldier was Nabataean: Schmid 2001b: 176.
[25] See the reconstruction of the Wadi Farasah Complex in Schmid 2007: figs. 9-11.
[26] Strabo, *Geographica*, 16.4.26. See also Tacitus, *Annals*, 2.57, 4 for a banquet given by the king of the Nabataeans to Caesar and Agrippina.
[27] Homer, *Odyssey*, XI, 20-50.
[28] Bignasca, Desse-Berset, Fellmann Brogli *et al*. 1996: 142.
[29] Al-Salameen 2005.
[30] Schmid 2000: 91-92, 153-156.
[31] Negev 1971a: 127.
[32] Adler 1931: 713; text revised by Healey 2001: 96.
[33] Lenoble, al-Muheisen, Villeneuve *et al*. 2001: 147.
[34] Burkert 2001: 91; the text was translated by A. Bernand.

in connection with tombs. An inscription on a funerary stela from Qudam B. Qâdim in Yemen asks for heavy rain (*wâbil*, *midrâr*) on the tomb so that a luxurious garden might grow on it. The tradition of pouring water on a grave, a gesture the Prophet made over the tomb of his son Ibrâhâm, is still known in Arabic countries[35]. In Petra, hydraulic systems including cisterns (*ṣhwt*) and wells (*b'rwt my'*) are mentioned in the Turkmaniyah inscription. These installations were part of the funerary complex and were placed under the protection of the god, just as the tomb and the sepulchres were[36]. Archaeological remains from Petra confirm that water was commonly found next to tombs. Basins were sometimes built at tomb entrances and cisterns are often associated with funerary complexes. The supply of water to Petra was made possible by aqueducts that crossed the necropolises before reaching the city. The aqueducts thus supplied water to the funerary complexes before reaching the houses of the city centre. For example, at the south-eastern part of the site, a spring supplied first the funerary complex of the Soldier tomb and then the az-Zanṭūr residential area[37].

It is certain that specific oils were also poured out during funerary libations. According to Strabo, Nabataea was rich and fertile, and produced sesame but not olive oil[38]. Strabo's latter assertion is surprising, since olive trees are obvious in the region today. Olive pits were found in the oil presses of Khirbat adh-Dharīḥ, dated to the second century AD, thereby refuting the testimony of Strabo and confirming that olive oil was produced in ancient Nabataea. Sesame and olive oil were thus produced locally, but rare oils would certainly have been imported. As mentioned above, liquids that were poured into the libation hole in front of the al-Khaznah tomb were collected in a basin via a canalisation. We doubt that such a precaution would have been taken if it was olive or sesame oil that was being poured. Clearly the liquids that were poured in front of the al-Khaznah tomb had a certain price, or at least a symbolic value. Precious oils ought to have been those which were difficult to extract or those which were imported. In the Nabataean tombs of Madā'in Ṣāliḥ, calcite — a stone similar to alabaster — vases were found[39]. These vases were produced in Yemen and their diffusion was linked to the incense trade. In Palmyra in 137AD, a tax of 25 denarii was imposed on a camel loaded with aromatic oils in alabaster containers. Certainly, aromatic oils were also imported into the capital city of the Nabataean kingdom[40].

Is chemical analysis any help in determining what liquids were poured into libation holes? Unfortunately, no residues were visible on the surfaces of the libation holes from the tombs that we surveyed. Nevertheless, as an experiment, in 2005 sandstone samples from the base of two libation holes were taken from tombs nr 362 and nr 371 at Umm al-Biyārah. The two samples were analyzed by gas chromatography and mass spectrometry[41]. Despite the lack of visible residues, the results for both samples showed a significant presence of organic matter. Fatty acid analysis confirmed the presence of vegetal oils, and perhaps dairy products and animal fats. Heavy compounds of the triterpene family might have come from vegetal resins, such as incense or myrrh. In 2006, new analyses were conducted on the libation holes from tombs nr 8 and nr 303[42]. They seemed to confirm the results from tombs nr 362 and nr 371: the same organic materials — vegetal oils and dairy products — were found. We may thus note, first, that even if no residue is visible, sandstone may nevertheless retain traces of organic matter susceptible to further analysis and, second, vegetal oils and dairy products were found in four libation holes from Petra. This represents an important contribution to our knowledge of the liquids poured out by the Nabataeans for their dead, but more analyses are needed.

Conclusion

The main features of funerary ritual in Nabataea, especially Petra, seem to have been close to the funerary rituals of the classical Mediterranean world. Inside the tomb, offerings of food and water were left close to the deceased in order to provide them

[35] See the commentary on the stela by M. Schneider and her study of water rituals on Islamic tombs in Schneider 2001.
[36] Healey 1993: 238-242.
[37] Schmid 2001a: 346-347.
[38] Strabo, *Geographica* 16.4: 25-26.
[39] Unpublished results from the french archaeological mission in Madā'in Ṣāliḥ, directed by Laïla Nehmé.
[40] Browning 1979: 15-16; Teixidor 1984: 86.
[41] Analyses conducted by Nicolas Garnier, LNGVic-le-Comte laboratory. We are grateful to Dr Fawwaz al-Khraysheh for having authorized these analyses.
[42] Nicolas Garnier, the results are to be published in the Acts of the Society for Arabian Studies Biennal Conference, "Death, Burial, and the Transition to the Afterlife in Arabia and Adjacent Regions", held in the British Museum, London, November 2008.

with sustenance. Above the tomb, families made offerings and libations to commemorate their dead. In Petra, libation holes were always located in an easily accessible place so that people could use them regularly, perhaps several times per year. Libation holes have only been found at Petra, but this need not indicate that libations were not made elsewhere in the Nabataean kingdom, as plates or other receptacles could have been used to pour liquids. Banquets also took place in the funerary complexes at Petra, which were holy places (*ḥrm*) protected by the Nabataean gods. Details of the ceremonies are unknown, but people might have had eaten and drunk together to celebrate the memory of their dead. Public funerary rituals seem to have been distinct from private ones. For example, libations were made inside or outside the funerary chamber according to the private or public nature of the cult. Families made libations in holes cut inside the tomb, when the funerary chamber was easily accessible, or above the chamber where an entrance shaft made access more difficult. In the al-Khaznah royal tomb, however, the chamber could easily be accessed through a large door, but it seems to have been opened only for a few people, probably priests and relatives. The general public would have offered their libations to the dead monarch outside the tomb, in a hole cut into the threshold of the closed door. Thus, in private cult, families apparently performed their rituals inside the funerary chamber. In public cult, dedicants had no access to the funerary chamber and the sepulchre seems to have been closed to the public most of the time.

Were Nabataean funerary practices influenced by the Roman practices current at that time? The question is not an easy one to answer. Within Nabataea, it is extremely difficult to distinguish Hellenistic influence from Roman influence[43]. There were Roman military expeditions to the Near East prior to 65/64BC; Roman missions were travelling in Syria more than a century earlier, even as early as 164BC[44]. However, from the first century BC exchanges between Rome and Petra increased significantly. Foreigners — Romans amongst them — were already numerous in Petra in the first century BC[45]. Nabataean delegations went to Rome as well; the Nabataean minister Syllaeus went to Rome at least twice, in 9/8BC and 6BC[46]. When Trajan annexed the Nabataean kingdom in 106AD, the Romans interacted with the Nabataeans for two or three centuries, not only in the eastern but also in the western Mediterranean. Nabataean aristocrats became wealthier thanks to trade and their society was eventually transformed. Nabataean civilisation reached its peak between the second half of the first century BC and the end of the first century AD. The funerary architectural remains that enable us to study Nabataean funerary practice date mainly to this period. We have very little evidence of funerary architectural remains dating to the middle of the first century BC. It is thus difficult to distinguish the results of external influence from the internal transformation of Nabataean society. It is clear that Nabataean society underwent radical change following contact with Rome. But as archaeological remains are extremely scarce for the preceding period, we do not have detailed information about Nabataean society before the middle of the first century BC.

Artefacts provide slightly more information than architecture about pre-Roman Nabataea. In the Petra tombs, Hellenistic black-glazed *unguentaria* dating to the third – second century BC are the earliest vases intended to contain liquids, but these were imported from Greece and are not necessarily linked to the Roman presence. Can we observe any changes in ceramic assemblages from tombs following the second half of the first century BC, when the Roman presence became stronger in the Near East, or following the beginning of the second century BC after Trajan annexed Nabataea? Some variation can be observed in the pottery from inside the tombs during the Nabataean period. During the entire Nabataean period, almost all pottery types were placed in tombs: vessels for drinking, eating and cooking were all used in funerary deposits. This pottery was essentially local — very little was imported. Not a single sherd of Italic production has been found in a Nabataean tomb at Petra; even the widely-distributed Eastern Sigillata A, produced in Asia Minor, is rare[47]. However, from the Augustaean period onwards, Nabataean pottery

[43] Local oriental tradition is not our purpose here (for which cf. Sachet 2005: 33-34, and Sachet 2006).
[44] 2Maccabees, 11.34-37; Sartre 2001: 430.
[45] Strabo, *Geographica*, 16.4: 21.
[46] Josephus, *Antiquities of the Jews*, 16.271-299, 17.54-57.
[47] See the study of the ceramics found in Nabataean tombs: Sachet 2006: ch. 7.2, 156-164.

was Romanised. Cups and goblets inspired by contemporary glass production appear and demonstrate that tastes had changed among the population.

At first glance, the Roman presence does not appear to have had much influence on Nabataean funerary custom. The Nabataeans may have been subjected to stronger influences when the Near East was Hellenised. Moreover, the Romans living in Nabataea often adopted local habits. For example, Sextius Florentinus, a Roman legate who died in ca.129AD choose to be inhumated in a rock-cut tomb with a façade identical to the tombs of Nabataean aristocracy. The tomb is located among other rich Nabataean tombs, north of the royal necropolis[48]. Sextius Florentinus' tomb may actually have belonged to a Nabataean family before being used by the Roman legate. The decor of the façade is very similar to the decor of the Renaissance tomb, dated to the third quarter of the first century AD [49]. The construction of the tomb of Sextius Florentinus could therefore have been earlier than the inscription engraved above the door that describes the Roman legate as owner of the tomb. We may also note that, even though the inscription only mentions one burial, the tomb was actually made for many more — at least eight persons — on the pattern of Nabataean family tombs[50].

Exchange between Rome and Petra invariably led to changes in Nabataea. The thriving incense trade, which developed in order to satisfy growing demand in Rome, led to the rapid enrichment of the Nabataean population. The development of commercial trade routes gave the inhabitants of Petra easier access to rare products. They could afford rare goods from south Arabia or India, and may have offered these rare and precious products, such as imported perfumes and oils, as libations to commemorate the family dead.

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[48] McKenzie 1990: 46; Freyberger 1991: 8.
[49] Schmid, Huguenot, B'dool 2004.
[50] See the plan of the tomb in McKenzie 1990: pl. 153.

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The Dead Sea Scrolls: an Introduction

Sixty years after their discovery, the Dead Sea Scrolls are still a major field of research for Old Testament scholars, epigraphists of ancient Oriental languages and specialists in religion. This tentative introduction will refer to the fundamental work of F. M. Cross Jr (1980) '*The Ancient Library of Qumran*', the stimulating monograph of I. Knohl (2000) '*The Messiah before Jesus*', the problematic interpretation of J.-B. Humbert (1994) regarding the community of Qumrān and, finally, to the controversial significance of the cemeteries. However, the main objective of this introduction is to introduce Jordanian specialists to a hitherto neglected field of research for students of the history of Near Eastern religions and Semitic languages, mainly Aramaic and Mishnaic Hebrew. It is regrettable that for the sixty years during which the Dead Sea Scrolls have attracted global attention, including near-continuous conferences, meetings and colloquia, Jordanian participation has been almost non-existent. This unusual situation was recently acknowledged by H.E. Khaled Touqan, former Minister of Education and Higher Education. He encouraged the creation of a scientific committee, under the presidency of Prof. ʻOmar al-Ghoul of Yarmuk University, and the allocation of an office University of Jordan by Prof. ʻAdnan al-Bakhit, in order to follow up recent developments in Dead Sea Scroll studies and to build up a specialized library in this new centre. These decisions are highly appreciated and will hopefully stimulate student interest in the discoveries of Qumrān and its sectarian regulations.

This contribution will deal with the following items:

1. The circumstances of the discovery.
2. The excavation of Khirbat Qumrān.
3. The Congregation of Qumrān and its sectarian rules.
4. The Expectation of the Messiah.
5. The Copper Scroll.
6. The Cemeteries.

1- The Circumstances of the Discovery

The best accounts of the Dead Sea Scrolls discovery are by Trever (1948), who was Director of the American School of Oriental Research and invited the Syrian Orthodox Convent in Jerusalem to bring the four scrolls to the School to be photographed by him (Trever 1948: 3-24). Burrows published the different readings of the Isaiah Scroll (1948: 16-24). De Vaux, who was at the Ecole Biblique in Jerusalem, published detailed accounts of the discovery (1956: 73-84, 1967: 319-358). The story of these fascinating discoveries was widely circulated amongst scroll researchers and specialists in the archaeology of Qumrān.

At the beginning of 1947, a young shepherd, Muhammad adh-Dhib of the Taʻamra tribe of Bethlehem (FIG. 1a), was pasturing his flock of sheep and goats around the Dead Sea cliffs *ca*. 12km. south of Jericho. He was searching for a lost animal around 1300m. north of Khirbat Qumrān, when he discovered a cave in the cliffs with jars containing leather scrolls, carefully wrapped in linen tissue. Three scrolls were carried away by Muhammad adh-Dhib and were subsequently bought by Sukenike E.L. of the Hebrew University of Jerusalem. These were the War Scroll (IQM), the Thanks-giving Hymns (IQH) and the Isaiah Scroll (I Qlsab). Five other scrolls, which were collected by Muhammad and his cousin were acquired by the Bishop of the Jacobite community of Bethlehem through Khalil Iskandar Shahin, an antiquities dealer (known as Kando). These were the Isaiah Scroll, Manual of Discipline, Habakkuk Commentary, Lamech

1a. Muhammad adh-Dhib, after Lapp, P. and N. Discoveries in the Wadi ad-Daliah, 1974: Pl. 102a.

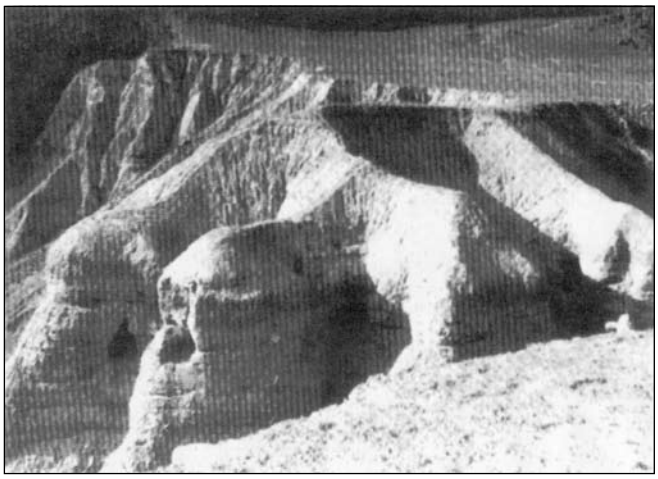
Apocalypse and some large fragments of Daniel (Charlesworth 1992: 36). The Bishop traveled to the U.S.A. with the scrolls and sold them in New York for $250,000 for the benefit of his community, building a church in Holland with the money. These scrolls were later acquired by the Hebrew University and are exhibited at the Shrine of the Book in west Jerusalem.

The hostilities between the Arabs and the Israelis during 1948 made exploration of the Dead Sea area very hazardous. Fortunately in 1949 — after the truce — Capt Lippens, a Belgium UN observer stationed at Ramallah on the West Bank of Jordan, commissioned the late Capt ʻAkkash az-Zabn of the Arab Legion to investigate the Dead Sea area and search for the cave where the scrolls were first found. Az-Zabn was interviewed by the author in 1981 at his villa in north ʻAmmān, when he stated that he went down to the Dead Sea and spent a week exploring the cliffs until he found a cave with broken jars. He took some sherds to the Palestine Archaeological Museum (PAM) and showed them to de Vaux, who was Director of the Ecole Biblique, and to Harding, then Director of the Department of Antiquities of Jordan. The sherds proved to be of the same type as the jars in which the scrolls were found. De Vaux and Harding then organized a campaign between 15 February and 5 March 1949 in order to excavate Cave I (de Vaux 1967: 219-221). They discovered the remains of about 50 jars with their lids and no less than 600 inscribed leather fragments, belonging to about 70 manuscripts (Laperrousaz 1961: 9). Cave Q4 (FIG. 1b) was rich in inscribed fragments but very poor in pottery. Similarly, Cave Q5 yielded inscribed material but not a single sherd (*op.cit.*: 337). In all, 11 caves were explored; five were found by bedu and six by the archaeologists.

2- A Summary of the Excavation Results

The first excavations were carried out in November and December 1951 under the supervision of Harding and de Vaux. The Department of Antiquities of Jordan invested 10.000 JD for the excavations and, subsequently, 15.000 JD to buy the two batches of scrolls stored in the Palestine Archaeological Museum. This generosity on the part of Jordan, despite budgetary constraints, was praised by the scholarly world (Field 2006: 46). Six campaigns were subsequently conducted by de Vaux alone, because of Harding's administrative responsibilities elsewhere.

The excavations were carried out on a marl terrace north of Wādī Qumrān. The western part of this terrace was a residential area, whereas the



1b. Cave 4, Qumrān (Photo courtesy of the Department of Antiquities of Jordan).

area during the second century BC. The reasons for this migration are not clear, but it was assumed that a group of fundamentalist Jews and priests left Jerusalem under the leadership of a priest, the Teacher of Righteousness. The motives for this retreat were inspired by the prophecy of Isaiah (40: 3): "*A voice cries out: Prepare in the wilderness a road for the Lord! Clear the way in the desert for our God*". Other reasons for their migration were 1) to follow their own schedule of feasts, using a solar calendar (IQS 10: 1-3) (see Charlesworth 1994: 3) rather than the lunar calendary of the Temple of Jerusalem, 2) to observe the regulations of purity and, most importantly, 3) to devote themselves to the study of the Law of Moses. According to the Rule of the Congregation (VIII: 12-15), "*When the times will come, they will depart away from the wicked men and will retire in the desert where they will prepare the way of the Lord*". However, Cross has surmised that "the origin of the Essene movement must be sought for in the struggle of rival priestly houses, the one hyperothodox and presumably legitimate, the other less orthodox but successful in gaining control of the high priesthood and the Jerusalem *cultus*" (1980: 129). This assumption is credible, given the fact that the Hasmonaean prince John Hyrcan (135-105BC) usurped the high priesthood and persecuted the Righteous Teacher, who was a Sadokite of the legitimate class, obliging him to migrate to Damascus.

3- The Sectarian Regulations of the Community

According to the testimony of classical authors, the community of Qumrān belonged to a group of Essenes. The earliest references are by Philo of Alexandria (30BC-45AD), Pliny the Elder, who devoted a paragraph (5: 73) in his *Natural History* (*ca*. 70AD) to the subject (see Magness 2002: 40) and Fl. Josephus, who describes how he joined the Essene community (*Life 10* 02: 40) and discusses their activities after 80AD in *Jewish Antiquities XII* (V: 9) and *War II* (VIII: 2) (see Vidal-Naquet 1977: 117-1630).

According to these authors, the Essenes were identified with a group of fundamentalist Jews. Philo of Alexandria derived their name from the Greek *osioi,* meaning "saint" or "pure", but another etymology was proposed by Dupont-Sommer (1967: 43), who derived the name from the Hebrew '*ezah*, meaning "party" or "council" (1980: 31, n. 3), equivalent to the Greek *essennoi* or *essaioi* (1967: 43). This term appears several times in the Scrolls, with the Essenes identifying themselves as "men of the council or of the congregation", i.e. the '*yaḥad'*. Alternatively, according to Puech (1998: 283), the name of the Qumrān community derives from *ḥsyn, ḥs'*, meaning "pious" (1989: 283).

It is clear that the Essenes practiced a communal way of life; de Vaux insisted that the Qumrān group lived as a community and that the residential buildings of Qumrān belonged to a "congregation". He emphasized this aspect of the Qumrān group and, as a result, his enemies accused him of comparing the Essenes to Christian monks. However, de Vaux asserted in his response to Driver that he never used the word "monastery" when writing about the Qumrān community (see Puech 1998: 283; Avi Yonah (1936) was the first scholar to use the term "monastery" in relation to the Dead Sea sect). It is true that they refused marriage in order to avoid "physical passions", but they were able to adopt young children, who were then able to receive their teaching. They considered themselves as the "real Israel", replacing the discredited high-priest-hood of Jerusalem and extending the regulations of the Sanctuary to their members.

An important practice was the precept of purity. This was an obsession they followed strictly; according to Fl. Josephus "*the Essenes purified themselves by immersion in cold water before the communal meal. Then after working without interruption to the fifth hour* (11H a d.)*, they reassemble in the same place and girded with linen loin cloth, bathe themselves in cold water. After this purification, they assemble in a special building to which no one is admitted who is not of the same faith. As soon as they sit in the refectory the baker distributes the bread in order and the cook helps with one bowl full of one meal. The priest recites a prayer and no one is allowed to taste the food before the end of the prayer. After the meal they recite another prayer, take off their pure and sacred clothes and return to their respective jobs until the evening. They return to the refectory and take their meal in the same manner*" *(War* 2: 129). These instructions are laid out in two documents: *The Rule of the Congregation* and *The Damascus Document*. According to these documents, membership of the congregation was open to any volunteer of Israel, following examination of his intelligence and aptitude to follow the discipline. If selected, he spent one year as

a novice after which, "*he draws closer to the way of life and partakes of the purer waters of Purification*" (*War* II: 138), the council would examine his case. If it was decided that he was close to the congregation, his possessions and revenue would be placed in the hands of the community's inspector, who registered them to his account. He would not participate in the communal meal before the second year, after which — suibject to examination by the council — he would sit regularly amongst his brothers.

4- The Expectation of the Messiah

After the Babylonian exile of 587 to 538BC, the population of Palestine expected a Messiah to deliver them from oppression at the hands of hostile invaders. This expectation became more pronounced during the Seleucid and Roman occupations of Palestine. Before Jesus of Nazareth, other Messiahs had appeared. The most famous was Menaḥem the Essene, who was a leader of his community during the reign of Herod the Great (30-4BC) and was a friend of this king. After Herod's death, Menahem revealed his messianic character (Knohl 2000: 58-66). He was excommunicated by Hillel, leader of the Pharisees, and Menaḥem organized a revolt under the reign of Archelaus. However, the "new king sent his cavalry against the rebels and three thousand people were killed" (Knohl 2000: 67). Menaḥem was most probably killed in this revolt. In his above-mentioned monograph, Knohl (2000) analysed the so-called *Messianic Hymns* of Qumrān Cave 4. In two of them, 4Q491 and 4QHe, the so-called *Self-Glorification Hymn* attributed to the Teacher of Righteousness, the writer "sees himself as possessing divine attributes" and "claims to be elevated above the angels and to sit on a throne in heaven", whilst at the same time viewing himself in the person of the "suffering servant" of *Isaiah* 53. This combination of the two Messiahs was unprecedented in Jewish religious tradition; according to Knohl, there is evidence "that the speaker in the hymn was a leader of the Qumrān sect who saw himself as the Messiah and was so regarded by his community" (*eod.loc*. 20).

Jesus of Nazareth was born in 4BC and crucified in 30AD. It is suggested by Knohl that Jesus identified himself with the "hero of the hymns" (*eod. loc*. 24-26). He combined the two concepts of the "suffering servant" and the one who was resurrected after three days (Knohl *eod. loc*. 26-29). This hypothesis of Knohl sheds significant light on the emergence of the early Christian church. The fact that the idea of a suffering and rising Messiah was unknown in the Biblical tradition but referred to in the above-mentioned *Messianic Hymns* "bear(s) witness to a messianic movement in the Qumrān community" (*eod. loc*. 86). Jesus of Nazareth was born a generation after Menaḥem the Essene. The Hebrew meaning of Menaḥem is equivalent to the Greek *paraclete*, or "comforter". When Jesus told his disciples at the Last Supper that he would send them another *paraclete* (John 16: 7), he was identifying himself as a second Menaḥem (Knohl *eod. loc*. 71). The supposed uniqueness of Christianity is therefore seriously undermined by the Qumrān messianic hymns.

In response to this assumption of Knohl's, it is admitted that Jesus identified himself with the "suffering servant" of *Isaiah* 53, who was raised from death. However, he also demonstrated that he was invested with supranatural authority when he healed a paralytic, telling him "your sins are forgiven" and informing the amazed Jews that he had authority to forgive sins on earth (*Mark* 2: 5-10). Knohl also suggests that the New Testament was influenced by the Roman eschatology, which believed that Emperor Augustus was *divi filius* or "son of god" (Knohl *eod. loc*.100). This may have been so, but Augustus as "son of god" had no aspirations to be a Messiah, or savior of mankind.

The Essenes anticipated the arrival of two Messiahs, 1) a king-Messiah, descendent of David and 2) a priest-Messiah, heir of the prophet Aaron (Collins 1998: 3-37). The arrival of these Messiahs were to have been presaged by 40 years' war between the sons of light and the sons of darkness. They, of course, considered themselves to be the sons of light, whose victory was predestined by God, because they believed in predestination, ressurection and the immortality of the soul (Humbert and Villeneuve 2006: 50). However, according to Starcky (1963: 455-481) who published a major article on the "Four Stages of Messianism at Qumrān", the Teacher of Righteousness was a persecuted priest who considered himself as restorer of the law, but who never claimed to be a savior of mankind or a Messiah.

5- The Copper Scroll (3Q15) (FIG. 2)

This is the most enigmatic of the Qumrān scrolls. It was discovered in Cave 3Q on 20 March 1952

2. The Copper Scrolls in Cave 3Q15 at the time of their discovery (Photo courtest of the Department of Antiquities of Jordan).

by the joint expedition of the Palestinian Archaeological Museum, Ecole Biblique and American School of Oriental Research. It was made of three sheets, each measuring 28-30cm. high and 80cm. wide, with the total width being 240cm. according to Kuhn (1954: 194), who was able to examine the scrolls in September 1953 whilst they were exhibited at the PAM. He deciphered part of the text and recognized that it dealt with hidden treasures of the Essene community (Kuhn 1954: 204).

Two sheets were originally riveted, whereas the third was rolled up (FIG. 2). They were completely oxidized, so much so that it was impossible to unroll them (Garcia Martinez 1994: 460). A decision was made to cut them into 23 cylindrical segments. The operation was successfully carried out at the University of Manchester by Wright-Baker (1962: 203-210), who invented a special saw and cut the sheets into strips. The procedure was supervised by Allegro J. M, who had been asked by the scientific team to prepare a transcription of the text in case of accident. He copied the text, made a translation and sent it to Harding. Later, he published a monograph on the Copper Scroll (Allegro 1960), but was severely rebuked by de Vaux (1961: 146-47) because he had not been authorized to publish the translation. Allegro believed that the treasures were genuine and belonged to the Qumrān community, or were a tithe offered to the Temple. Following the destruction of the Sanctuary, so Allegro's argument went, they were hidden, waiting for better days (1960: 68). With the help of a British newspaper, he organised a campaign to discover the hidden treasures but failed to find them. He was a free-thinking scholar who wrote anti-Semitic (1972) and anti-Christian books (1979) which ruined his career because he was discharged from the international team as a result. He retired to a British Isle, where he died in isolation in 1988.

Subsequently, the Copper Scroll was was worked on by J. T. Milik, who published a preliminary translation in *ADAJ 4-5* (1960: 137-155) and a final translation in Baillet, Milik and de Vaux (1962: 203-211). The 60 caches are described in detail. The quantities of precious metal involved are enormous: 4630 talents, equivalent to *ca*. 63 tons. De Vaux and Milik regarded the caches as legendary folkloric fantasies; the author of the Scroll was not experienced and made many linguistic and orthographic mistakes. It is unlikely that the resources of Palestine could have accumulated such an enormous quantity of precious metal in the 1st centuries BC-AD. For example, the fortune of Herod the Great at the time of his death in 4BC was equivalent to 760 talents, almost 4000 talents less than the treasures referred to by the Copper Scroll (Baillet *et al*. 1962: 283).

A more probable explanation for the riddle of the treasures of the Copper Scroll is that they were symbolic. After the Babylonian Exile (586-538BC), it would have been necessary to comfort the population of Palestine. By stating that the treasures of the Temple were hidden and that nothing was lost, it would have given them hope that normal life would start again and that the Temple could recover its ancient splendor (Humbert and Villeneuve 2006: 111-12).

In 1993-94, the Copper Scroll was restored by experts at the EDF Valectra laboratory in France and published in two volumes. Volume 1 deals with the technical analysis of the metal, the conservation methods employed and the production of a copy using galvanometry by the engineers Bizemeure and Lacoudre (2006). Volume 2, by Puech (2006) provides a new transliteration, translation and commentary in both English and French. The scrolls were returned to the Jordan Archaeological Museum where they are currently exhibited.

Interpretation of the Copper Scrolls and the Archaeology of Qumrān

In his interpretation of the Copper Scrolls, Puech (2006) argued that the treasures belonged to the Essenes. His arguments can be summarized as follows:

1) The treasures were hidden in the middle of the

first century AD, before the occupation of Palestine by Titus in 66-73AD.

2) The quantities of precious metal referred to are 1672 talents of silver, 362 talents of gold and 1504 talents of unspecified metal, possibly bronze.
3) The quantities of golden and silver bars are unspecified.
4) If the weight of a talent at this time was 5.7 grams, the total amount of precious metals amounts to 63 tons, rather than the 120 tons estimated by Milik and de Vaux (Puech 2006: 176ff).
5) According to Josephus (*Ant*. 18: 20), the number of the Essenes was around 4000 persons, amongst whom were priests. The Teacher of Righteousness himself was a priest, probably the son of Onias III. The priests received part of the tithe given to the Temple by each adult Jew. It is unlikely that they departed empty-handed when they left Jerusalem for Qumrān.
6) The localities mentioned in the Copper Scrolls are near Jerusalem or in the area of Jericho and Qumrān, which is mentioned four times in the Copper Scroll as Secacah (Magness 2002: 25) or Sokokah (Puech 2006: 175). Since Palestine was occupied by Titus in 66-73AD, only the Essenes could have access to those sites. The discovery of inscribed leather fragments with the Copper Scroll is another proof that they were hidden by the Qumrān community. The conclusion of Puech is that the treasures of the Copper Scrolls were genuine and belonged to the Essene community of Qumrān.

It is however surprising that Puech, who worked on the final publication of the Copper Scroll at the Ecole Biblique in Jerusalem, disregarded the above-mentioned statements of Milik and de Vaux (1962: 283) concerning the resources of Palestine. In the opinion of this author, the most reasonable interpretation of the Copper Scroll treasures is that they were only symbolic, as argued above.

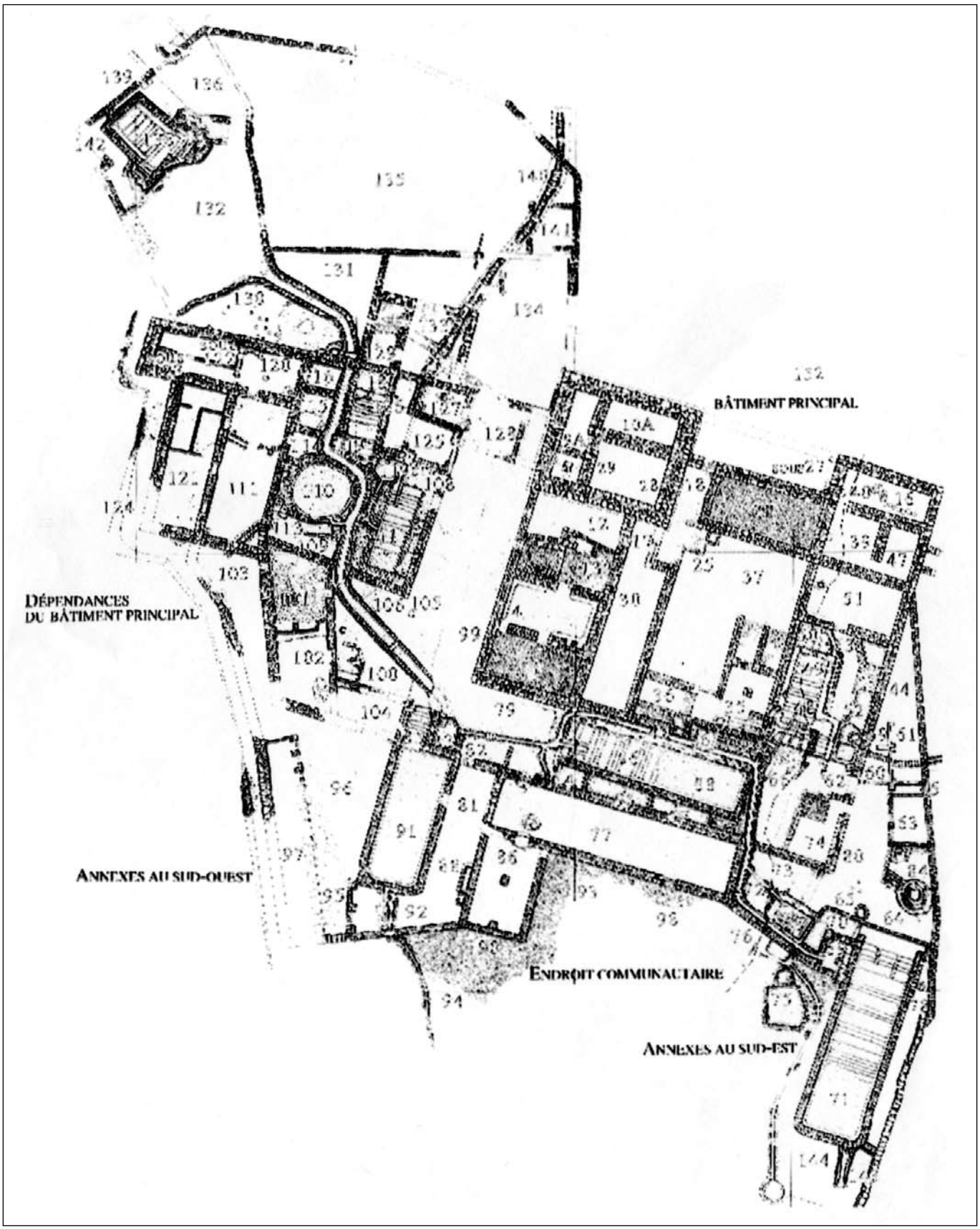
6- The Cemeteries

The cemeteries have been the subject of controversial debates. First, the number of the tombs has been reduced from somewhere between 1000 and 1200 down to around 700 (Kapera and Konik 2000: 35-49). They were located 50m. east of the settlements and were well-organized in quarters separated by alleyways. The graves were marked by stone heaps or cairns, delineated by a standing stone at head and feet (Humbert 1994: 181-82), and consisted of rectangular cists, with an internal shelf on which to place the body. At the south-western edge of the cemeteries, de Vaux discovered five tombs containing bones of women and children. They were buried east-west, with head facing south, whereas the adult men were buried north-south, with head facing south. The logical conclusion was that the graves of women and children belonged to *bedu* buried within the last 100 years, whereas the graves containing the men belonged to the Essenes, who were celibate and "*had the palm trees only, as company*" (Pliny 5. 73; Zias *op.cit*.: 49). However, according to Josephus (*War* 11: 160-61) there was an order of married men amongst the Essenes (Magness *op. cit*.: 163-167; Schuller 1994: 115-131).

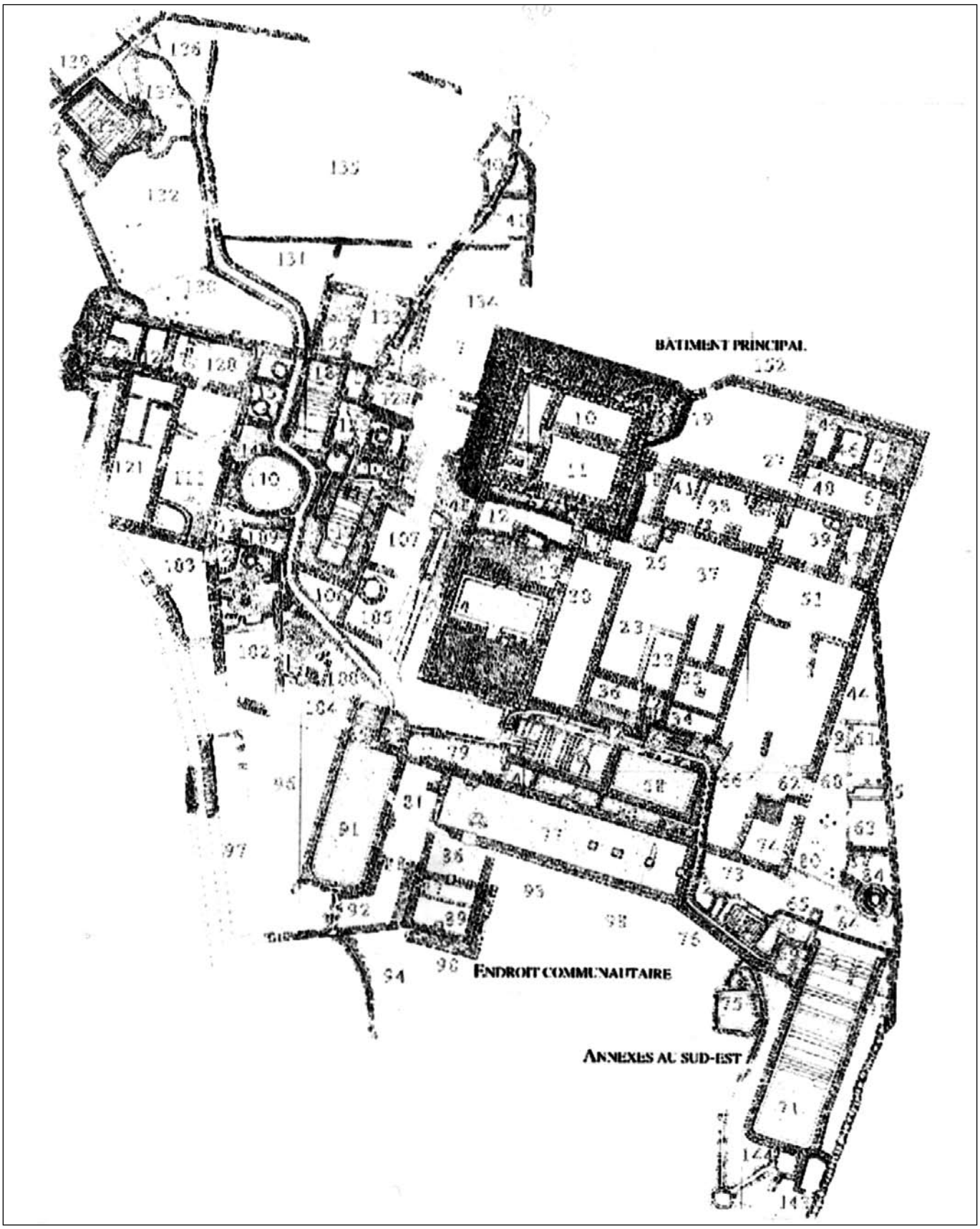
General Conclusions

This last assertion of Josephus was not taken into consideration by Golb (1995: 34), who affirms that the tombs "are obviously better interpreted as the graves of the warriors who fought at Qumrān". According to his hypothesis, the residential area of Qumrān was the centre of the Zealot resistance during the first Jewish revolt, of 66 to 73AD, and the tombs belonged to these warriors (*eod. loc*. 35-38). For him, the Scrolls were brought to the caves of Qumrān by fighters from Jerusalem. He did not take into account the scrolls most characteristic of the Essene community, e.g. *Rules of the Community*, *Damascus Document* or *Habakkuk Commentary,* in which the Essenes developed their doctrine.

This article will conclude with the hypothesis of Humbert (1994). He assumed that Qumrān was the cultic centre of the Essenes and that no more than 10 to 15 people lived on the site, arriving occasionally to offer libations and sacrifices. Locus 120 (FIGS. 3, 4) faced Jerusalem and could have been an Essene equivalent of the "holy of holies" in the Jerusalem Temple (1994: 195-96). In addition, long walls were noticed on the sea shore at ʻAyn Fishkha and east of the Qumrān esplanade (Humbert 1994: 207-09; Pls Ia-IIIa) which were interpreted as delineating the holy space. It is possible that sacred enclosures were built at Qumrān and ʻAyn Fishkha, but one should bear in mind that the whole Dead Sea depression, the so-called "Oriental Sea" or "Sea of Siddim" (Abel 1967: 498-505) was considered sacred in the Bible. It was in this depression that the kings of Sodom and Gomorrha perished (*Genesis* 14: 10). It is also the place to which God will send



3. Plan of the excavated settlement of Khirbat Qumrān during de Vaux's Period Ib (After Humbert and Chambon 1994: Pl. IV).



4. Plan of the excavated settlement of Khirbat Qumrān during de Vaux's Period II (After Humbert and Chambon 1994: Pl. V).

the vanguard of invaders from the north to be exterminated (*Joel* 2: 20). In his recent monograph with Villeneuve, Humbert (2006: 73-78) modified this hypothesis and referred instead to a communal centre at Qumrān. However, he proposed a new interpretation, i.e. Qumrān was originally a Hasmonaean villa and only became Essene during the reign of Herod the Great, not before 37BC (Humbert and Villeneuve 2006: 79). The cemetery is Essene, but was not used solely by the community of Qumrān, because some secondary burials were discovered. The cemetery could therefore be interpreted as the burial place of pious Essenes who wished to be laid to rest close to their sacred site (Humbert 1994: 182). This hypothesis does however suffer from several weaknesses. It has been demonstrated that Qumrān was not a villa belonging to some noble residents of Palestine (Magness 2002: 90-100). On the other hand, if Qumrān was indeed the cultic residence of the Essene community, the excavators should have uncovered more objects relating to the cult. The hundreds of pottery vessels discovered by de Vaux suggest that more than 10 to 15 people lived permanently at the site. The same objection applies to the various plastered basins, or *miqivaot*. Finally, one cannot but accept the interpretation of de Vaux, quoted by Magness (2002: 71): "Khirbet Qumran is not a village or a group of houses; it is the establishment of a community. We must be still more precise: this establishment was not designed as a community residence but rather for the carrying on some communical activities". Those activities were probably related to the study of the Law of Moses, copying of Biblical texts and their interpretation according to the doctrine of the Essenes. Other religious activities, such as libation and sacrifice, were also practised by the Essenes at the site, but it is difficult to conclude that it was only a meeting place for the cult.

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Ayla at the Millennium: Archaeology and History

"The city of Ayla is a great city on the shore of the salt sea and in it gather the pilgrims of Syria, Egypt, and the Maghreb. There are numerous merchants and common people" (al-Yaqubi 340).

Structure and Chronology

The archaeological project of the University of Chicago and Department of Antiquities of Jordan pursued the discovery of the early Islamic town in 'Aqaba from 1986 until 1995. These excavations produced the formal plan of Ayla, a foundation which presents important evidence for the earliest "Islamic city". One hypothesis is that this foundation was under the Caliph 'Uthmān ibn 'Affān (ca. 650AD), and this urban center might contain the earliest mosque, palace, and other elements.[1] The second historical episode with structural implications for Ayla was the 748 earthquake;[2] apparent evidence of this event ushered in a period of prosperity and trade under Abbasid influence (reconstruction and connections in ceramics, ie, storage jars are local, Iraqi blue-green, Far Eastern stoneware). This seems the civilized apogee witnessed and described by al-Muqaddasi in the late 10th century, historically known as the late Abbasid or Fatimid period.

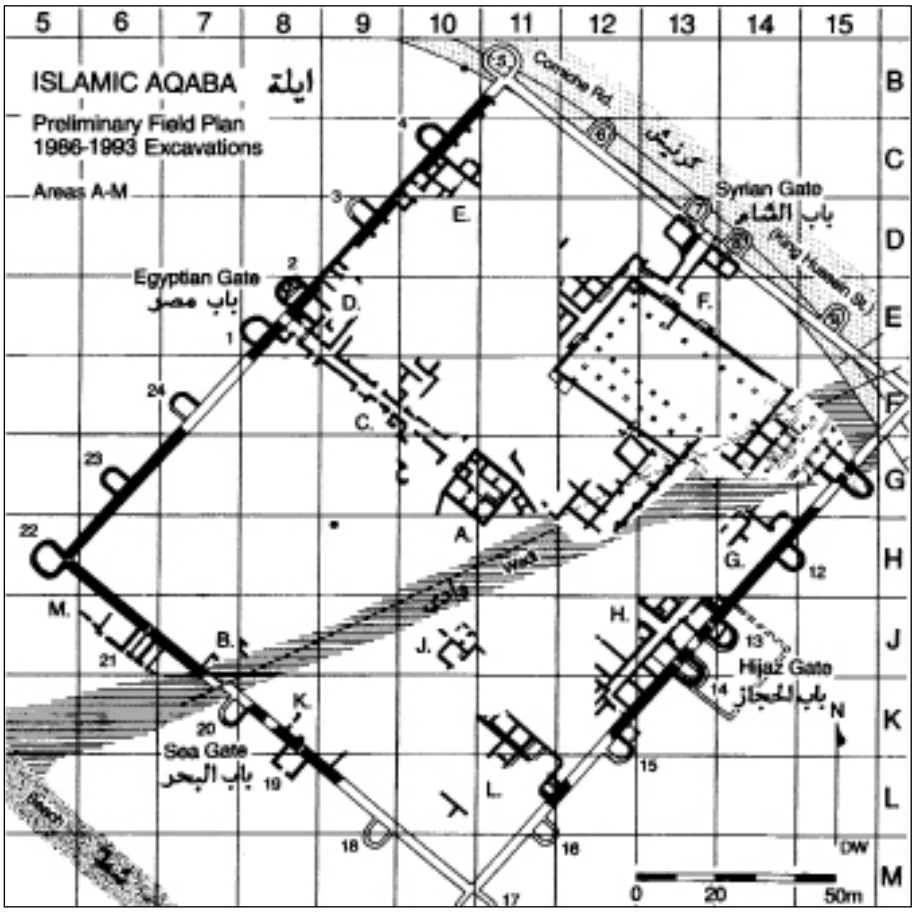
The structure and character of the mature city in its latest period of decline has not been discussed in detail. Yet this remains the last chapter in the cyclical history of the city, the logical outcome of a foundation with the beginnings of Islam, the sophisticated prosperity of the Caliphal empire of the Abbasids, and the complexities of a changing world of the medieval world of the Fatimids and other dynasties. Archaeological data gives evidence of these social stresses, symbolized in the odd juxtaposition of a lustre bowl of a man with a turban and humble tupperware, a handmade product imitating products of the Chalcolithic era, some four millennia earlier. This was an untidy period when causes may be evoked from historical records: the sacking of the town in 1024 by the Banu Jarrah, the extraordinary violence of the 1068 earthquake, and attack of Crusaders in 1116. An archaeological perspective allows a more nuanced documentation for the experience of Ayla, and by extension the nature of cities and their populations during these times.

Archaeological Sequences

One may begin with a chart of the periodizations of the history and archaeology from the perspective of the Ayla excavations. The archaeological periods seemed to fall into Early Islamic 1, Early Islamic 2, and Middle Islamic 1 at the time of the excavations; the historical periods differed in a random fashion (FIG. 1). More recently it appears to the author that the seventh century and the eleventh centuries should be considered archaeological transitions and the intervening centuries labeled Early Islamic 1, 2, and 3. This provides a very good fit with the presumed dating of the archaeological phases on the site of Ayla. The chart also indicates a cultural lag of perhaps fifty years of material culture after significant historical change. Finally it might be noted that this city was both founded in a period of transition and ceased during an even longer period

[1] Walmsley 2007: 94-95; most scholars are more comfortable with an Umayyad, and preferably Marwanid, date for this urban beginning in keeping with traditional interpretations.

[2] One is reluctant to rely on earthquakes excessively as a chronological mechanism in archaeology. Nevertheless, the quakes of 748 and especially 1068 (for which the epicenter was at the head of the gulf of Aqaba) were particularly affective for the stratigraphy. A recent citation to the earthquake of 873 at Ayla may be more questionable (see al-Tarazi and Korjenkov 2007).



1. Archaeological phases in the Ayla excavations, compared to historical and archaeological periodizations.

of transition, or perhaps better, decline. The purpose of this paper is to attempt a preliminary understanding of this penultimate phenomenon through a brief description of select architectureal features, following each not as it was excavated but as the strata were deposited.

1. The Square Tower

This was tower 19 on the sea wall (Area K, L8b), which flanked Sea Gate of Ayla to the southeast. This tower presented an anomaly and, as such, demanded to be investigated; it was completely excavated in 1989 (Whitcomb 1995). The original U-shape tower was found near the water-table (Whitcomb 2006; FIG. 2). This tower was replaced by a square building using the original walls, which may have been damaged by the 748 earthquake. The interior had a plaster floor and was subdivided into a series of bins; this was replaced by a second floor and bins. Likewise the doorway showed two construction phases of continued use as a shop above the beach facing the sea during the Abbasid period (phase C).

The decline of this structure was in two phases the first characterized some fallen debris and dark brown occupation materials (phase D). The final collapse of this structure was a massive stone fall from the city wall (FIG. 3) accompanied by ca. 1.5-2m of late Abbasid or Fatimid depositions (phase E), including a Fatimid dirham (L8b-3, RN 464). One storage jar with vertical lines of an impressed Kufic inscription (identical with a jar from Area C; RN 87-1564) may been suggested to imitate Chinese painted jar inscriptions. An 11th century date is reinforced by the presence of Qingbai ceramics.

The square tower was one of a series of shops along the beach front. A first interpretation as concession stands for Abbasid tourists yielded to a more serious attention to sea-borne commerce commonly associated with the Fatimid revival of Red Sea trade. The Sea Gate which is wider that other gates may be expected to have led directly to warehouses (still to be uncovered).

2. The Central Pavilion

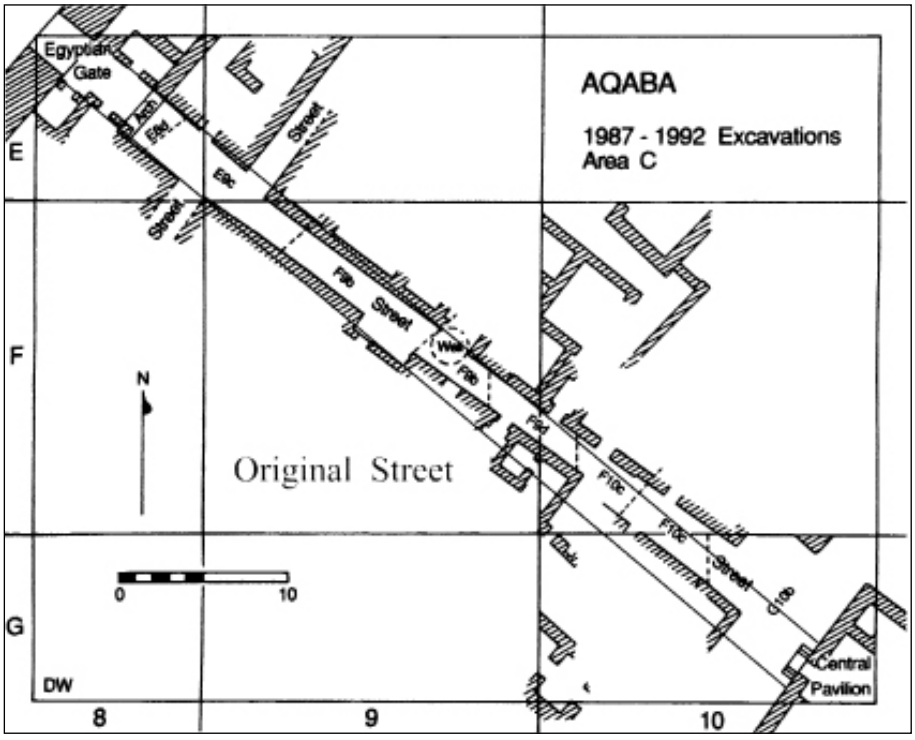
The central building for the entire city was discov-

2. The square tower, showing the original U-shaped tower, door through the city wall, and water table.

ered and completely excavated in 1987 (Area A, G10-G11; Whitcomb 1988). Further excavation on the southeast exterior revealed jambs and the arch of a tetrapylon (confirmed with a partial arch in the wall of the south west iwan; FIG. 4). The entire building was reinterpreted using the walls (but filling the arches) and laying new floors. The layers associated with these floors had earliest glazes and Mahesh wares, giving a ca. 750 date, also consistent with the 748 earthquake.

The new building would seem typical of a residential structure: entered from a formal stairway and door into a bent axis, past a corner lavatory,

4. The southeast wall of the Central Pavilion, showing original arch and late blockage.



3. The square tower, showing fallen stone debris in upper levels (with Hugh Barnes).

into a central yard with its own well; on the south east was a formal iwan with frescoes and two side chambers; and on the northeast was a kitchen, storeroom, and stairway to the roof (FIG. 5). One suspects this was kept clean and functioning for a considerable period of time (perhaps much of phase C).

The artifacts indicate destruction through burning, though relative lack of objects *in situ* does not suggest sudden violence (FIG. 6). Indeed, there seem to be secondary depositions before and during the disintegration of the mud brick upper walls (and vaulting?). The occupation on the floor antecedent to ash deposition is more difficult to determine but should fall within the 10th century and probably the latter half (phase D). While these depositions have some Abbasid materials, the presence of Fatimid storage jars and "tupperware" (Whitcomb 1988, fig. 5a-i)[3] suggest that deposition ended near the beginning of the 12th century that is during phase E transition.

3. The Egyptian Street

The original plan of the town seems to have stipulated main, axial streets, running from the gates to the crossing through the tetrapylon (FIG. 7). As we shall see in the Egyptian gate, the foundation street was some 3+ meters in width (Area C, E8d, E9c, F9b, F9d, F10c, G10b; Whitcomb 1995). A deep test was excavated in 1987 in F9d, over four meters deep to the original street level (FIG. 8). It

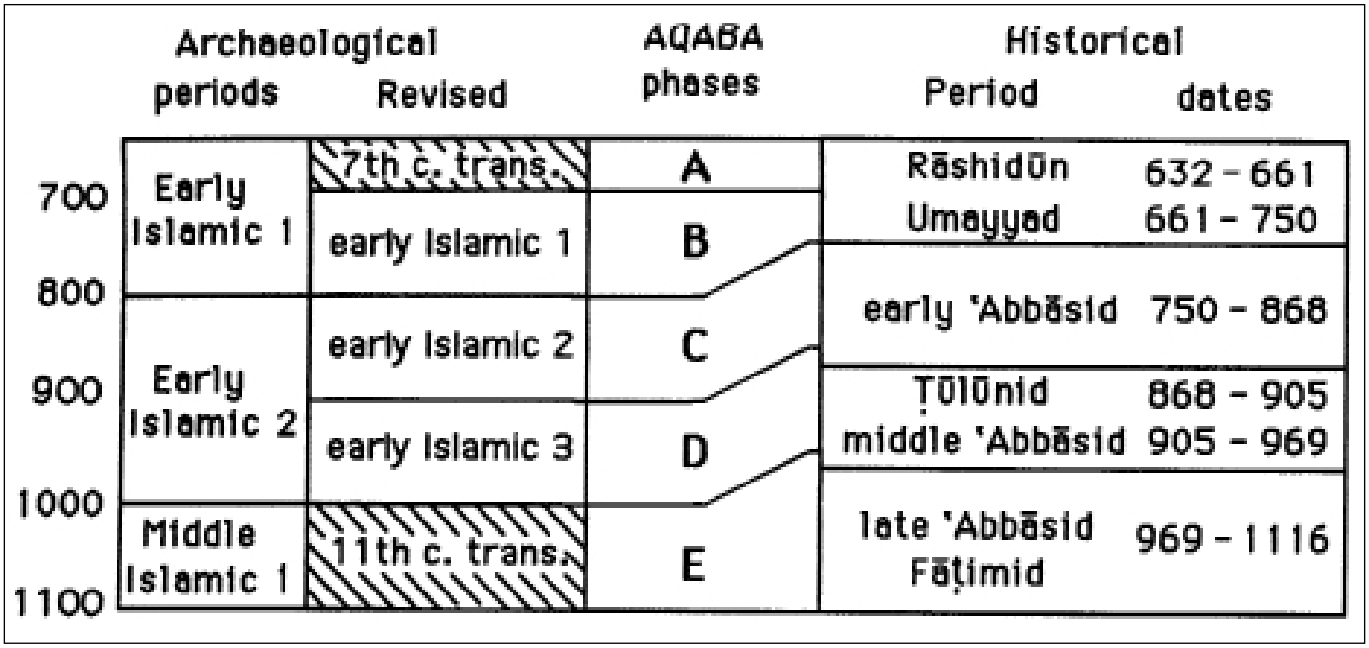
5. Plan of the Central Pavilion building.

6. The Central Pavilion building, from the north corner looking south.

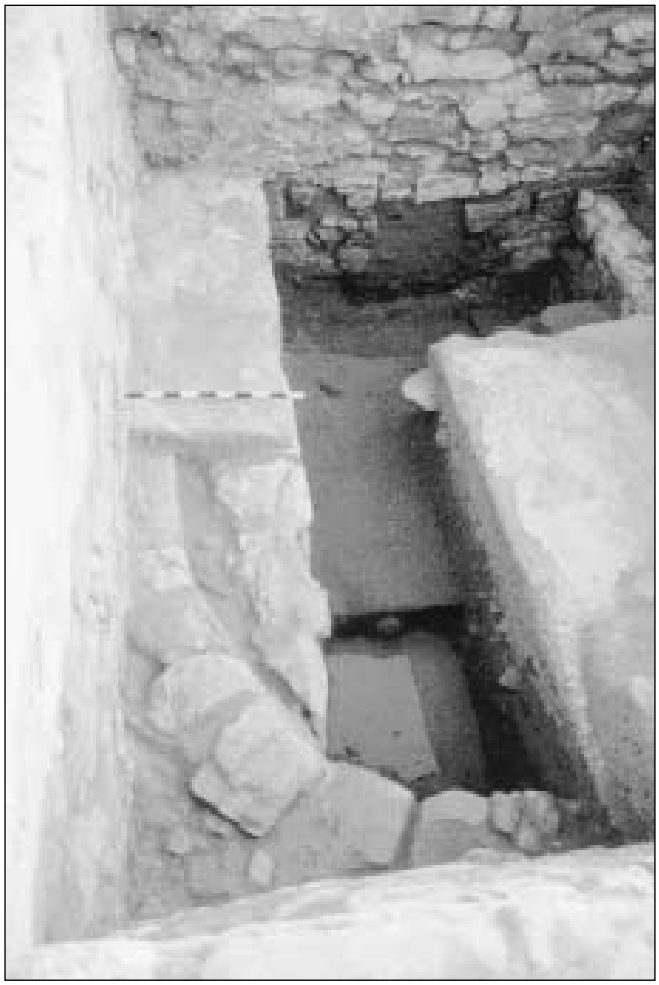
was clear from the excavation that subsequent rebuildings of adjacent structures tended to encroach upon the width of the street; and as the street tended to become increasingly narrow as time passed, its alignment was likewise less measured and more crooked (FIG. 9). As might be expected, a street is kept relatively clean and is not a prime location for datable artifacts.

Nevertheless the latest building phase may be characterized by the street façades and their attached structures. These latest walls, which came just to the surface of the ground, were a patchwork of granite cobbles with limestone facing only the door and window openings. This façade opened onto passages and a large courtyard entirely con-

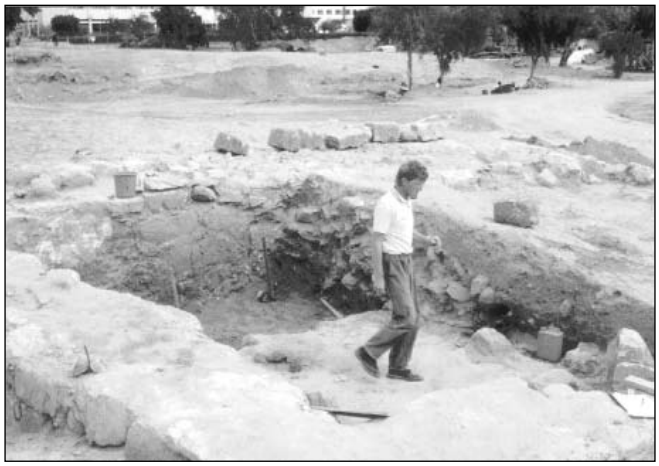
[3] These hand-made wares, very common during the last period, have prompted much discussion. The simple forms of bowls, cups, and small jars seem to be modular and can nest in sets (prompting the nickname). Many were made with little or no vegetal temper and have been repaired; often impressions of reed matting are found on the base. A number of pieces, particularly small bowls, have irregular decorations in red paint and may represent the beginnings of painted geometric tradition, a recognized characteristic of the following Ayyubid-Mamluk era (FIG. 16).



7. General plan of the Ayla excavations, 1986-1993.



8. Section across the Egyptian Street (F9d), showing stone façades of buildings.



9. Plan of the Egyptian Street, showing the original alignment between the Egyptian Gate and Central Pavilion.

structed of mudbrick. Within the courtyard were several bread ovens (*ṭābūn*) placed near the walls. A large flat stone was nearby, apparently used for making the bread; upon turning it over, this proved to be a tenth century tombstone. Naturally most of the ceramics were cooking vessels but among the other refuse were a number of Qingbai sherds of the 11th century.

4. The Egyptian Gate and Inner Arch

The arch crossing the Egyptian Street was semi-circular and apparently identical to the original arch of the Egyptian Gate (see below). The two arches seem to have formed a vestibule between

the gate and the town proper, though its precise form is now obscured with later walls. Both to the southeast (Area C, E8d-31-35, excavated in 1989) and to the northwest (Area D; E8d-6-24, excavated in 1987) one have walls constructed of alternating layers (each of two to four courses) of limestone and basalt stones. This decorative use of stones, known as ablaq, is most typical of Ayyubid and later architecture (and thus stratigraphically impossible); an alternative derivation might be from Byzantine architecture (with courses of stone and baked brick).[4] The decorative walls narrowed the street filling the vestibule with a series of shops (FIG. 10) and, beyond the arch, a large building with benches (mastaba) on either side of a doorway (FIG. 11). On both sides of the inner arch, the latest street level, upon which there was fallen stone and refuse, was usually 1.75m below surface and contained 11th century materials (phase E; Whitcomb 1995: fig. 3).

10. Northwest face of inner arch, showing ablaq walls of shops in the earlier vestibule.

The Egyptian Gate began as a formal structure; the northwest entry into the city was a grand affair, over 3m in width with carefully carved voussoirs in its rounded arch (FIG. 12). Architectural alterations to this city gate may be balanced with a stratigraphic sequence (Area A; E8a-4-38). Soon after its completion, the width of the gate was deemed excessive and cut in half; a rounded column was placed in the center and the north side blocked. A series of walls were placed against the flanking towers, forming small rooms or shops on either side of the narrowed, exterior street (not unlike the interior shops described above, but without decoration).

Abbasid artifacts were antecedent to a definitive break in this early gate sequence. New walls formed reconstructed shops and, more importantly, complete blockage of the gate with rubble formed the foundation for a redesigned gate. This must represent the destruction of an earthquake, presumably that of 1068 to judge from subsequent artifacts. This destruction must have brought down the wall above the gate and the blocks of the Ayat al-Kursi (FIG. 13).[5] The rooms between the towers were replaced, but the gate itself was reconstructed as a narrow doorway with pointed arch (partially reusing very old voussoirs). This last gate gradually filled to a higher threshold with a basalt pipe of drain running through it[6]. These latest layers (E8a-9-20) are marked with Fatimid materials of the late 10th and 11th centuries.

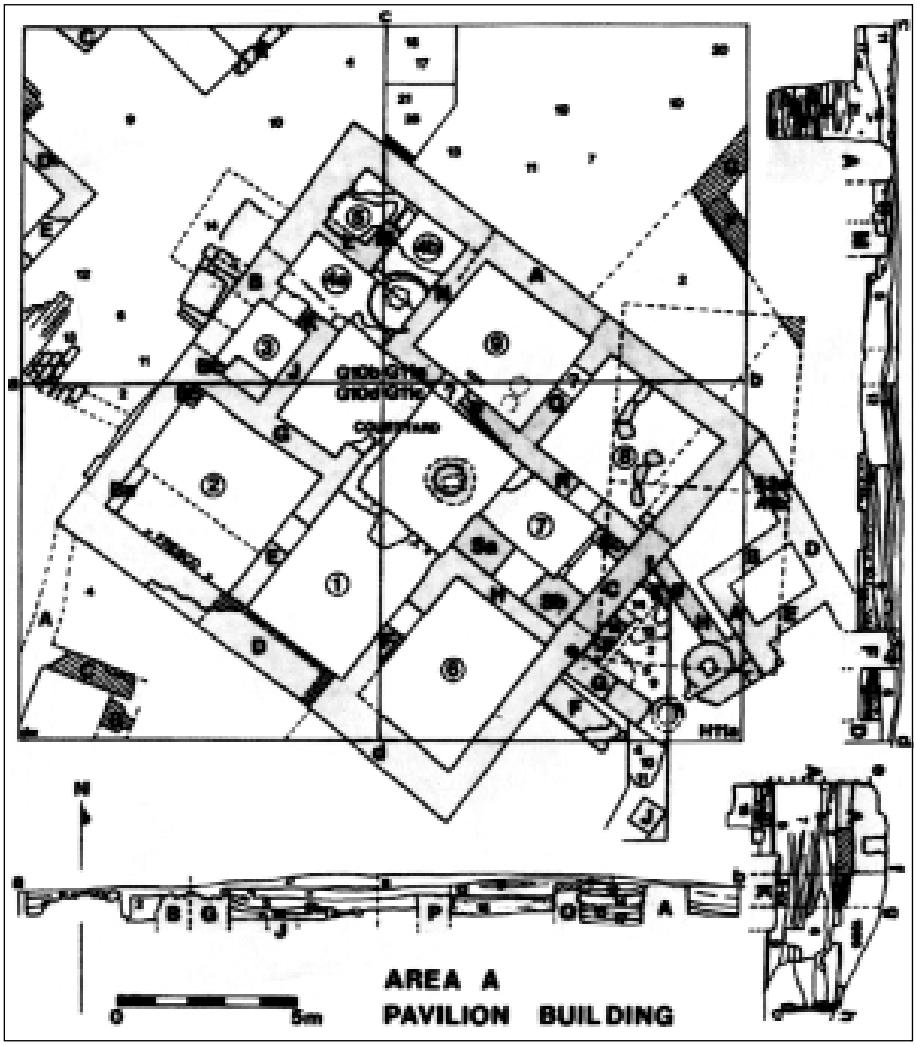
5. The Syrian Street

In 1992 an effort was made to investigate the Syrian Gate (Area F; D13; Whitcomb 1993). This was complicated by the fact that the Corniche sidewalk and roadway passed over the gate and towers (and a water pipe was laid onto the wall itself; FIG. 14). Nevertheless the inner face of the gate and entry into tower 7 were exposed. Most of the excava-

[4] An even more interesting speculation might be a derivation from al-Ablaq, the name of a pre-Islamic castle near Tayma, some 400 km to the southeast. Whether Byzantine or Hijazi in inspiration, one must accept an early use of ablaq decoration at Ayla.

[5] This inscription must date to the original construction with its early Kufic lettering; it seems to have suffered earlier *in situ* damage from cracked stones and re-carving of block J (FIG. 13) surface with a more cursive script after spalling of the original.

[6] The excavations of the Sea Gate in 1988 (Area K, K8c, K8d) revealed a remarkably similar architectural and stratigraphic history of replacement by narrowed gates over time.



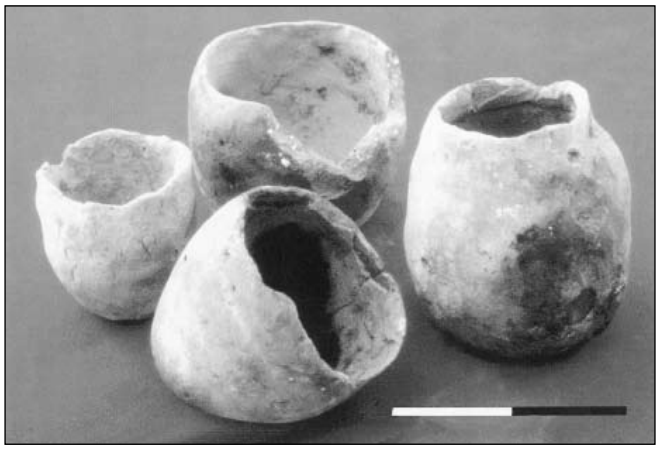
11. Building with ablaq and blocked doorway, east of inner arch (E8d, E9c).

12. Exterior of the Egyptian Gate, showing original wide gate with arch, early blockage of half with column, complete blocking preceding insertion of narrow doorway and pointed arch.

13. The Ayat al-Kursi inscription, originally above the Egyptian Gate, showing cursive repairs to Kufic original.

tions concentrated on the latest phase of the flanking rooms of the Syrian street, connecting the gate to the northeast entry into the mosque (Whitcomb 1994a). As seen above in the Egyptian Gate, by the Fatimid period (phase E), this street had narrowed and a drain passed through the Syrian gate. Less than 20cm from the surface in this upper street the Ayla hoard was found; this was a purse of 32 coins

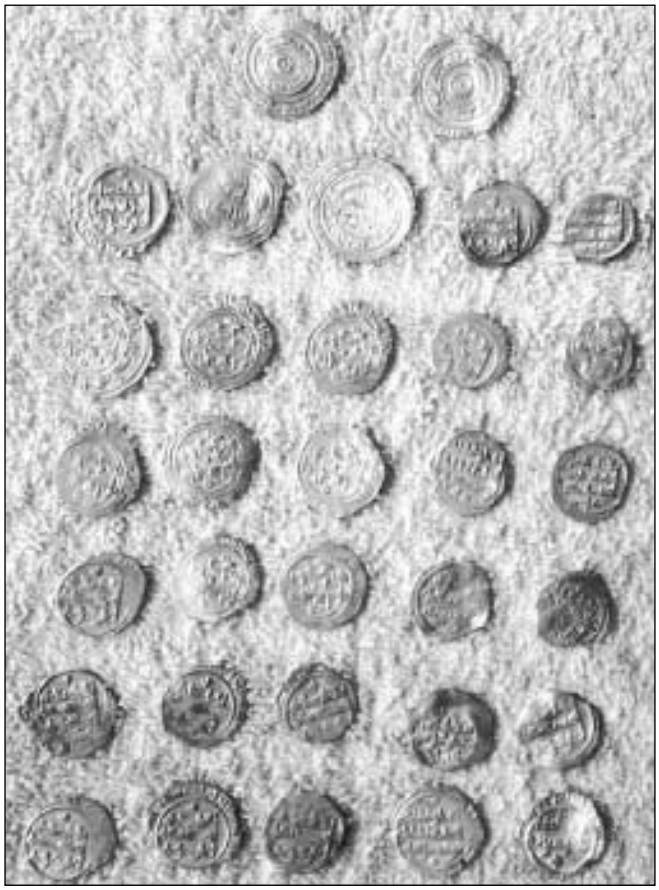
14. The Syrian Street looking northeast toward modern Corniche (city wall lies beneath modern pipes).



16: Examples of common, handmade vessels, called "tupperware".

minted at Sijilmasa in north Africa (now located in southern Morocco; Whitcomb 1994b).

The twenty-nine of these dinars minted at Sijilmasa (FIG. 15) were uncirculated, all die-linked and attributed to Khazrunid vassals of the Spanish Umayyads (976-1055).[7] Three Fatimid coins seem to have been added in Qayrawan, Tunesia (all datable from 970 to 1004); these additional coins would seem to have been necessary to create a purse of 30 dinar value (possibly sealed by an exchange in Qayrawan). The purse might have been lost by a pilgrim from Morocco on his way to Mecca; but the find-spot in the middle of a main street might suggest deposition at night. One might construct an historical narrative to account for this discovery: that the purse was hidden during the attack on the Maghrebi (north African) pilgrimage of the year 1024; this attack by the Banu Jarrah, who were in revolt against the Fatimids, is said to have acquired slaves and 3000 dinars. This narrative might account for this curious discovery, but its broader implication is the continuing connection of Ayla with the commercial (if not pilgrim) interactions across the Islamic world, even during its (relative) decline.



15. The Ayla hoard found in the Syrian Street, with 29 coins from Sijilmasa and three from Qayrawan.

Summary

The archaeology of Ayla ('Aqaba) has been studied for its foundation and prosperity, that is, its role in the history of urbanism in the Middle East. After less than four hundred years this complex of institutions, the population force in political and economic life of the head of the Gulf, declined and ceased. Archaeological excavation has an irony in beginning at the ending, and therefore that most elusive phase in its cultural history lies just beneath its present surface. This was composed of destruction debris associated with large amounts

[7] These coins are discussed in a numismatic study by Choukri Heddouchi, The Medieval Coins of Sijilmasa, Morocco: A History of the Mint and its Minting Techniques. M.A. thesis, Middle Tennessee State University, 1998.

of trash accumulation within the first 1-1.5m. Virtually all-Chinese sherds have been found in this phase in Ayla (FIG. 17), coinciding with the much vaunted opening of the Red Sea to Indian Ocean and Far Eastern trade under the Fatimids. Chinese and Fatimid luxury wares (e.g., lustre; FIG. 18) are in sharp contrast with the declining quality of life (an economic contradiction explored in Whitcomb 2001, 510).

What is the role of Ayla for the archeology of Jordan? Ayla was debated as a having a mixed identity in Muqaddasi's presentation: did this port belong to Egypt, the Hijaz or Bīlād ash-Shām? Could regional interactions in its final phase be expressed as diverse social identitifications, that is, with the Fatimids, Seljuqs or Bedouin tribes? Regional contributions during the preceding Abbasid prosperity were probably similar but less dramatic in comparison to the disfunctional pressures of this transitional period. Both documentary and archaeological evidence agree to the anomaly of commercial expansion and social collapse during this period. Morony's recent study of Arabia in the 11th century notes that "drought and famine in the Hijaz caused emigration and the cancellation of Hajj caravans" (n.d.). At the same time, al-Idrisi calls Ayla a small town and center of bedouin trade that was soon abandoned (al-Wohaibi 1973: 49, 51). More generalized regional social problems and disruption of occupational patterns may be directly reflected in the breakdown in the sanitation system of this town.

17. Examples of Chinese porcelains, especially Qingbai and Sung incised wares.

18. "The Man with a Turban," a luster-ware sherd from Fatimid Egypt.

Walmsley has demonstrated the new archaeological interest and evidence being brought to bear on the Fatimid period in Jordan (2001). He cites the results from Ayla in parallel with those from the citadel in ʻAmmān. In both cases, the implications remain to be fully analyzed. Indeed, the half-century both before and after the millennium show dramatic developments in urban organization. Damgaard has recently shown, in his new excavations at Ayla, the presence of a wide, subsidiary street maintaining the original grid of the city (n.d., 6). This may be balanced with the "massive urban dislocation" apparently attributable to the 1068 earthquake (Walmsley 2001: 524). Clearly the archaeology of Ayla reflects the complex events of the latest period, one, which held both prosperity and decline as minor fortunes typical of most historical periods. The common tendency of archaeologists to seek the beginnings (or "origins") and most famous epochs may lead to neglect of interesting transitions which may be of more value to broad historical understandings. These are their true contributions of archaeology to the medieval history of Jordan.

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The Ethnic Origin of the Edomites*

In arguing for the ethnic origin of the Edomites, I am only following the conclusions of the late Michael Avi-Yonah, who understood they were an Arab people[1].

Unlike the Hurrians, whom they displaced and replaced, the Edomites were a Semitic people who belonged to the waves of Semitic migrations from the Arabian peninsula to the Fertile Crescent, such as the Ammorites, the Canaanites and the Aramaeans. But more relevantly, they can be placed amongst the groups of Arab peoples to be found in Trans-Jordan during this period, such as the Ammonites and the Moabites, who erupted into in what might be called Trans-Jordania Tripartita through its two gateways, Wādī Sirḥān and the Tabukiyya in northern Ḥijāz. The Jews rejected them as Israelites, so what else could they have been but Arabs, in the sense of whatever the term meant in that period? They were as Arab as the Ammonites and the Moabites, both considered Arab peoples, perhaps even more so as they lived even farther to the south than either of these two peoples, in the deepest southern corner of the Fertile Crescent, immediately adjacent to Arabia and its two gateways.

Part I

In support of Avi-Yonah's position, attention may be drawn to the fact that the term "Edom" is close to Duma, one of the twelve sons of Ishmael in the Bible[2], and is also a toponym for a well-known location at the mouth of Wādī Sirḥān in northern Arabia. The Table of Nations in Genesis is not always accurate but in this case it appears to be so, at least in the sense that it assigns Duma to the sons of Ishmael, who are — it is generally recognized — the Arabs. This is the extent of the value of Genesis. But the toponym, Duma, is more important than the personal name in Genesis, since if the toponym is identified with the term "Edom" then the Arab and Arabian origin of the Edomites can be inferred without the help of the Bible.

"Edom" is phonetically close to Duma and the presumption is that the Arab (again, in the sense of whatever the term meant in that period) people who inhabited the location moved through Wādī Sirḥān, one of the gateways of Bilād ash-Shām, and into southern Jordan, whence they were driven into Palestine by the Nabataeans. Identifying Edom with Duma not only relates the Edomites to the Arabs but also points to their exact provenance in Arabia, whence they came. As a result, the Edomites cease to be a people who suddenly appeared in Jordan and Palestine, whose antecedents before that time remained obscure. As is well known, Dumat was the center of an important Arab kingdom whose kings and queens are known, and whose relations with the powerful Semitic empires of Mesopotamia are also known from inscriptions[3]. They were in possession of a strategic site in northern Arabia, hence the campaigns against them by the rulers of Mesopotamia.

The identification of Duma with Edom, despite the phonetic closeness of the two terms, may still

*The article is essentially the same as the paper read at the 10th International Conference on the History and Archaeology of Jordan, held in Washington DC between 23 and 28 May 2007. It therefore retains some features peculiar to oral delivery. Notes are reduced to a minimum, since the thrust of the article is to bring together some well-known facts in support of the argument for an Arab origin of the Edomites.

[1] Avi-Yonah, M., *The Holy Land: A Historical Geography* (Grand Rapids, Michigan, 1966), pp. 25, 61-62, 65, repeated on the same pages of the most recent edition of the book (Carta, Jerusalem, 2002).

[2] Genesis, 25:14.

[3] On Duma and the Assyrian kings, see Eph`al, I., *The Ancient Arabs* (The Magnes Press, The Hebrew University, Jerusalem, 1982), pp.118-142.

be doubtful as the initial plosive sound (E) or (A) is missing in Duma, although two consonants of the tri-literal root are present. This brings me to the second new item, which clinches the identification, namely, the fact that Duma was originally pronounced Aduma or Adummatu with the initial plosive sound, which is how it appears in the inscriptions of the Assyrian kings. The site or place called Aduma or Addummato thus relieves Duma of its apocopated status and confirms the identification of Arabian Adumma with Biblical Edom, that of Jeremiah, Ezekiel and Josephus, on phonetic grounds. This carries important implications for the history of Edom, initially in Arabia and later in the Fertile Crescent, where the Edomoites settled first in southern Jordan but were then forced into southern Palestine by the Nabataeans. These two stages may be summarized as follows:

1- The identification provides Biblical Edom with an Arabian historical background in which it was not a minor entity, but a power in Arabia, the center of which was the strategic site of Duma, later called Dumat al-Jandal. The best evidence, the epigraphic, provides details of their life and history. One of the Assyrian inscriptions, that of Esarhaddon, states how his father Sennecherib conquered Duma and captured its queen, along with images of its deities[4]. Their having been a respectable force in Arabia might explain why the Edomites were able to retain their identity when they settled in the Fertile Crescent (and later produced forceful personalities during the Herodian period).

2- The identification could also explain why the Edomites left their ancestral home in Arabia and moved to the Fertile Crescent. Their center, Dumat al-Jandal, attracted the unwelcome attention of the powerful Mesopotamian empire of the Assyrians, who terrorized the Fertile Crescent and Arabia. As a result, all or most of them decided to move on.

3- The move to the Fertile Crescent might also explain their name. What they called themselves when they were domiciled in Duma is not clear, but after they left it and moved into the Fertile Crescent they were known as "Edomites". When peoples or individuals move they are often referred to by the place they came from. The Arab world is full of families who derived their names from the towns or regions they had come from, e.g. Beiruti, Tarabulsi, Halabi.

It is noteworthy that after the Edomites moved, their name retained the initial plosive sound (A) or (E), a sure sign of their place of origin. But the laws of phonetics eventually caught up with the Arabian toponym, which after centuries appeared elided and apocopated as Duma, a common feature in the colloquial pronunciation of Arabic names.

The movement of this Arabian people from Duma in the peninsula to the Edom of Jordan and Palestine, as well as their adoption of the name Edom, is paralleled by the movement of another Arab people from roughly the same area of the peninsula to the Fertile Crescent in the 5th century AD. This reveals a recurring pattern of migration and will strengthen the conclusions about the movement of the Edomites reached in this paper. This later movement is that of the Salihids, or Zokomids, the Arab *foederati* who lived in what had become the Byzantine *Provincia Arabia*. They had emigrated from a place referred to in Ptolemy's *Geography* as Zagmais, which the indefatigable explorer Alois Musil located in Wādī Sirḥān and which was correctly identified with the Arabic name of the Daja'am group[5]. This group was also named after a toponym, Daj'am, in the Arabic broken plural form of Daja'ima. The history of this group is doubly relevant to that of the Edomites in the sense that they too were subsequently displaced and replaced by the superior power of another Arab group, the Ghassanids[6], in much the same way that the Edomites were later displaced and replaced the Nabateans. Thus, a pattern can be seen in the movement of Arab peoples during the pre-Islamic period, out of the Arabian peninsula and into the Fertile Crescent owing, at least in part, to political and military pressure.

So much for the history of Edom in its Arabian phase, which the identification of Biblical Edom with Assyrian / Arabian Duma or Adummatu has made possible. Biblical Edom will now be discussed in the context of the light shed upon it by its Arabian predecessor.

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4 For an English version of one inscription in which the Assyrian Esarhaddon refers to his father Sennacherib's conquest of Adummatu and the capture of its queen, see Hoyland, R. *Arabia and the Arabs* (Routledge, London and New York, 2001), pp. 133-134.

5 For this toponym in Ptolemy, see his *Geography,* ed. C. Muller (Paris), vol. I, part 2, p. 1016, and the present writer in *Byzantium and the Arabs in the Fifth Century*, Dumbarton Oaks, (Washington DC, 1989), p. 246, n. 66.

6 See *ibid*., pp. 282-289.

Part II

The second stage in the history of Edom is well-known, as it became part of Roman and Jewish history for some two centuries, from the settlement of Pompey in 63BC, and is mentioned in literary rather than epigraphic sources[7], which had been the case during the first phase of its history. The new light thrown on the history of the Edomites by the identification of Edom with Duma calls for a new approach to their history and is a challenge to the cultural analyst. The new approach consists of disentangling Edomite history from Roman and Jewish history, placing it in its pre-Islamic Arab context. This will be a truly new approach to Edomite history, which historians have typically linked to Roman and Jewish history, recorded as it was by a major Jewish historian: Josephus. This process should not be difficult, as the Jews utterly rejected the Edomites as non-Israelites who overthrew their own Hasmonean dynasty and, through Roman power, ruled oppressively. Indeed, the name Edom became the name for hated Rome itself in Jewish writings. What then is the new context within which the history of the Edomites, as an Arab people, can be understood?

The main factor which affected these Arab peoples during the period in question was the constant gravitational pull which the Fertile Crescent, with its material and cultural wealth, exerted on those who lived in the arid Arabian peninsula. This pull set in motion waves of migration from the peninsula into the Fertile Crescent, which resulted in the profound transformation of these peoples once they settled there.

Over the course of the last half century, I have discussed three waves of peninsular Arab migration into the Fertile Crescent, during the 4th, 5th and 6th centuries AD[8], and it is within the context of these migrations that Edomite history can most fruitfully be evaluated. Within the context of these migrations, the Edomites stand out as unique, as of all these people, they were the ones who underwent the most profound cultural transformation. From their origins as an Arabian people living a primitive life in Duma, they became a vibrant community that was profoundly influenced by the three major cultural currents of the Fertile Crescent at that time, *viz.* Judaism, Hellenism and Romanisation. Indeed, some of the results of these powerful influences have survived in the region until the present day[9].

This is illustrated by the career of Herod the Great, a *philoktistes* or lover of building unparalled by any of other personality in this pre-Islamic period of migration, who in so doing set the tone for his descendants.

1- For Judaism, he rebuilt the Second Temple on the grandest scale, even though he did so to curry popular favor.
2- As a Philhellene, he erected monumental buildings associated with Greeks and Greek culture, not only in Judaea, but also in other parts of the Near East.
3- As Philrhomaios, he also built structures associated with the Romans and founded *poleis*, such as Caesarea and Sebasteia, in honor of Augustus.

His descendants followed in his wake as *philoktistai*, who contributed much to the urbanization and pacification of the region, as well as to the eradication of paganism.

In the spiritual history of the Arabs, the Edomites represent the adoption by an Arab people of, first, Judaism, then Christianity and finally Islam. Jewish monotheism was also adopted by other Arab peoples, but the Edomites were the ones most profoundly influenced by it, since they became completely Judaised, at least formally, although their rulers may not have been the most pious of converts. It was in their adoption of Judaism that the Edomites wrote a chapter in human history, as they left their mark not only on Jewish history but also on its daughter religion, Christianity, as their culture was flourishing at the time which witnessed the birth of the latter. Thus, they have left their mark on two world religions.

After their contribution to Judaism, the Edomites became involved in the fortunes of Christianity and influenced a number of important events in the history of that religion. Herod the Great is associated with the massacre of the innocents; his son Antipas the Tetrach of Galilee and Peraea beheaded John the Baptist; Agrippa I, his grandson, treated St. Paul well, contributing to the decision to send him

[7] For a succinct history of the Edomites in this period, see the entry "Edom" in the *Encycloapedia Judaica* (1971) vol. 23, pp. 369-380.

[8] See *Byzantium and the Arabs in the Fourth Century*, Dumbarton Oaks (Washington DC, 1984); *Byzantium and the Arabs in the Fifth Century*, Dumbarton Oaks (Washington DC, 1989), and *Byzantium and the Arabs in the Sixth Century*, Dumbarton Oaks (Washington DC, vols. I, 1 and 2 [1995] and vol II.i [2002]).

[9] Represented by the cities they founded and the structures they erected.

to Rome for trial as a Roman citizen, an important decision in the life of the Thirteenth Apostle and Apostle to the Gentiles.

This re-evaluation of the Edomites, as an Arab people, inevitably calls for discussion of the Biblical Job and his *Book*. So much has been written on him, his ethnic origin and on his *Book* as a masterpiece, not only of Biblical Hebrew literature but even of world literature. An extravagant claim has been put forward that his *Book* was merely a translation of an original Arabic text[10]. For a minimalist like myself, however, the following facts are relevant to this discussion:

1- There is no doubt that Job was *not* an Israelite, as demonstrated by toponymical statements in the first chapter, e.g. he belonged to the land of 'Us, Sabaeans attacked his oxen and his children[11], the onomasticon of his three friends and their provenance[12].

2- If the hypothesis of an orginal Arabic text is to be rejected, it should be noted that Arabisms have been noted in the *Book* by Hebraists, which only an Arabic lexicon could explain[13].

From these two observations it follows that Job was an Arab. Who other than an Arab would have used Arabic in the pre-Islamic era, before it became the universal language of Islam when non-Arab Muslims used it.

3- Job's Arab tribal affiliation remains unclear. However, his God is none other than Jehovah, which links him explicitly to Judaism and reveals him as an Arab convert.

From these three premises it is natural to conclude that Job was an Edomite, who belonged to the Arab people who adopted the religion whose God was Jehovah, namely, Judaism.

As my conclusions on the Arab identity of the Edomites concur with those of Avi-Yonah, so do they concur with those of Robert Pfeiffer, a distinguished Old Testament scholar who argued that Job was not an Israelite but an Edomite[14]. He did not say, however, that he was an Arab. But if Avi-Yonah's conclusions about the Arab identity of the Edomites are accepted, to which the identifcation of Edom with Adummatu in Arabia proposed in this paper may be added, the inevitable conclusion is that Job was both Edomite and Arab.

If Herod is the greatest figure in the political and cultural history of the Edomites, Job is his counterpart in their literary history. As an Arab, he could figure — albeit in a vague and ambiguous sense — in the history of pre-Islamic Arabic poetry, which is shrouded in obscurity in this distant past. However, regardless of his ethnic origin, the *Book of Job* remains, as it must, part of Hebrew rather than Arabic literature, as it is in Hebrew that the work has survived, notwithstanding the Arabisms within it.

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[10] See Foster, F.H., "Is the Book of Job a Translation from an Arabic Original?" *The American Journal of Semitic Languages* 49 (1932-3), pp. 21-45.

[11] *Job*, I:1, 15. The `Uz/`Us of Job is identifiable with 'Is in Northwest Arabia; see Ali, J., *al-Mufssal fi Tarikh al-`Arab qabl al-Islam* (Beirut, 1971), vol. vii, p.356.

[12] On the three friends of Job as non-Israelites, hailing from northwest Arabia, see *The New Oxford Annotated Bible*, ed. Metzger, B. and R. Murphy (Oxford University Press), p. 627, n. 29.

[13] See Pfeiffer, R.., *Introduction to the Old Testament* (Harper, New York, 1948), pp. 682-3.

[14] *Ibid*., pp. 680-681.

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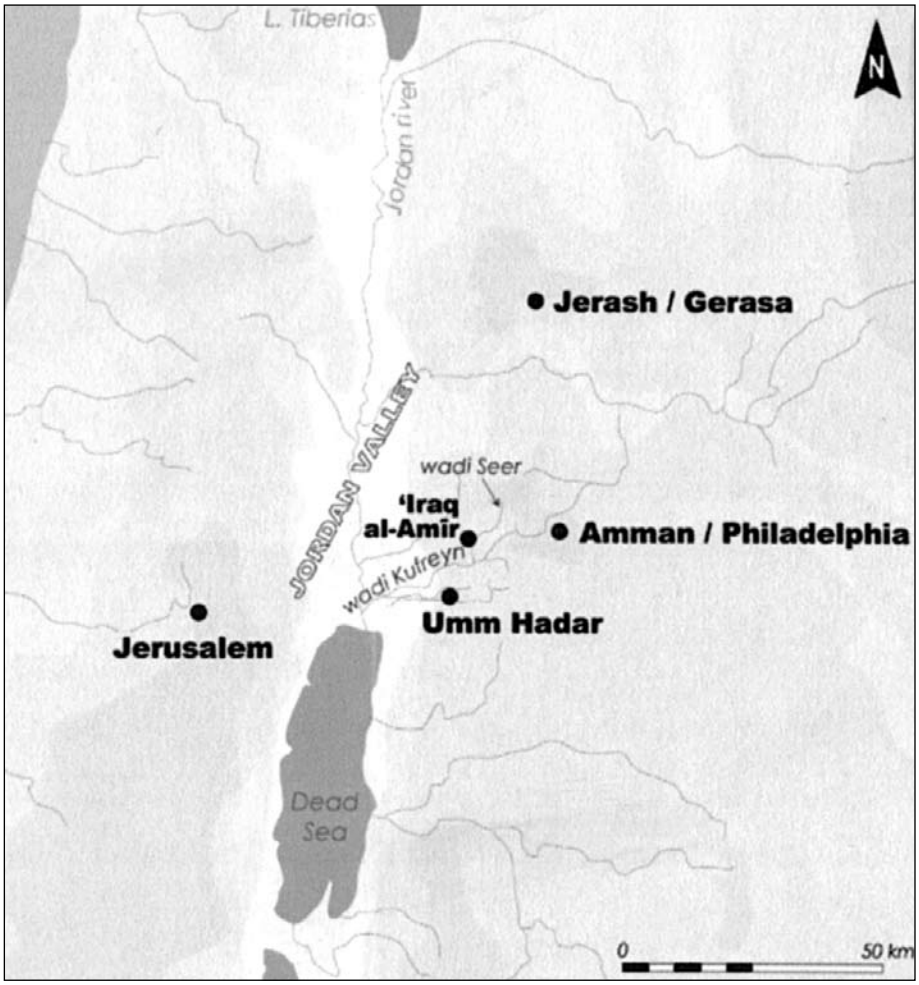
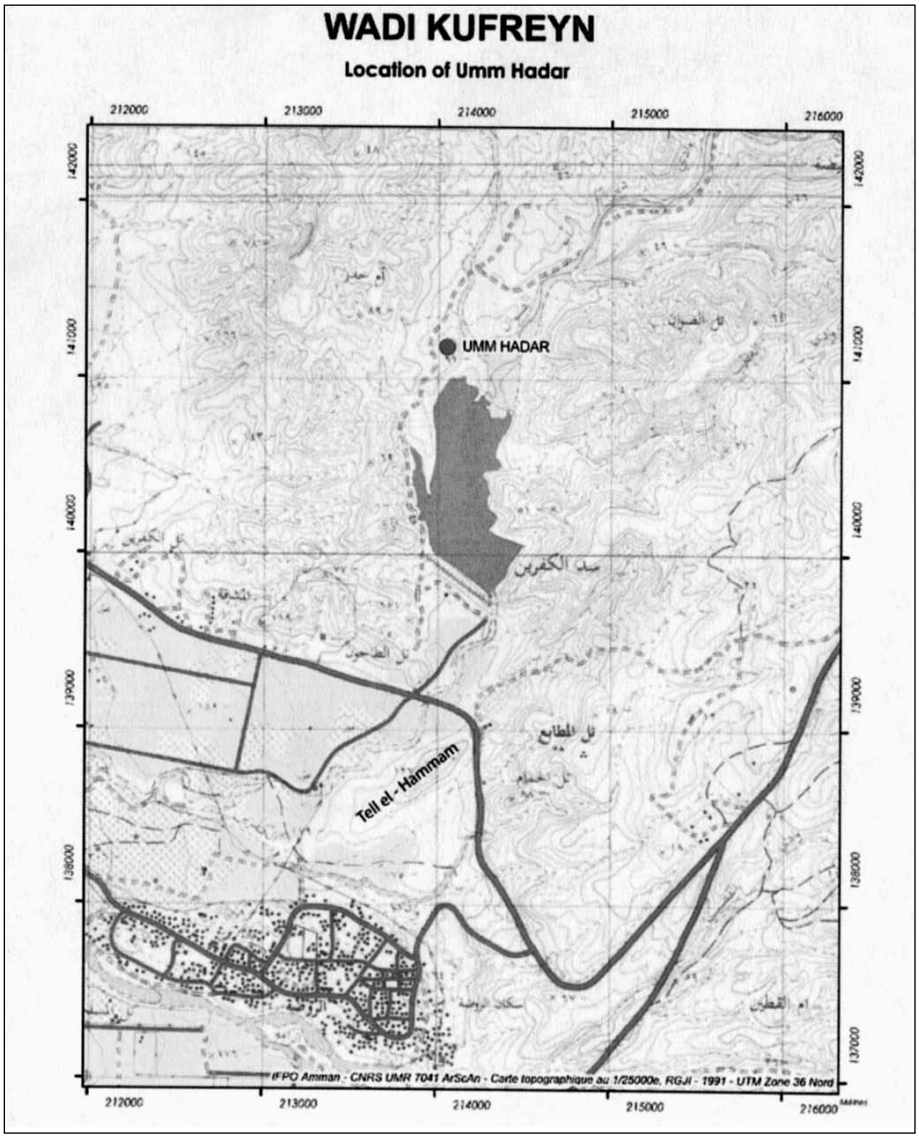
Hasmoneans, Herodians and Arabs in the Jordan Valley: Disputes Over a Border?

The French project at Umm Ḥadhar in the lower Wādī al-Kafrayn, in the area known as the Ḥadhar plains just upstream from the al-Kafrayn dam (FIGS. 1, 2), resulted from a couple of unresolved questions about the history and archaeology of the Wādī as-Sīr - Wādī al-Kafrayn - Jordan Valley region, and also from the positive obstinacy of our friend Dr Fawzi Zayadine to see this site fully excavated and protected, the latter being achieved recently by the donation of a fence by the Jordan Valley Authority.

One of the first questions was: is there any chronological and historical relationship between ʻIrāq al-Amīr and the site of Umm Ḥadhar (see description below)? It is generally assumed that Wādī as-Sīr and Wādī al-Kafrayn were the main routes from the city of Birta in Ammanitis mentioned by Zeno (*P. Cairo Zen.* 1, 59003, see Durand 1997) —



1. Sketch plan of Central Jordan (Caroline Kohlmayer).



2. Topographical environment of Umm Ḥadhar (Laurent Costa, CNRS).

that is Philadelphia / Amman — to Jerusalem, via Abella / Abila (*P. Cairo Zen.* 1, 59004*, P. Lond.* VII, 1930) — usually identified with Tall al-Kafrayn,[1] located *ca.* 1km north of the al-Kafrayn dam.

On this hilly track, the fortress of Sūr was established on the eastern ridge of the al-Kafrayn range of hills during the Hellenistic period, according to its pottery (Villeneuve 1988: 280-281; Ji and Lee 1998: 597-598, 2004), seemingly in order intended to protect Wādī as-Sīr and its settlements. However, was it really the western «border» of the Tobiad estate? Zayadine (2004: 270) mentions the site of Khirbat al-Farāwīt, also referred to by Ji and Lee (1998: 596), as another possible defensive position of the Tobiad estate. Thus, the exact extension of the Tobiad domain remains to be ascertained.[2]

[1] Although no archaeological remains of the Hellenistic period were found on this huge site. Papadopoulos (2007: 189) mentions some finds from the fifth century BC: «the alabaster cosmetic palette; the gaming-board stone with rows of circular impressions and the decorated sherd of a fifth century BC Attic red-figured vase, all of which suggest links with Egypt, Palestine, Cyprus and Classical Greece». At the same time, contemporary artefacts were found in the village of ʻIrāq al-Amīr (American excavations) and in the excavation of the door of the village (F. Villeneuve excavations).
The identification of Abella/ Abila with Tall al-Kafrayn is not accepted by Fawzi Zayadine, who suggests that it should be the site of Tall al-Hammām, about 1,5km South of Tall al-Kafrayn (Gatier 2004: note °8 = Zayadine, 2004: 269-270): Abila would have been included in the gift of Livias (nearby Tall ar-Rameh) by Nero to Agrippa, son of Herod.

[2] Ji and Lee (2004) argue that the southern «border» of the estate included al-Maḥaṭṭa and some other small sites in the region of Wādī Ḥisbān. To the North, F. Zayadine claims that Birta-Amman was part of the estate. The eastern and western limits remain unclear.

On the other hand, Umm Ḥadhar stands out as a small oupost among a number of larger fortresses in the south-eastern region of the Jordan Valley. Numerous fortified sites cluster in the rather narrow area of the valley itself and the lower slopes of the hills[3] to its east, some dating back to the Early Bronze Age. The function of Umm Ḥadhar seems to have been to control traffic along Wādī al-Kafrayn, preventing access up from the Jordan Valley to Wādī as-Sīr, or *vice versa*, or possibly both.

Such questionings guided our exploration of the site, comprising a topographical survey in June 2006, a one-month season of excavation in January 2007 and another in January 2008.[4] We are much indebted to Dr Mohammed Waheeb, who kindly offered to collaborate in the study of data from his 1996 season. This paper will present the main results of the 2007 season and presents a few questions which we hope to address during the continuation of the project, planned for 2008-2010.

Introduction to the Site

The site was previously surveyed by Mohammed Waheeb of the Department of Antiquities in 1996; two main architectural features, still visible on the ground, were described by the author (Waheeb 1997) as follows:

Umm Ḥadhar 2

«Remains of a building belonging to a small Hellenistic structure. It is a rectangular structure (16.50 x 13m). No post holes were found — they would have been unnecessary considering the pillars attached to the compact soil. The site should be related to the nearby main site to the south and possibly functioned for some secondary reasons. Few pottery sherds and no other material culture were recovered during excavation» (Waheeb 1997). The site is labelled 119 in Ji and Lee's survey (1999: 533), with the authors adding that «the pottery is Late Hellenistic-Early Roman». The site is partly bulldozed and its southern part has been completely destroyed.

Umm Ḥadhar 1

This is the main site «located on top of a hill northwest of the dam-lake, at approximately 100m bsl. It covers an area of about 200m. The north-east and west slopes are relatively steep. To the south is a shallow saddle. The entire area is entirely terraced[5] and not cultivated. […] The excavations conducted in the northern and southern parts of the site revealed the remains of a structure approximately 40.7 x 30.8m built of not well-dressed limestone blocks with squared-shaped butresses located at the four corners of the structure, each measuring between 6-6.9 x to 6-7m. The limited excavation in the structure revealed foundation walls built of small and medium stones, a large cistern located in the centre of the site possibly to collect the run-off water from the roof during winter season. Judging from the discovered architectural remains it is difficult (at this moment) to determine the nature and extent of the internal division of the structure. What distinguishes the site is the layer of destruction which was noticed everywhere in the excavated squares. It is not clear whether the site was destroyed by an earthquake or other events. Excavation trenches have produced an enormous amount of pottery sherds and some intact vessels especially lamps, jugs, juglets, etc. In addition to that a large quantities of charcoal-mudbrick fragments, grinding stones and iron fragments were discovered on the site. It is evident that the architect used stones for

[3] «The entire valley of Jericho was protected by a chain of fortresses built by the Hasmoneans on the hills around the valley. Herod continued this practice», quoted by Prag and Barnes 1996: 59.

[4] 2006 Jean-François Salles, DoA Inspector Mr. Abdelrahim Abu Hazim, ingeneer-topographer Laurent Costa (Maison de l'Archéologie et de l'Ethnologie, Nanterre, Univ. Paris1 and CNRS), and Massud Karim as assistant.
2007 Jean-François Salles, DoA Inspector Yazid Alian, Dina Frangié as field-director, archaeologist Olivier Callot (CNRS-Lyon), Rizaine Touili assistant-archaeologist (University Lumière Lyon2), ingeneer-topographer Laurent Costa and Massud Karim as assistant. Nesrine Frangié was the draghtswoman. The team gratefully welcomed Prof. Roland Étienne, Chair of Greek Archaeology, University Paris1-Sorbonne, for two weeks; Dr. (Mrs.) Claire Hasenohr, professor at University Bordeaux-3, joined the team on a few occasions.
2008 Jean-François Salles, DoA Inspector Rami Freihat, Dina Frangié as field-director, archaeologist Olivier Callot (CNRS-Lyon), Caroline Coudre assistant-archaeologist (University Lumière Lyon2), Rizaine Touili assistant-archaeologist, ingeneer-topographer Laurent Costa and Massud Karim as assistant. Nesrine Frangié was the draghtswoman.
The programme was sponsored by the French National Council for Scientific Research (CNRS : Jordan-CNRS programmes), the French Institute for the Near East (IFPO), and the University Paris1-Sorbonne. It benefited from a strong and friendly support by the French Company Dégrémont in 2007.

[5] The word is partly inadequate, as it may suggest that the slopes were intentionally terraced (*e.g.*, in ancient time for cultivation). Actually, the many «steps» running along the slopes seem to result from the endless movements of the flocks of goats rambling in the lower plains of Wādī al-Kafrayn.

the lower courses of the structures then mudbrick was added for the upper courses. The structure was roofed by wood and other organic material. It is not clear whether the whole structure was roofed or some parts only. Traces of post holes were noticed in the hard compact floor of the structure. Barley, wheat, plain seeds, olive, etc. were among the discoveries, this reflecting the strong reliance on plant resources» (Waheeb 1997: 466-467).

The site is labelled 118 in Ji and Lee's survey (1999: 533). The authors emphasize the «excellent visibility in all directions» and state that «the pottery is Late Hellenistic-Early Roman».

Umm Ḥadhar 10

This is another site surveyed by M. Waheeb (1997: 466), located «to the west of the Hellenistic site (1) approximately 100m distant in the plateau area, and several stone traces and pottery scatters were noticed. One test trench was put down which indicated a possible reservoir built beside the run-off water drainage. The pottery indicates a Hellenistic and Byzantine date». Ji and Lee's description is slightly different: «Approximately 200m east [c.f. west for Waheeb] of the late Hellenistic buildings. [...] The pottery collected by the survey team at this site and its vicinity indicates the early Hellenistic and Byzantine periods. Hence, the Hellenistic building at this site seems to have been slightly earlier than the counterparts at Rujum Umm Ḥadhar and Site 119» (1999: 533). The site was not spotted during our research in the area.

Without considering other chronological data from the region, e.g. Papadopoulos (2007) or Prag (1996), the information on this very limited area of the Wādī al-Kafrayn plains indicates discontinuous occupation from the Early Hellenistic to the Byzantine periods. The area would not have been used for agriculture on account of its aridity and, probably, the recent evolution of the river course. It may well have been used for grazing, as it is today, but that would have not required the construction of a small fort at Umm Ḥadhar.

The 2007 Season

Three areas were cleared during the four-week excavation season (FIG. 3): the north-western tower, the north-eastern tower (these two areas were linked up at the end of the season) and the open space west of the cistern (FIG. 4). At the same time, a team of workers was emptying the 4.30m wide cistern. By the end of the season, it had been excavated to a depth of 5m without reaching the base.

Northern Area

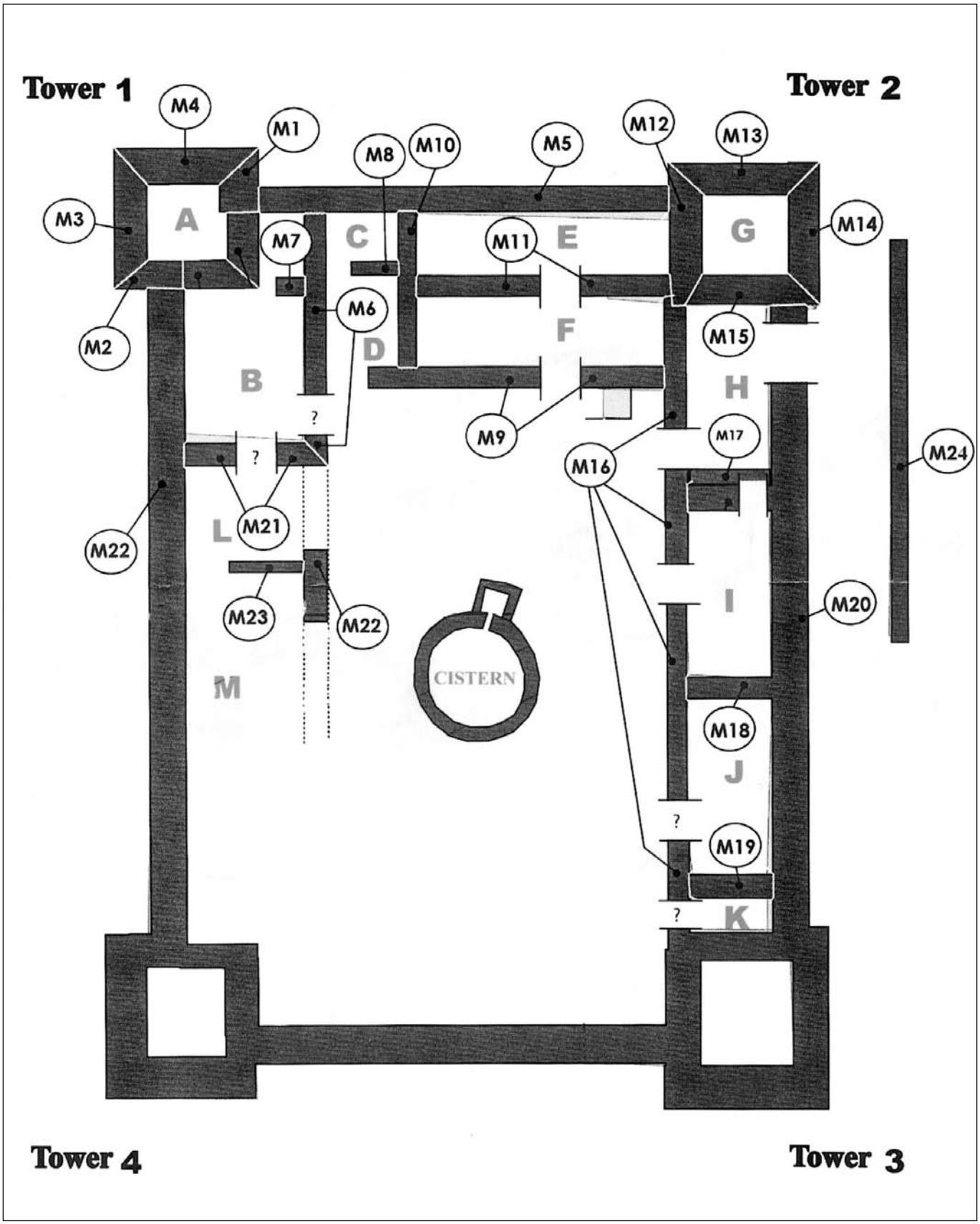
The northern part of the fort had been partially exposed by Mohammed Waheeb in 1996, and remained so up to the 2007 season. The area was disturbed in places, but excavation could take place. In the north-western tower (Loc. A), the remains of an earthen floor without archaeological material were removed, with a sounding in the south-eastern corner of the locus exposing the foundations (or at least their inner face) of the walls. These consisted of four courses of large, undressed blocks, nicely fitted together with smaller stones (FIG. 5). Inside the fort, the foundations rest on what appears to be a natural accumulation of eroded material, compacted in a sort of compact gravel.[6] However, we know from the north-eastern tower (Loc. G) that the outer face is more deeply founded, about 2m in the case of the eastern wall (M14), both for strengthening and because of the slope. Strangely enough, no trace of a door was found in either tower, which might mean that there were filled up to the top, what seems unlikely, or that their top — a simple platform — was reached by ladders.

Several rooms, Loc. B to F (FIG. 6), were found between these two towers. The largest, at 5.5m long and 2.5m wide, are Loc. E and F. These have entrances on the same axis, with the door of Loc. F opening on to a central courtyard. Numerous traces of destruction were found in Loc. E (FIG. 6), including charcoal, burned wood, fragments of *pisé* roofs with imprints of reed ceilings. Elsewhere in the locus (as well as in the cistern, where it was more frequent), a whitish, very fine powder may be indicative of the burning of palm leaves, often used in traditional architecture in the Jordan Valley. Pottery was abundant in Loc. E, including fragments of jars and other vessels, lamps (one complete), plus a spindle-whorl, bronze pendant, three coins, date stones, a carbonised bee cell and a probable oyster shell. Loc. F was not fully excavated.

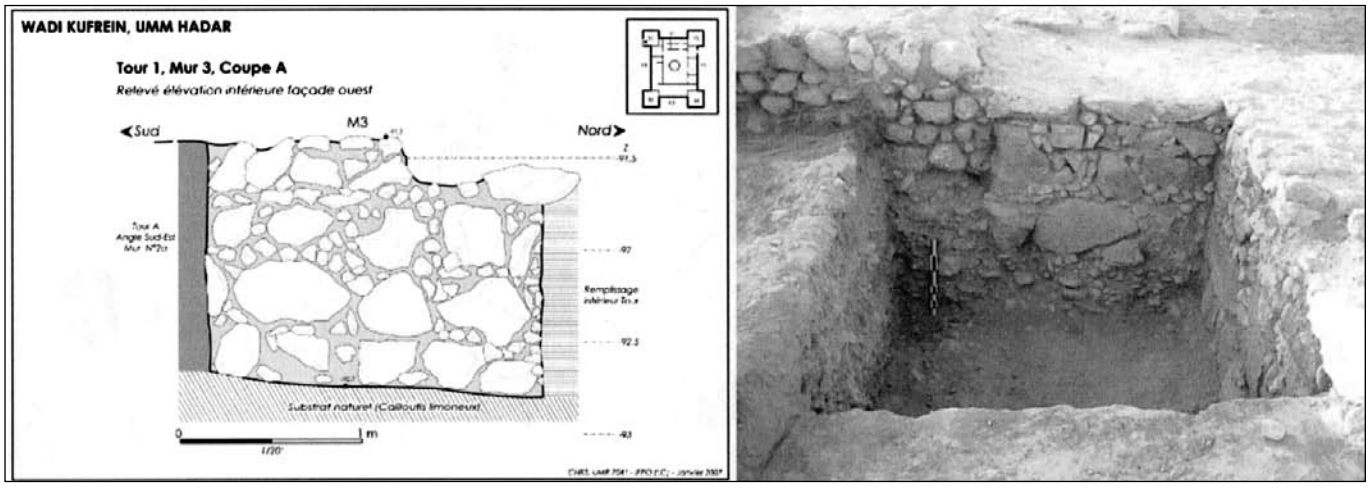
The smaller Loc. C and D may have been used for domestic purposes. In Loc. D, a fragment of

[6] A few trenches were dug out on the slopes of the hill by treasure-hunters: all of them were empty of any archaeological trace, but they all show the same geological composition of the hill.

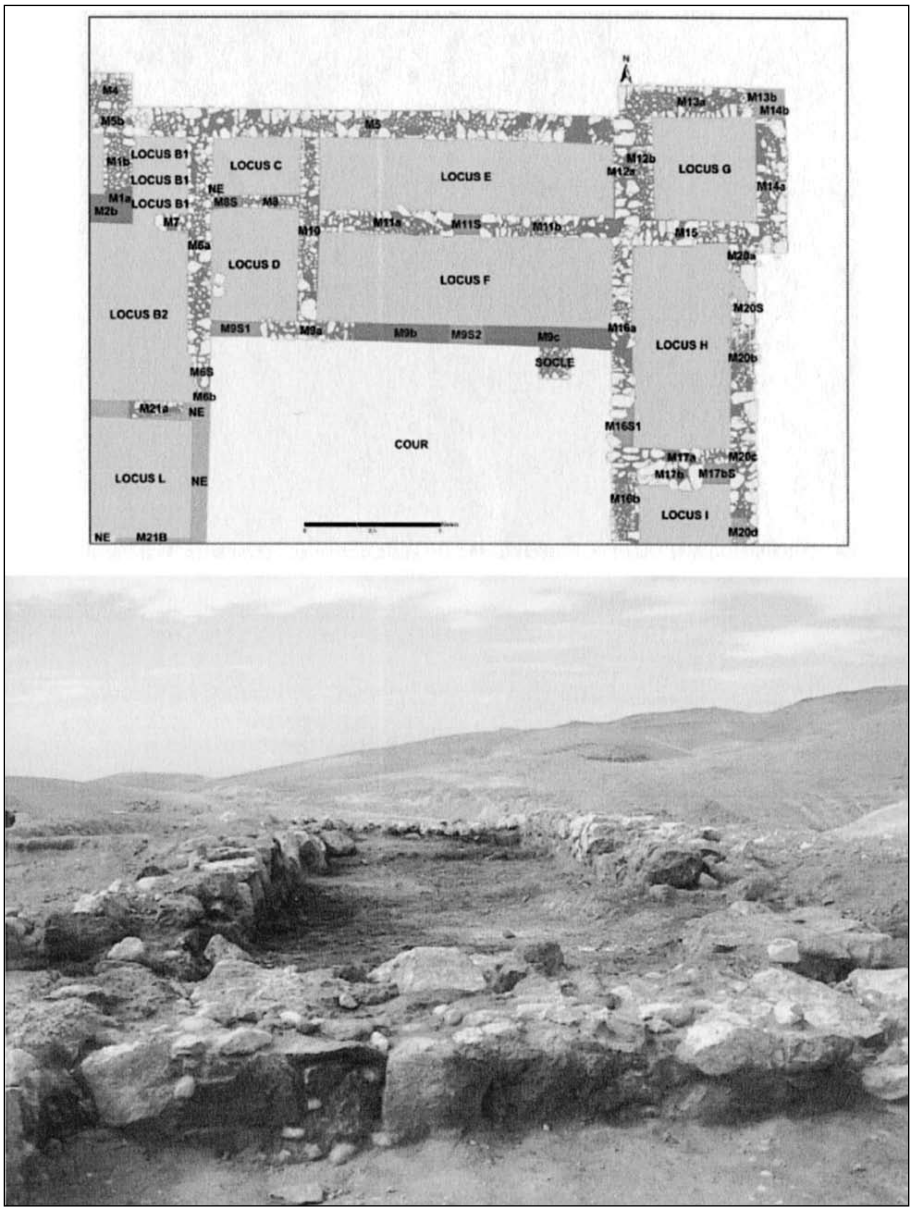
3. The site of Umm Ḥadhar at the end of the 2007 season, kite photograph (Yves Guichard, CNRS).



4. Plan of the site at the end of the 2007 season (L. Costa).



5. Tower 1, Locus A: the inner foundations of the enclosing wall and a view of sounding insinge the locus.



6. Plan of the north part of the site excavated in 2007 (L. Costa) Photo of Locus E, from the East: see the traces of burning in the back.

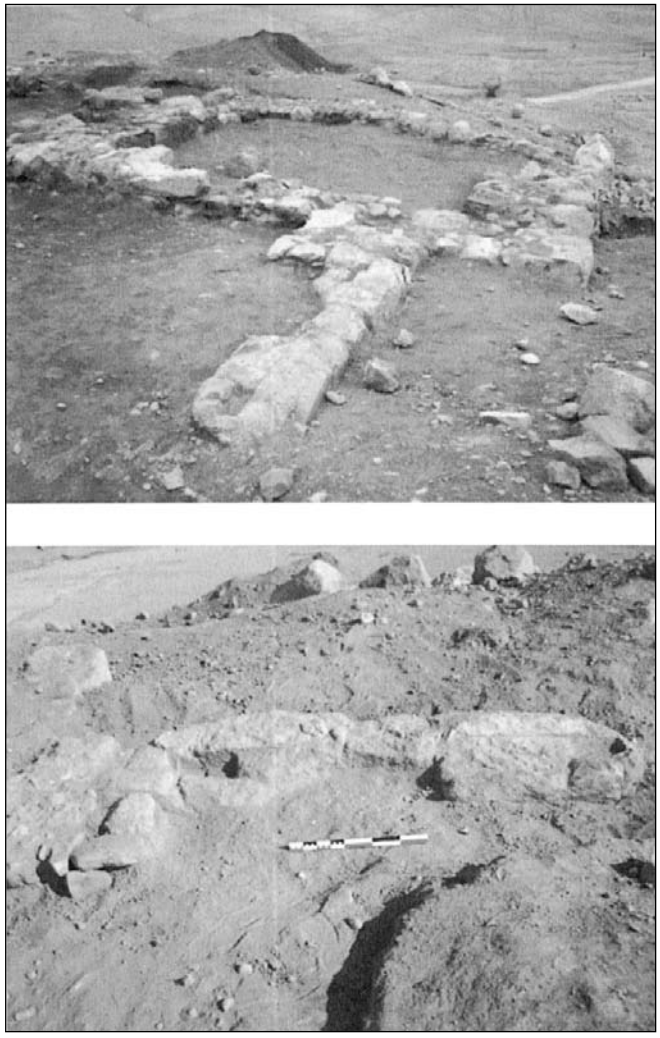
solid, cemented floor was uncovered, which may have been related to the presence of a large grinding stone nearby. Nothing special was found in Loc.B, where a northern recess has yet to be interpreted; four courses of brickwork were preserved in a small section of wall M6 (see *infra*).

In Loc. E especially, but also in Loc. D, a succession of two floors was clearly identified. The upper one is made of beaten earth mixed with pebbles (found also in Loc. H and I) and is rather well-preserved. In Loc. E it was found just under the destruction layer. Another floor was exposed in a test trench, about 10cm lower down; its texture is different, being just an earthen floor without pebbles. These indicate two phases of occupation, rather close in time, but definitely different. This phasing also appears in some of the architectural details in Loc. D and B.

Close to the north-western tower, i.e. Loc. G, the main entrance pierced the eastern curtain wall, M20. The external walls of the tower are 1.10-1 .20m wide and built of irregular blocks with a filling of small stones. The inner walls are sligthly narrower, 0.90m but of the same construction. No floor and no trace of a door was uncovered (see *supra*). The main entrance to the fort is located in Loc. H (FIG. 7); it is 2m wide, with three threshold blocks with a longitudinal groove and two door-sockets preserved *in situ*. Made of a different type of limestone, the blocks of the threshold are badly damaged. Only the northern base of the door jamb remains, the southern one having been destroyed by looters after the 2006 season. The passage between Loc. H and the central courtyard does not show any trace of a door and might be associated with a second phase of the main entrance. Nevertheless, the E-W partition wall (M17) between Loc. H and Loc. I is a later reconstruction, suggesting that Loc. H and I may originally have been a single space, though which the original entrance passed.

Outside the fort, on its eastern slope, we found remains of a very badly-preserved wall (M24), running parallel to the curtain-wall (M20). It was about 2.50m away from the fort and followed the slope. It may have been a small retaining wall for a ramp leading to the main entrance. This wall has now disappeared.

A few soundings made at the end of the season provided clear evidence for similar rooms along the entire inner perimeter of the structure. The construction techniques are suggestive of rather crude



7. Tower 2, Locus G, from the S.E in the foreground, the entrance of the fort. Details of the threshold.

buildings, with foundations typically consisting of just one or two courses of rubble and rough stones, although wall M6 is more deeply founded (*ca*. 0.60m), at least on its western, excavated face. The walls are based on two or three courses of undressed stone, with the remainder being constructed of mudbricks — still visible on wall M6 (FIG. 8). Numerous mudbrick fragments were also found in the cistern. The roofs were made of earth laid over a reed framework, or more simply of palm leaves.

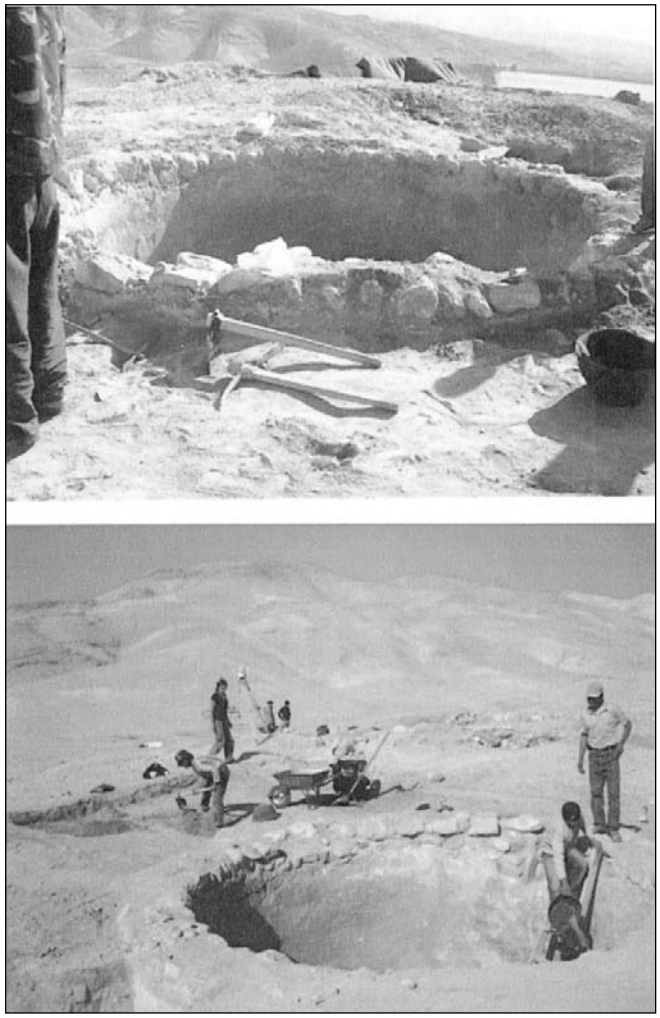
The Central Courtyard and Cistern

The plan of the fort, as it now appears, has a large central courtyard with a well in the middle. Its dimensions will be known only after the complete excavation of the surrounding rooms, but is somewhere in the region of 14m W-E. The western part of this «square» was excavated; the original floor

8. Fragments of mudbricks *in situ* on the walls.

was discovered 0.80m below the rim of the cistern, which suggests that the cistern wall stood at least 1m above the floor, which was in turn laid over the substratum of the hill. The floor appears to have been re-laid at least once, but we have to excavate the whole courtyard to be more precise. The function of the courtyard is however not in doubt: it is the place where all day-to-day activities took place, especially when one considers the narrowness of the surrounding rooms — most probably living and domestic quarters.

The well is the most massive construction of the site: its internal diameter is 4.20m, or 5m with its wall (FIG. 9). From what can be seen of the exposed part of the wall, it was carefully built with irregular blocks and small stones, probably with some kind of earth or clay binding which is still visible in places. The mortar is very well preserved for the full height excavated so far, and there is indisputable evidence of two successive coatings and probably some repairs. Clearly, this well was carefully maintained for a long period. To the north, there is a nicely-built basin about 1 x 1m across and 0.6m deep, with a well-built channel leading to the well. Can it be interpreted as a basin for the well water? A sounding south of the well showed, without any doubt, the large cut which had been excavated during the construction of the well. It is 1m larger than the well itself and the gap between the substratum and the wall was filled with rubble.



9. The upper part of the cistern, standind over the courtyard.

It seems most unlikely that this well was intended to reach the underground water-table (probably situated at a depth of 30m or more). It is more likely that the water came from the run-off of winter rains — perhaps through a light roofing, which might justify the decanting basin? It is also possible that the well was filled by hand, bringing up the

water in goatskins from Wādī al-Kafrayn or from another perennial wadi on the western side of the valley, close to the site («*corvée d'eau*»). It was impossible to follow any stratigraphy inside the well, although it was carefully excavated one half at a time. The upper 2 to 2.50m consists of undatable, non-archaeological fill. The archaeological fill below cannot be divided into successive layers; the well was clearly filled in a single episode with all the debris of the fort (pottery, bricks, beams, vegetal roofing material etc.). The pottery recovered during the excavation of the cistern is quite homogeneous all way down (although this will have to be confirmed when the base is reached).

Architectural Comments

The setting, size and plan of the small fort at Umm Ḥadhar raises a few questions, as this type of construction is unknown — to the best of our knowledge — in Jordan and Palestine during the period in question: the mid-second to late (?) first centuries BC (see below). There are a large number of Roman fortresses in the region from the second century AD onwards, with a rectangular plan, square towers at the corners, rooms along the internal face of the curtain walls, and a well or cistern in the centre. All have a genuine defensive and military capability, as demonstrated by their massive construction. At Umm Ḥadhar, such a function is less evident, as the «garrison» — if any — would have consisted of just a handful of soldiers in view of the size of the living quarters. There is also a gap of four centuries between these two types of structure.

One would be tempted to look for an «ancestor» of such a construction in the shape of the small fortress at Horvat Radum, situated in the Negev, close to the city of Arad (*EAHL*: 1254-1255): «[…] toward the end of the Iron Age this was the site of a small Judahite fort […]. The almost square fort (21 x 25m) is enclosed by a 2-m thick wall, preserved to a height of 2m […]. The gateway was in the eastern side; it included an opening in the fortress's wall protected by a rectangular structure outside […]». Apparently, the cisterns were located outside the fort. Although we might hazard a guess at a Judaean tradition still present at Umm Ḥadhar four centuries later, there are several differences which need to clarification.

Despite the chronological gap (second century AD), a comparison could also be made with the Roman *praesidia* established on the caravan routes from Myos Hormos to Coptos in Egypt (Brun 1996). These forts are rather small in size (50 to 60m square), with rooms along the curtain walls and a well or cistern in the centre (which has not been demonstrated at Horvat Radum). The main function of these *praesidia* was to control the caravans, perhaps supplying them with food and water, and to protect them in case of attack. The Horvat Radum fort was interpreted as an outpost for the fortress at 'Uza, controlling the road along the course of the river. Would it help us to understand the function of the fort at Umm Ḥadhar (see concluding remarks)?

The Archaeological Material

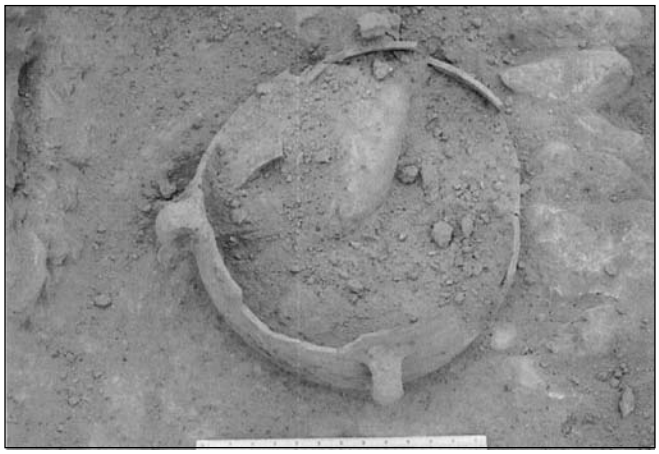
The study of the excavated material is in its early stages; a detailed study of the pottery is being prepared by Dina Frangié after a very preliminary examination of the corpus, which has yielded some basic information. Of the two coins discovered in Loc. E, one was an illegible small copper coin of the Roman period (date uncertain) and the other a coin of Demetrios II, dated to *ca*. 140BC.[7]

The pottery found during the 2007 season has many shapes, including jars, cooking-pots, flasks, jugs and juglets, table *amphorae*, lamps, bowls, *unguentaria* etc.. Table-wares, such as plates, small bowls, goblets, etc. are present but in small quantities, mostly showing the traditional incurving bowl of the Hellenistic *koinè*, in plain ware. The study of the pottery is still in progress; for the moment, we can only offer a very preliminary description of some of the shapes found in the Umm Ḥadhar excavations.

Amongst the jar types found at Umm Ḥadhar, we identified jars with four handles (FIG. 10), which are very common at Jericho (Type J-SJ1 (Bar Nathan 2002: 22-23)), Jerusalem, Beth-Zur, Tell el-Ful etc.. The date of these jars spans the second and first centuries BC. They are principally characteristic of the Hasmonean period and Judaean tradition but, at Masada, it appears that some were also found in a warehouse dated to the Herodian period.

Flasks and juglets are one of the most common shapes at Umm Ḥadhar. The pilgrim flasks are distinguished by an assymetrical body, sometimes decorated with concentric circles (FIG. 11b and d),

[7] Information kindly provided by Dr. Christian Augé (IFPO-Amman), after cleaning.



10. Four-handled jar *in situ*.

and two vertical handles. This is Jericho type J-FL1 (Bar Nathan 2002: 65-67), dated from the end of the second to the first centuries BC. They are much more widespread in the later period. We know of their presence at Ashdod, Jericho, Qumran, Masada, Cypros, Jerusalem and Herodium, where they seem to continue until the end of the first century AD.

A large number of juglets was also found, similar in all aspects to Jericho type J-JT1A1, itself a variant of type J-JT1 (Bar Nathan 2002: 52-55). They are characterized by a globular body, rounded base and vertical handle (FIG. 11a and c); the neck is usually very narrow. The rim, as described at Jericho, is «cup-mouthed». This type is very common in Hasmonean and Herodian contexts at Jericho, i.e. from the first century BC to the second century AD, but starts to appear elswhere at the end of the third century BC as, for example, at Tirat Yehuda and Samaria. At Tell el-Ful and Beth-Zur, this type appears from the 2nd century BC onwards (Bar Nathan 2002: 52-55). Such juglets are also common at Macheronte ('*gruppo 26*' belonging to '*strato 2*'). They are apparently most common in the first century BC, but are still found during the late first century AD (Loffreda 1996: 60-62; Photos 22-23, Fig. 22).

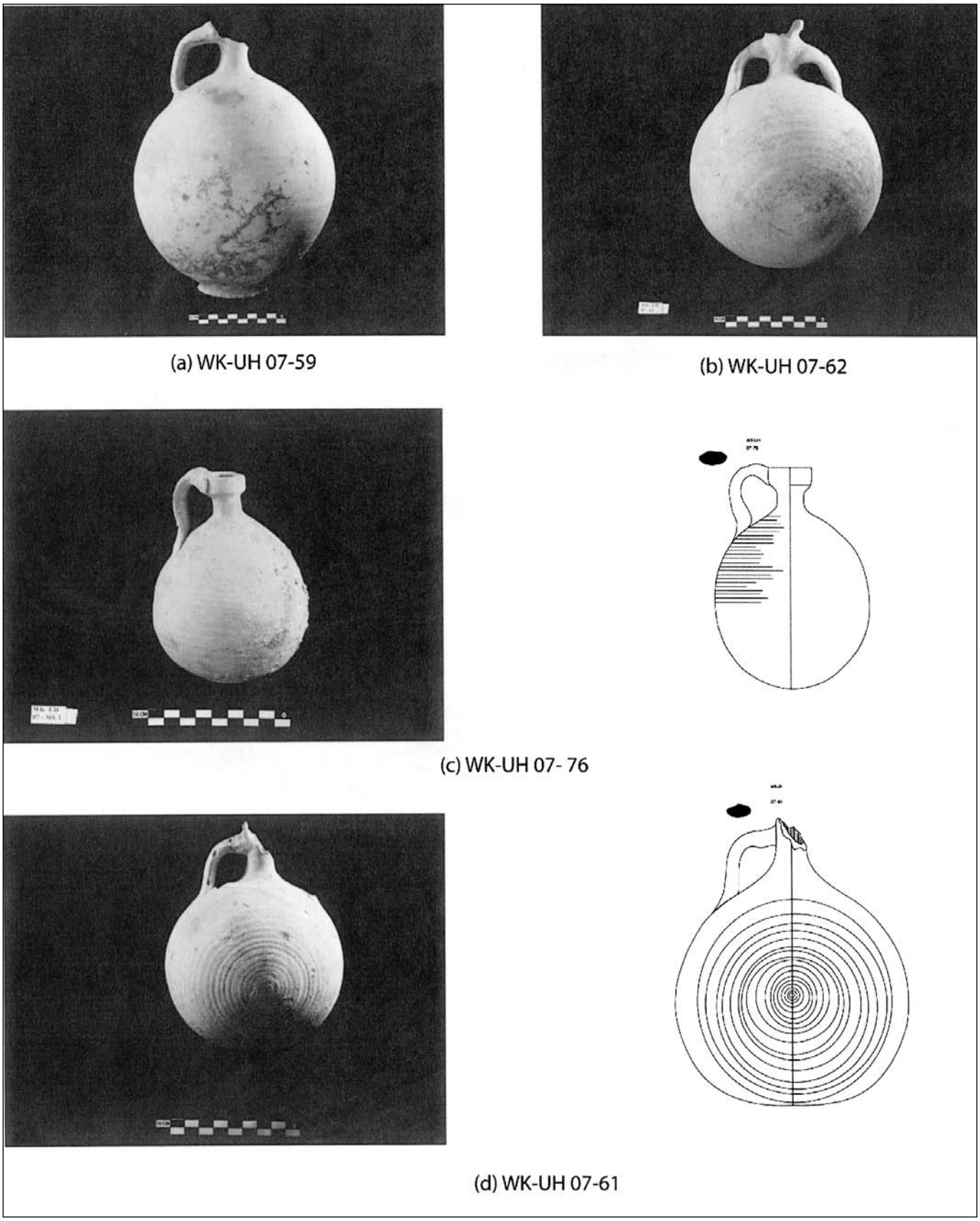
Fusiform *unguentaria* are rather numerous in the Umm Ḥadhar pottery corpus. A large number of fragments were recovered during the 2007 excavations, and F. Zayadine has published some complete ones from Mohammed Waheeb's excavations (Zayadine, in press), concluding that «the five examples presented in this contribution are probably of the early second century BC and are supposed to be contemporary of the establishment of the Tobiads at 'Irāq al-Amīr and environs» (FIG. 12b and c). Fusiform *unguentaria* were widespread in the Near East during the Hellenistic period, especially in the second century BC. They appear at Jericho during the first century BC and are replaced by piriform *unguentaria* during the first century AD (Bar Nathan 2002: 57-58).

We also found a few unslipped bowls that are distinguished by a string cut base. These bowls have also been found at Dor (Guz-Zilberstein 1995: 289-290, Fig. 6.1: 34-38), where they seem to have been used as jar lids rather than bowls. At Dor, they are common in contexts dating to the beginning of the Hellenistic period. Guz-Zilberstein states that, in Judea, they are most common at the end of the Hellenistic and beginning of the Roman periods.

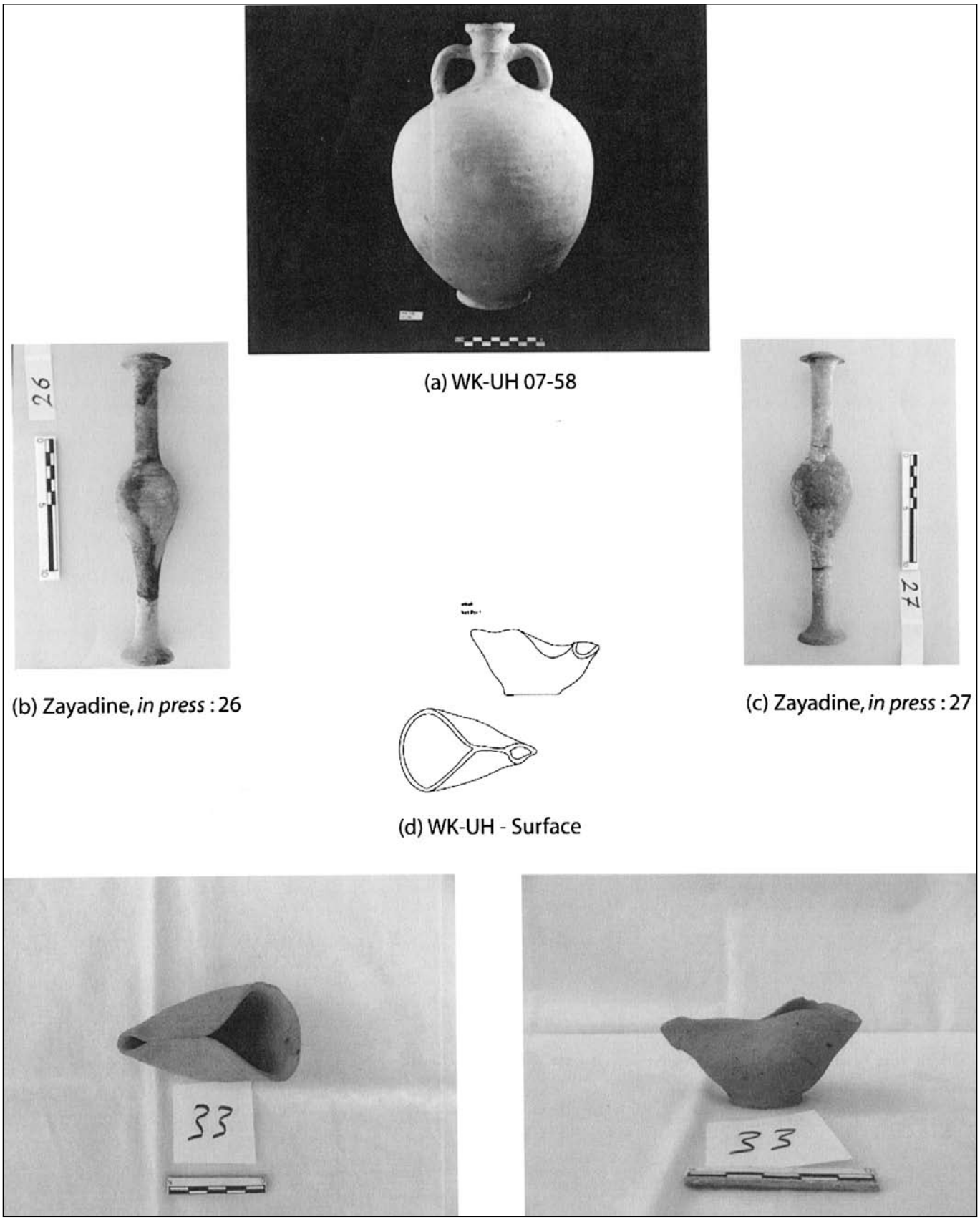
Few lamps were recovered during the 2007 excavation. Of those that were found, the dominant type was a type of folded lamp already published from the site by F. Zayadine (Zayadine, in press), who dated them to the transitional Persian – Hellenistic period, i.e. Early Hellenistic or *ca*. 250BC (FIG. 12d and e). At Jericho, this type is known as J-PL1A, which was associated with Hasmonean contexts. These folded lamps were very common in the first century BC at Jericho and have also been found at many other sites, such as Jerusalem, Bethany, Ramat Rahel, Tell el-Ful, Tell en-Nasbeh, Nahal David, Beth Shemesh, Ashdod and Samaria (Bar Nathan 2002: 102-104). It seems that these lamps do not occur in Herodian contexts at Jericho, suggesting — according to the author — that their production stopped at around 31BC. They also appear to have had a limited distribution in the Judean area. Lapp dates these lamps to the second century BC, on the basis of parallels at Beth-Zur (Lapp 1961: 162).

Another type of lamp from the 2007 Umm Ḥadhar excavations, known as «s-shaped lugs» (*lampe à poucier en 's'*), was also uncovered, albeit only in fragments. It has a grey colour, is moulded and is distinguished by a side lug in the shape of an 's'. This type of lamp was very common on Phoenician and Israelian coastal sites, especially in the second century BC (Frangié 2005, in press).

The pottery is thus basically common ware, with no imported / decorated material (e.g. washed Hellenistic pottery) on initial inspection. The fabric of the majority of the pottery is «regional», as it was not produced at the site itself. Clearly, at one time in its existence the site of Umm Ḥadhar was fully



11. Pottery from Umm Ḥadhar: flasks and juglets.



12. Pottery from Umm Ḥadhar: unguentaria and lamps.

integrated within the Jericho - Hasmonean sphere of influence, probably during the second half of the second and the first centuries BC. Only a few traces of typcial Hellenistic Near Eastern culture were found, such as the incurving bowls (in plain ware) and the «s-shaped lug» lamp. A simple reading of the archaeological evidence therefore tends to confirm the «non-Hellenistic» character of the Hasmonean monarchy (Schwentzel 2007: 135-137).

Concluding Remarks

The chronology and function of the fort at Umm Ḥadhar should be viewed in the wider context of regional evolution, in terms of politics as well as settlement patterns — including the Jordan Valley and the slopes leading up to the Jordanian plateau. For the latter, it is worth quoting the results of the three year survey by La Sierra University: «The Iron II-Hellenistic and early Roman periods are also well represented in the survey. It seems apparent that the number of occupied sites in the regions of ʻIrāq al-Amīr and Wādī al-Kafrayn rose dramatically during the Iron II period after long occupational abatement, and this settlement intensification continued into the Hellenistic period. In particular, the early Hellenistic period was one of the best represented period of all historical periods in the region» (Ji 2007: 139). Ji rightly asks: why such an intensification of occupation during the Hellenistic period, and for what reasons? The answers, when they come, will help us towards a better understanding of the fort at Umm Ḥadhar.

The second half of the second century BC, insofar as it is represented in the archaeological finds from Umm Ḥadhar, is consistent with the historical background. After the Maccabeean wars, Jonathan the Hasmonean (152-142BC) — actually the heir of the Maccabees — initiated a policy of expansion towards the Palestinian coast as well as towards Ammanitis and Moab in the east, a policy followed by his brother Simon after Jonathan's assassination by Tryphon in 143 / 142BC. Although the sources are mute on this point, it seems reasonable to assume that the Jordan Valley was the first step in the Hasmonean expansion. Simon was assassinated at Jericho in 135BC, and the first palace at Jericho was probably built during the reign of John Hyrcan (134 - 104BC) (Netzer 2001). Thus, a Hasmonean presence at Umm Ḥadhar should not come as a surprise. Without taking into account the preceding centuries referred to by Ji (*supra*), is it possible that the alliance between the Hasmoneans and Romans (I *Macc*., 8 = *ca*. 160BC; I *Macc*., 12 = 140BC) gave new impetus to the human occupation of this region? There is however no obvious reason for that. The Hasmoneans were looking for a new partnership in order to escape Seleucid hegemony and, beyond their competition with the Seleucids, the Romans may held some attraction for an already wealthy region, as we see later in the time of Anthony and Cleopatra. However, the source of this increasing wealth had nothing to do with politics (see below).

Before the Maccabeean wars, the situation is less clear. Very little archaeological data dating to the third and first half of the second centuries BC have been found in the Jordan Valley. Furthermore, the classical literary sources referring to this the region cannot be dated with precision until the time of Herod (e.g. what were Strabo's sources?). Even Josephus is rather silent about this area. What is noticeable is that the association between Jerusalem and the Tobiad estate in Wādī as-Sīr appears to have been a long-term one. Jason the high priest escaped to the Tobiads in Ammanitis in 170BC and we may assume that there was a kind of «connection» between these two regions, without presuming that the entire southern Jordan Valley was part of the Tobiad estate! What is clear is that the Jordan Valley, a very fertile area close to Jerusalem, was in the hands of the great families of the city, as attested by the Hasmoneans in Jericho. Indeed, the initial conjecture of the Wādī al-Kafrayn project was that Umm Ḥadhar might have been a «border» post of the Tobiad estate. This has yet to be demonstrated. At the time evidenced by the archaeological finds — which cannot predate the second half of the second century BC, or possibly very slightly earlier — nothing is known about the former Tobiad estate, which was mentioned for a last time in 2 *Macc*. 12, 35 and that in connection with events that occurred in 163BC. We know that the village of ʻIrāq al-Amīr was re-built at *ca*. 100BC, but it is not clear who its inhabitants were (see Zimmerman, this volume). It might even have been that the fort at Umm Ḥadhar was not at associated with Wādī as-Sīr at all.

What happened after the Hasmonean period remains to be cleared up as well. Hasmonean pottery was found in large quantities on the site itself (e.g. the *in situ* jar in Loc. L), even more so within the cistern. Thus, the final destruction of the site should

post-date to the Hasmonean period. As there were no major changes in local pottery production before the time of Herod, it would be hazardous to date the end of the fortress to the period of his reign — although there is an evolution in Herodian pottery (Bar Nathan 2002) which does not appear clearly at Umm Ḥadhar. Although the exact meaning of «Late Hellenistic - Early Roman» in ceramic terms remains debatable, the absence (up to now) of *sigillata* at Umm Ḥadhar might suggest that the site was destroyed some time between the middle and end of the first century BC, although the questions of by whom, when exactly and in which regional context remain to be answered.

We have already discussed the probable function of several fortresses in the Near East in terms of providing logistical support (water, food, accomodation etc.) and military security for caravans marching along the barren and insecure routes of the region. This is especially apparent in the case of the Roman *praesidia* in Egypt, e.g. *az-Zarqā'* (Brun 1996). Might this concept be applicable to central Jordan and the Jordan Valley, in much the same way as it was applied to the Iron Age fortresses of the Negev by Israeli archaeologists? At this point, a key issue is our knowledge of the long-distance trade routes relating to central Jordan and the Jordan Valley.

«Philadelphia stood at the crossroads of the lucrative trade with inner Arabia, some of which may have come from westward through the Wādī as-Sirḥān and the al-Azraq oasis. The bulk of it came northward through Petra from the Ḥijaz and the Ḥismā. Philadephian merchants transshipped these goods northwest through Gerasa to Pella and Scythopolis, and then on to the Palestinian coast» (MacAdam 1992: 31), to which should be added transshipment to the west via the Jordan Valley and Jerusalem, a route frequently mentioned in the classical sources.

On the other hand, it is well known — from both written sources and archaeological discoveries — that the trade in luxurious products from the East (India and, in the case of cinnamon for example, further to the east) or from South Arabia, increased in the Iron Age and flourished from the Achaemenid period onwards. It was based on caravan traffic from the Persian Gulf to the Levantine coast (see, for example, the economic interpretation of the conquest of Tayma by Nabonidus in the 6th century BC, or the role of Gerrha in eastern Arabia) and from South Arabia to southern Jordan / Palestine. Such a multi-faceted enterprise, which involved many more people than the caravaneers themselves and led to a new prosperity that surpassed that of the preceding agricultural tradition, might provide a clue with which interpret the significant growth in population and settlement density between the Iron Age and Hellenistic period (see above for the region under consideration here). Indeed, these caravans were the most important of all, as they carried the most luxurious and expensive items of the «Indian» (i.e. from the East and South) trade to the Mediterranean. Might Umm Ḥadhar have been a Hellenistic precursor of the Roman *praesidia*, one located along the route taken by the priceless caravan traffic to Jerusalem?

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[8] There is an enormous literature on this problem, which will not be referred to here. For the role of the Red Sea and its connection with southern Jordan and Palestine, see, for example, Salles 1998.

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Iron Age Deities in Word, Image, and Name: Correlating Epigraphic, Iconographic, and Onomastic Evidence for the Ammonite God*

For the study of Iron Age religion in Jordan, personal names offer an important source of information, especially given the scarcity of other forms of textual evidence (Bartlett 1989: 187-228; Mattingly 1989; Israel 1990; Aufrecht 1999a). Among the onomastica of the Iron Age southern Levant, the Ammonite names pose an intriguing dilemma. While inscriptions and biblical texts indicate that the chief Ammonite god was Milkom (e.g., 1 Kgs 11:5, 33; 2 Kgs 23:13), the overwhelming majority of Ammonite theophoric personal names instead feature the divine element) *'l* (Aufrecht 1999b: 156-59). Based on this fact, some scholars have concluded that the Ammonites' leading deity was not Milkom but El (Daviau and Dion 1994; Aufrecht 1999b: 159-60; though cf. Aufrecht 2003: 139, note 3). Others discount the personal name evidence as uncertain and look to the other textual sources mentioning Milkom (Hübner 1992: 256). Still others have suggested that El and Milkom, or their aspects, have been combined in some fashion (Tigay 1986: 19-20 and note 60; Lemaire 1994).

Any further advance in the discussion of the Ammonite dilemma will require accounting for a few basic aspects of West Semitic theophoric personal names as religious evidence. As scholarship has affirmed and reaffirmed, personal names typically do not reference the specific cult, myth, or theology of a particular god or goddess but rather convey fairly generic expressions of trust, hope, thanksgiving, and praise that could apply to various deities (Caquot 1962: 256; Tigay 1986: 5-7; cf. Fowler 1988; cf. further Barr 1990; Roberts 1990). Moreover, as religious evidence, anthroponyms belong primarily to the realm of family or personal religion (Albertz 1978), and yet they also reflect broader social and political dynamics (Tigay 1986; Albertz 1978: 49-76; Callaway 1999). What is more, while personal names seem to offer the most obvious information as an indication of deities worshiped by a population, this correlation is a complex one and so names need to be studied in relationship to other kinds of religious evidence (Pardee 1988: 119-122; Smith 2002: 4-5).

In keeping with these aspects of onomastic religious evidence, there is a need for further discussion that incorporates all relevant evidence categories for identifying any leading god of the Ammonites. Unto that end, the following discussion brings the onomastic evidence into relationship with other epigraphic and iconographic evidence from Jordan. The remarks that follow are offered as one effort toward correlating the various categories of available onomastic, epigraphic, and iconographic evidence bearing on the question, and refining the analysis pertaining to it. As the discussion will show, viewing the various evidence categories together in this way gives new support for understanding onomastic) *'l* and epigraphic Milkom as referring to the same Ammonite god.

1. Ammonite Statuary: The Persona of the Royal God

Surviving artistic evidence from ancient Ammon is marked by a relative abundance of statuary and sculpture in the round (Dornemann 1983: 153-

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163). The Ammonite statuary includes a series of items that have figured into scholarly discussions of the identity of the Ammonite god, namely, depictions of a figure wearing a form of the Egyptian *'atef* crown (Abou Assaf 1980: 34-36, 57-58, 77-79; Younker 1994: 308-310; LaBianca and Younker 1995: 410). That evidence includes a number of stone statues and statue heads recovered from ʻAmmān and its environs (Abou Assaf 1980: 21-24, 70-71 and Tafeln I-V; Dornemann 1983: 156-157; ʻAmr 1990; Dabrowski 1997), along with two similarly-styled heads from clay figurines—one, a clay figurine with painted beard and moustache from the Amman Citadel (described in Zayadine *et al*. 1989: 362) and the other, a plaque figurine discovered at Tall Jāwā (Daviau and Dion 1994).[1]

Whether these statue heads represent a human or divine figure has been a matter of scholarly debate. In his study of Ammonite statuary, A. Abou Assaf compares the stone heads with the *yrḥ*ʻ*zr* statue (*CAI* 43), which was discovered in the same find as one of the *'atef*-crowned statues (Barnett 1951: 34-35 and Plates X-XI; About Assaf 1980: 25-27, 78 and Tafel IX). As Abou Assaf suggests, the use of the less elaborate headband in the *yrḥ*ʻ*zr* statue to depict a prominent human subject, most likely the Ammonite king (see, e.g., Zayadine 1974: 135-36), may indicate that by comparison the full crown denotes a figure of yet higher status, that is, a deity (Abou Assaf 1980: 78). On the other hand, the similar posture, dress, and bare feet in both the *yrḥ*ʻ*zr* statue and the two complete *'atef*-crowned statues might suggest that the latter also depict the human king (see Barnett 1951: 34; Horn 1973: 179-80).[2] Accordingly, based on these aspects of the Ammonite statuary alone, one might think in terms of two different modes of artistic representation of the human king—a more austere image of royal dignity in the *'atef*-crowned figures and a more approachable royal persona in the *yrḥ*ʻ*zr* statue. A brilliant suggestion by Zayadine is that the *'atef* crown is reserved for a deceased, deified king and that the *yrḥ*ʻ*zr* statue represents the living, mortal king (Zayadine 1991: 50). Intriguing as this suggestion may be, more evidence would be needed to show that the Ammonites believed in the deification of their deceased kings.

In determining the status of the figures depicted in the Ammonite statuary, the factor privileging the greatest amount of evidence is the broader significance of the Egyptian *'atef* crown. While the *'atef* crown is sometimes included in portrayals of other Egyptian deities, it is associated primarily with Osiris (*ANEP*, No. 573; Horn 1973: 174 and notes 16- 18; Daviau and Dion 1994: 160). As an elaboration on the white crown of Upper Egypt, the *'atef* crown is distinguished by the two ostrich feathers flanking the crown at the sides—in effect, a doubling of the curled feather of Maat, against which the heart of the deceased is weighed before Osiris in the otherworldly judgment described in "the Book of Going Forth By Day" (i.e., the Book of the Dead) and in accompanying pictorial scenes, sometimes along with the depiction of "two Maats" looking on in the final judgment scene (see Gardiner 1957: 504; Helck 1980: especially 1112; Wyatt 1983: 276 note 21; Faulkner and Andrews 1985: 27-35). In short, the *'atef* crown is emblematic of Osiris' role as otherworldly judge and king over the realm of the dead. Accordingly, in Egyptian myth and art Osiris stands as the ultimate ruler of human destiny and personifies the ideal of timeless royalty beyond the corruptibility of earthly existence (see, e.g., Griffiths 2001). Osiris' persona and symbolism as a royal god are thus fitting for the depiction of prominent deities within the realm of ancient Egypt's political and cultural influence.

Accordingly, the *'atef* crown appears in various artistic depictions of West Semitic deities associated with divine or human kingship in Syria-Palestine during the Late Bronze and Iron Ages (Horn 1973: 173-75; Abou Assaf 1980: 77-79; Daviau and Dion 1994: 160-61). From Late Bronze Ugarit, reliefs and bronze sculpture show an enthroned god, usually understood to be the senior head of the pantheon El, wearing the *'atef* crown (Schaeffer 1966: 7-8, Fig. 3 and Pl. II; Wyatt 1983). The goddess Anat, who is identified at Ugarit as "the mistress of kingship, the mistress of dominion, the mistress of the high heavens" (*bʻlt mlk bʻlt drkt bʻlt šmm rmm*

[1] Two male clay figurine heads from Tall al-ʻUmayrī include a headdress with ridges similar to those of the Tall Jāwā head, but these lack the side feathers of the *'atef* crown (see below) and, as Dabrowski suggests, probably belonged to rider-on-horse figures (see Dabrowski 1997: 343-348 and figs. 18.14-18.18).

[2] Horn's interpretation of the *'atef*-crowned Ammonite statues as depicting the crown of the human king in connection with 2 Sam 12:30 and 1 Chr 20:2, though acknowledging the *'atef*-crown's widespread role in the depiction of non-Egyptian goddesses and gods, does not adequately account for its meaning as a divine symbol across that range of comparative artistic evidence (see the discussion below; Horn 1973; see Abou Assaf 1980: 76).

KTU 1.108 6-7), appears enthroned and wearing the *'atef* crown in stelae and sculpture from Egypt and Palestine (*ANEP*, no. 473; Rowe 1930: 33 Pl. 50a; Montet 1933: Pl. LIV). Another Asiatic goddess depicted with the Osirian crown in Egyptian art is Astarte, often on horseback with a weapon in one hand raised in a "smiting" position (Rowe 1930: 21, Pl. 48:2; Leclant 1960: 24-25, 30-33, Figures 10-11, Pl. I:A, B). Other Egyptian depictions of a "smiting" goddess, perhaps Anat or Astarte, feature the *'atef* crown (Leclant 1960: 13-14, 52, Figures 2 and 28). In Transjordan, the Baluah Stele relief, also in Egyptian style, depicts a god, a human king, and a goddess, the latter of which—in keeping with the apparent royal emphasis of the scene—wears the *'atef* crown (Ward and Martin 1964: 14, 16 and Pls. I, III, and IV).

As an extension of its primary association with Osiris, the *'atef* crown's meaning as a divine attribute thus indicates that in the Ammonite statuary it likewise depicts a deity, more specifically, a deity who represents royalty among the gods and perhaps the human monarchy as well. In short, the god thus depicted stands in the role of the Ammonite royal god. The question remains, which Ammonite god served in this role?

The most substantial case for the deity El as the chief Ammonite god depicted in the Ammonite statuary has been made by P. M. M. Daviau and P. E. Dion (1994). In making the case for El, they draw on two categories of evidence: comparative iconography and personal names.

As Daviau and Dion make clear, important parallels for the Ammonite crowned figures come from Late Bronze Ugarit, specifically the depictions of an enthroned god, presumably El, in a stele relief and in bronze figurines (see above; Daviau and Dion 1994: 161, 164). It bears reminding, though, that the recognition of that Ugaritic deity as El is not made by the artifacts themselves, which are uninscribed, but rather involves an inference informed by various Ugaritic texts describing El's role as "king" (*mlk*) and patriarch of the pantheon, which is his royal family and the royal assembly over which he exercised authority (see Smith 2001: 135-137; Wyatt 1983; W. Herrmann 1999: 275; Cornelius 1999: 587-93). Different mythological frameworks distinguish Ugaritic El's role as king and progenitor of the gods from Osiris' role as deceased king and father of Horus, the living god who represents the living king (see Griffiths 2001). Nonetheless, the ability to connect Osiris' royal iconography in the form of the *'atef* crown at Ras Shamra with the deity El ultimately rests on what written texts reveal about El's status as the divine embodiment of royalty at Late Bronze Age Ugarit.

By analogy, the appearance of similar imagery in local depictions of the divine at Iron Age Ammon indicates the deity to be neither Osiris nor necessarily El but rather the head of the Ammonite pantheon in a similar role, whoever that deity might be. Just as the *'atef* crown appears in the depiction of other non-Egyptian deities of Syria-Palestine, so it appears for the leading deity of the Ammonites. That is, in the Ugaritic and later Ammonite artistic evidence alike, the imagery of Osiris represents not the identity of a specific deity but the role by which that deity is known, a god who personifies kingship—in short, the royal god.

In keeping with the broader emulation of Egyptian artistic style in Late Bronze and Iron Age Syria-Palestine, the *'atef* crown belongs to an international prestige language in iconography that is employed in the depiction of royalty among the divine. One may with Daviau and Dion affirm that the evidence from sculpture is compatible with the hypothesis of El's place as the main god at Ammon, but it would be equally compatible with whatever deity, including Milkom, might have occupied that role. At the end of the day, determining which specific Ammonite god filled the iconographically depicted role of divine sovereign rests on the available written evidence.

On the basis of biblical and inscriptional references (see above), Abou Assaf has suggested that deity to be Milkom (1980: 77-79). Dismissing that evidence as too meager, Daviau and Dion turn to the personal names, which as noted overwhelmingly favor the theophoric element *'l* (1994: 164). Daviau and Dion understand that divine element as being in reference to the deity El as opposed to the common noun "god," an assumption that is problematic without further support (see Layton 1996: 610; Lemaire 1994: 143). It is ultimately on the basis of the ambiguous onomastic evidence that Daviau and Dion's case for El as the Ammonites' leading god ultimately rests. Thus further precision in treating the onomastic evidence would enable a more fruitful utilization of the incisive comparative-iconographic analysis that Daviau and Dion offer.

At the same time, Daviau and Dion's analysis

leads to an important insight based on the Ammonite statuary, one that stands to inform further consideration of the theophoric personal names. The comparisons with Ugaritic artistic tradition show the religious ideal of the royal deity to be one later shared and celebrated among the Iron Age Ammonites. Both Ugaritic and Ammonite traditions depict a royal god, and in so doing represent a broader and longstanding Syro-Palestinian inclination toward Egyptian emulation. Thus the imagery and symbolism associated with Osiris were well suited for the visual representation of the role of divine sovereign at Iron Age Ammon as at Bronze Age Ugarit. That is, the motif of divine royalty in the Ammonite statuary reflects the acknowledged status of one deity above others as an ideal given visible expression in Ammonite religion. In view of this insight from the artistic evidence, one might now give further consideration to the Ammonite personal names.

2. The Onomastic Evidence: The National Deity as the Family Deity

In seeking to identify the leading god of the Ammonites as depicted in their statuary, one might consider the identification of Milkom in this role in the Hebrew Bible (see above). As regularly noted, Milkom appears in personal names only infrequently, to date in only five names: *bdmlkm* (*CAI* 1b), *mlkm 'wr* (*CAI* 129), *mlkmgd* (*CAI* 127), *mlkm'z* (*CAI* 136), *mlkmyt* (*CAI* 147:1:1; see Aufrecht 1999b: 157 n. 26).[3] Slightly more frequent are *b'l* and *'dn*, which like *'l* might be understood as a common noun or title for a deity and not a proper divine name as such (Aufrecht 1999b: 156-60 and notes 19, 29). Though other divine names and titles appear in the Ammonite onomasticon (e.g., *gd*, *nr, yrḥ*, etc.), none occurs with any frequency. As others have observed, the Ammonite onomasticon thus does not reflect a great variety of deities, and the divine element *'l* dominates (see Tigay 1986: 19-20 and notes 60 and 61; Lemaire 1994: 142-43; Aufrecht 1999b: 156-59; cf. Israel 1990: 316-35).

The ambiguity of *'l* as a divine element in West Semitic personal names leads S. C. Layton to an apt and frequently cited suggestion: "In the absence of hard evidence, the interpretation of *'el* as a common noun 'god' is preferred" (Layton 1996: 610). Such evidence to the contrary might be sought through a close comparison of leading theophoric elements in the onomastica of Ammon's close neighbors in the southern Levant.

Among the Hebrew theophoric names in Iron Age inscriptions, as collected by J. Tigay, 83.3% refer to the Israelite god Yahweh (see TABLE 1 and Tigay 1986: 9-17, 47-85).[4] If only names in inscriptions from controlled archeological excavations are counted, the percentage of Yahweh names remains nearly identical (81%; see TABLE 2).[5] Though not sufficiently abundant either to be equally representative or to allow for the same statistical precision, the names from published Moabite and Edomite sources nonetheless indicate a similar frequency for Kemosh and Qos, respectively.[6] The comparable frequency of the most popular divine name elements among the Hebrew, Moabite, and Edomite names is matched among the relatively abundant Ammonite names, in which *'l* occurs in roughly 84% of the theophoric names, whether including or

[3] The last two names mentioned come from inscriptions that have been dated to ca. 500 (*CAI* 136) and the fifth century BC (*CAI* 147) and thus are not included in the statistics of Iron Age epigraphic personal names discussed below (see Aufrecht 1989: 136, 341).

[4] This count includes the Hebrew names with *'l* as the theophoric el ement, which Tigay lists in his Appendix D (Pp. 83-85) but which, in keeping with the aims of his study, Tigay excludes from the body of his discussion (see Pp. 9-17).

[5] As noted by Tigay (1986: 12 note 34). For extensive and incisive discussion of the problem of possible forgeries among non-provenanced finds, see Rollston 2003, 2004.

[6] The Edomite names are found in Bartlett 1989: 204–27 and in Avigad and Sass 1997: 387–94. The Moabite names are found in the Mesha inscription (*KAI* 181:1; *COS* 2:137), the Karak Fragment (Reed and Winnett 1963), Sennacherib's Annals (Luckenbill 1924: 30; *COS* 2: 303), and others listed in Mattingly 1989: 222 and in Avigad and Sass 1997: 372-386.
In keeping with Tigay's method for counting the Hebrew names, the Edomite, Moabite, and Ammonite names discussed here are tabulated in similar fashion. That is, the totals reflect the number of individuals understood to bear a given name. Multiple attestations of the same name in different sources are counted as different individuals, unless obviously referring to the same person; e.g., Edomite Qaus-gabri, mentioned in two different Assyrian inscriptions and in a seal from (Umm al-Biyāra (see Bartlett 1989: 204; Tigay 1986: 43-44). In contrast to the Hebrew names, which Tigay takes only from Hebrew inscriptions, those of the other language groups counted here are represented by comparatively small epigraphic corpera, and so Ammonite, Moabite, and Edomite names from contemporary Assyrian sources are included here. For all three groups and in keeping with Tigay's method, only names dated to the mid-sixth century or earlier are included.
As Tigay found with the Hebrew names, among the Ammonite anthroponyms, which are relatively well represented, the ratio of names invoking the most popular deities does not differ significantly when one excludes examples lacking an archaeological provenance (see Tigay 1986: 9-17, 47-85). The Ammonite names are taken from Aufrecht 1989; Aufrecht 1999b: 152-62; Aufrecht 1999a: 177–81.

excluding those from inscriptions derived from the antiquities market (compare TABLES 1 and 2).

Given the overall linguistic, cultural, and geographic affinities among these population groups, this striking pattern in onomastic theophoric elements suggests that in the Ammonite personal names *ʾl* has a significance corresponding to that of Qos, Kemosh, or onomastic forms of Yahweh in each of the other name groups. That is, the parallels suggest that in the Ammonite names *ʾl* typically occurs not as a common noun but as the title of the chief Ammonite deity, if not the divine name El.[7]

As noted, personal names are an expression of family religion, and the names reflect the significance of those deities in that context. The most frequently named deities in Edomite, Moabite, and Hebrew theophoric names are also the acknowledged national gods of each population.[8] Among the peoples of the southern Levant represented by these names, one might thus recognize an interrelationship between national religious identity and the family-based activity of name-giving. The correlation between the most popular divine name element in anthroponyms and the chief deity of national religion indicates a similar status for Ammonite *ʾl*.

One key area of onomastic evidence that illustrates the overlapping of family piety and national religion is that of royal names. Among the names of known Moabite kings, the national deity Kemosh is mentioned in the royal names *kmšyt* (*KAI* 181:1; *COS* 2:137; Reed and Winnett 1963) and *kemōšnadbi* (Kammusunadbi in Sennacherib's annals, see Luckenbill 1924: 30; *COS* 2:303). The Edomite kings included Qausmalaka (Tiglath-Pileser III, *ANET*, 282) and Qausgabri (Esarhaddon, Prism B, V.56, *ANET*, 291; Ashurbanipal, Prism C II.28, *ANET*, 294). Among the kings of Israel and Judah named in the Hebrew Bible, the overwhelming majority of theophoric names are Yahwistic, and, with the possible exception of kinship elements like *ʿam* in names such as Rehoboam and Jeroboam, no king rules by a name mention-

TABLE 1. Deities Invoked in Theophoric Names in Iron Age Inscriptions Including Unprovenanced Finds.

Language (number of theophoric names)	Most frequent divine element	Frequency of other divine elements including *ʾl*; for Ammonite, including *mlkm*)
Hebrew (669)	83.3% (557) *yh(w)/yw*	16.7% (112)
Ammonite (195)	84.1% (164) *ʾl*	15.9% (31)
Moabite (18)	83.3% (15) *kmš*	16.7% (3)
Edomite (15)	66.7% (10) *qws*	33.3% (5)

TABLE 2. Deities Invoked in Theophoric Names in Iron Age Inscriptions from Controlled Archaeological Excavations.

Language (number of theophoric names)	Most frequent divine element	Frequency of other divine elements including *ʾl*; for Ammonite, including *mlkm*)
Hebrew (263)	81% (213) *yh(w)/yw*	19 % (50)
Ammonite (45)	84.4% (38) *ʾl*	15.6% (7)
Moabite (5)	60 % (3) *kmš*	40% (2)
Edomite (12)	83.3% (10) *qws*	16.7% (2)

[7] In the Hebrew Bible, *ʾēl* rarely if ever appears as a deity clearly distinguished from Israel's god (cf., e.g., Ezek 28:2) and thus, in addition to its occasional occurrence as a common noun (e.g., Deut 32:12; Mal 2:11; Ps 81:10 [9]; etc.), regularly functions as a title for Yahweh (e.g., Gen 17:1; 33:20; 46:3; Exod 20:5; Isa 9:5 [6]; etc.; see Cross 1974: 253-61; Herrmann 1999; Smith 2002: 32-43, 200-207).

[8] For the Edomites, the lack of other textual evidence means that the personal names are also the main evidence for the national deity. Significantly enough, though, no other deities besides Qos appear with any frequency among the Edomite names.

ing a deity other than Yahweh.[9] Among the known Ammonite names, one royal official is attested with a Milkom name (i.e., *mlkm'wr 'bd b'lyš* in a seal from Tall al-'Umayrī [*CAI* 129; Geraty 1985: 98-100, plates 7 and 8; Herr 1989]), but as yet no names of known kings refer to Milkom, the only repeated theophoric name element being *'l*, (in *pd'l* [*CAI* 13] and *ḥṣl'l* [*CAI* 78:2]; see Cross 1985), this in keeping with the broader picture in Ammonite names.

In sum, the onomastic evidence suggests the dominance of a single deity in national and family religious life for Ammonites during Iron II. Whether a true divine name or a title for the main deity who also went by other designations, *'l* designates a god who fills the role of leading deity among the population, like Moabite Kemosh, Edomite Qos, and Hebrew Yahweh in the names of Ammon's closest Iron Age neighbors. Not only was the god designated in the names as *'l* the most popular Ammonite deity, but this deity knew no real rivals—*mlkm* being the only other divine name element that occurs with any significance and *b 'l* and *'dn* possibly being divine titles or appellatives. Thus following the pattern of theophoric names for Iron Age peoples of the southern Levant, the Ammonite onomasticon provides further evidence for the concept reflected in the Ammonite statuary, that of a leading national deity. With the aim of incorporating all the evidence relevant to that god's identity, one might now turn to other inscriptions.

3. Non-Onomastic Inscriptions: National and International Deities

Among the few non-onomastic inscriptions relating to the identity of the Ammonite god, the key text is the 'Amman Citadel Inscription, dating to the ninth century BC (*CAI* 59; *COS* 2:139). The loss of text on both edges of the limestone plaque bearing the inscription hinders a full understanding and has made possible a variety of interpretations of its focus and function (see Aufrecht 1989: 155-157, along with the comprehensive bibliography provided there and in *COS* 2:139). Nevertheless, there is general scholarly agreement that Milkom's name occurs at the beginning of the extant text, and in connection with "building" and with potential threats surrounding the ancient capital, Rabbat Ammon—matters that fall under the prerogatives and responsibilities of kings (Shea 1979, 1991; Hübner 1992: 254; Aufrecht in *COS* 2:139, note 3). The implication of this rare Ammonite monumental inscription is that from relatively early on, the main deity recognized in connection with the Ammonite monarchy was Milkom.

A seventh-century seal refers to its owner, *mng 'nrt* (Akkadian *Mannu-kī-Inurta*) by the epithet "blessed of Milkom" (*brk lmlkm* CAI 55; Avigad 1965).[10] The appearance of such an epithet on a stamp seal suggests Milkom's relevance to both personal and public spheres of life. The signaled importance of identifying personally with Milkom is underscored by the fact that the seal owner has an Assyrian name—what is more, one mentioning a foreign deity, namely, "(N)inurta." Whether an individual of Mesopotamian origin or a native Ammonite who had received the name while living abroad or in the service of the Assyrian empire (see Hübner 1992: 88; Avigad and Sass 1997: 301- 302), the seal owner deemed it appropriate, advantageous, or sufficiently worthwhile to signal in print his identification with the Ammonite god Milkom.[11]

Scarce though the surviving Ammonite epigraphic evidence may be, inscriptions are better weighed than counted as religious evidence. That which is preserved, though sparse, attests to Milkom's prominence in public and political life during the time of the Ammonite monarchy. The non-onomastic epigraphic sources from ancient Ammon thus correspond to the usual acknowledgement of Milkom as "the god of the Ammonites" in the biblical books of Kings and in the prophetic books (1 Kgs 11:5, 23; 2 Kgs 23:13; Am 1:15; Jer 49[=30]:1, 3; Zeph 1:5; cf. Judg 11:24; 1 Kgs 11:7)[12]. The etymological associations of Milkom

[9] For a convenient list, see the Coogan 2001: 531 in the ESSAYS section of the volume. For the understanding of kinship elements in anthroponyms as being in reference to deities, see Gray 1896: 254–55; Noth 1928: 66–75. According to J. J. Stamm, they invoke deceased human ancestors (Stamm 1968: 278–87). K. van der Toorn has argued that the kinship elements refer to divinized deceased human ancestors (van der Toorn 1996).

[10] The fact that this seal is of unknown provenance calls for caution in allowing too much to rest on this one object and the inscription it bears (for extensive bibliography and discussion of the seal, see Aufrecht 1989: 141-144).

[11] Alternatively, N. Na'aman and R. Zadok suggest reading the phrase as a patronymic in Aramaic, thus *br* ("son of") *klmlkm* (Na'aman and Zadok 1988: 45-46 note 51). The supporting explanation of *klmlkm* as a *mlkm*-name formed with the Akkadian element *kulu'u*"actor, member of the temple-personnel (of Iš]tar), performing dances and music" (*CAD* K, 529a), is less than convincing.

[12] In addition to these clear references from the MT, more debated references occur in Greek, Syriac, and Latin versions (see Puech 1999: 575-76).

with matters of rule and council through the West Semitic verbal root *MLK* would make it a most suitable name or title for the Ammonite royal god (see Hübner 1992: 252-256).[13]

Epigraphic evidence for El's influence in Iron Age Transjordan is found in the plaster inscriptions from Dayr ʻAllā in the Jordan valley (Hoftijzer and van der Kooij 1976; Caquot and Lemaire 1977; Hackett 1980; *COS* 2.27). While the language classification of these texts is debated (see, e.g., Huehnergard 1991; McCarter 1991; Pardee 1991), an Ammonite classification of the script is well supported (see, e.g., Hackett 1980: 9-19; Cross 2003: 100-101 and n. 6; cf. Naveh 1987: 109-110). In the inscriptions, the deity El figures prominently, even centrally, among the gods. The text presents El as exercising authority over an assembly of deities, or perhaps two separate divine groups, designated the *ʾlhn* and the *šdyn*, and acting as head of the pantheon (Combination I lines 1-2, 6-7).

Likewise the biblical Balaam traditions in Numbers 22-24, to which the Dayr ʻAllā texts bear numerous parallels of language and content (see *COS* 2:142-145), show a preference for language and imagery of El, even in connection with the otherwise solidly Yahwistic tradition of the exodus:

ʾēl môṣîʾām mimmiṣrāyim kĕtôʻăpōt rĕʾēm lô

El, who brings them out of Egypt, is like the horns of a wild ox for him" (Num 23:22; 24:8).

Other connections between Dayr ʻAllā and biblical texts like these as well as Isaiah 14:13-20, Psalm 19:1, and the book of Job support B. Levine's contention of a regional center of El's worship in Transjordan during the Iron Age (Levine 1985: especially 333-38).

On the other hand, the Dayr ʻAllā inscription mentions no national groups or known national deities. H. J. Franken interpreted the building containing the inscriptions as a sanctuary, and the building remains included an abundance of pottery and other items from throughout the eastern Mediterranean, suggesting that it served an international population as a worship place connected with long-distance overland trade (see Franken 1991; Ibrahim and van der Kooij 1991). This international setting at Dayr ʻAllā would correspond to that of its biblical parallels in Numbers 22-24, the context of which is Israel's place and destiny among the nations. These international connotations resonate with the recognition of El as head of the pantheon in texts from throughout Syria-Palestine from LB to Iron Age times (see Herrmann 1999). El's role at Dayr ʻAllā thus seems to be more that of internationally recognized head of the pantheon than that of a national god to be claimed by any kingdom. That is to say, at Dayr ʻAllā and in these biblical texts, the emphasis in connection with El is more international than nationalistic in nature.

While the plaster texts from Dayr ʻAllā describe El as head of the pantheon in broad perspective, in the epigraphic references to Milkom, that deity's role may be understood in more nationalistic terms as the chief god of the Ammonites. While El was widely regarded throughout Syria-Palestine as a leading god and, at least at Late Bronze Ugarit, as head of the pantheon, Milkom's name may have had more nationalistic associations, especially in connection with the Ammonite monarchy.

4. Glyptic on Name Seals: Human Status and Divine Identity

The evidence for El and Milkom as the Ammonite royal god leads to a final category of data to consider, namely, iconography accompanying the relevant personal names on seals. As U. Hübner has demonstrated, no individual iconographic elements or motifs in seals can be characterized as uniquely Ammonite, although Hübner identifies some characteristically Ammonite tendencies and constellations of elements within the shared West Semitic inventory of glyptic (Hübner 1993: 148-49).[14] While inscribed iconographic name seals may provide a desirable collocation of text and image, there is rarely if ever an identifiable correlation between distinct seal imagery and the specific divine elements of names in the West Semitic seals (Keel and Uehlinger 1998: 310). To test this generalization in connection with the Ammonite per-

[13] Notwithstanding the formation of *milkom* with the *-m* suffix, an identification with *mlkm* in Ugaritic god lists or with a deity *Malkum* / *Malik* in texts from Mesopotamian, Ebla, and Mari is far from being established (see Puech 1999; cf. Hübner 1992: 252-256). What is more, *Mailkom* is to be distinguished from *Molek* in 1 Kgs 11:7, a distinction recognized in the biblical texts themselves (see 2 Kgs 23:10, 13).

[14] For similar conclusions regarding the seal iconography of Ammon's neighbors, see the other essays in Sass and Uehlinger 1993. Discussions of iconography generally follow the identification of seals as Ammonite based on language, script, and provenance as leading criteria (see Hübner 1993: 132-133; see also Aufrecht 1989: xii, 350-351).

sonal names, one might begin with the relatively infrequent *mlkm* names.

Four of the five epigraphic *mlkm* names known to date are found on name seals. Of those four, only two occur as the name of the seal owner (*CAI* 127, *CAI* 129), the other two as the patronymic (*CAI* 1b, *CAI* 136). Not only is this too small a sample from which to establish a "significant series" of related iconographic elements (see Uehlinger 1993), but the accompanying iconographic elements in question, namely, the four-winged scarab and two sphinxes flanking what appears to be a small plant (*CAI* 127), are also found on other Ammonite seals whose owners have *ʾl* names (four-winged scarab: H 28, *CAI* 32, *CAI* 122; sphinx: H 31=*CAI* 39a; *CAI* 33, *CAI* 84, *CAI* 108) and also on other Ammonite seals (see Aufrecht 1989: 351-52). In short, the seal iconography tells us nothing directly about the deities mentioned in the personal names. It may, however, tell us something about the name bearers.

As discussed by R. Younker, one collection of iconographic motifs stands out among the Ammonite name seals, namely, the four-winged scarab flanked by two standards each topped by a lunar crescent or a lunar/solar disc appearing in a middle register of the seal demarcated by horizontal lines (Younker 1989). This constellation of elements appears in the seal of *mlkm'wr 'bd b'lyš'* from Tall al-'Umayrī (*CAI* 129). It also appears in two other Ammonite seals, those of *mnḥm bn ynḥm* (*CAI* 42)—which was found in a tomb with seals of *'dnnr* (*CAI* 40) and *'dnplṭ* (*CAI* 17), both designated as "servants" of the Ammonite king (Amminadab (*'bd 'mndb*). The other seal containing the iconography in question is that belonging to *šwḥr hnss* , the latter element being a title translated "the standard-bearer" (*CAI* 68).

As Younker points out, all three Ammonite seals displaying this iconographic motif belong to individuals who, either by virtue of their titles ("servant" [*'bd*] of the king, "standard-bearer") or close associations with others bearing them, have observable "royal connections" (Younker 1989: 376). Accordingly, Younker suggests that the four-winged scarab, though not unique to Ammonite seals, served as "the central motif for the royal insignia of Ammon." One of those individuals, whose title most explicitly identifies him as a member of the royal court (*'bd b'lyš'*, *CAI* 129), bears a clearly theophoric name, and the deity it mentions is Milkom.

Younker suggests that the meaning of *mklm 'wr*, "Milkom is (a) light," and the solar and lunar iconographic motifs on the seal might be expressions of Milkom's character as an astral deity (Younker 1989: 378). While such associations may have indeed pertained to Milkom—see Zeph 1:5, which Younker cites—the possibility for connecting the onomastic and iconographic evidence in this instance runs up against a couple of problems. The appearance of this iconographic scene on three Ammonite seals is significant in regard to the iconography itself; however, drawing a connection with specific theophoric name elements would require more than one example to establish a meaningful correlation between the iconography and the deity mentioned. Second, the two other seals bearing this iconography belong to owners with names lacking any astral connotations *mnḥm bn ynḥm*, *CAI* 42 and *šwḥr hnss*, *CAI* 68).

Furthermore and as noted at the beginning of this discussion, theophoric personal names, rather than identifying a deity's specific traits, as a rule express sentiments that are fairly generic in nature and that might apply to various deities (see above). More specific to this case, West Semitic names with the element *'(w)r* occur in connection with various divine elements— *wh(w)/yw*, *ʾl*, and *šdy* in biblical and epigraphic Hebrew (see Fowler 1988: 335); *ʾl* in other Ammonite names (Aufrecht 1989: 356); *qs* in a Nabatean altar inscription (Bartlett 1989: 201, 206). Given the relative paucity of names mentioning other deities among these name groups (see above), the occurrence of the name element *'(w)r* with these most frequently mentioned gods says little about the distinctive character or attributes of the deities in question.

While the iconographic motif in question, like others, may not relate directly to the divine element in a theophoric name, it occurs in all three cases on seals of individuals who enjoyed an elevated status within Ammonite society. In the case of *mlkn 'wr*, that status is indicated by his title as a royal official. In view of the limited number of deities named in the Ammonite onomasticon, it is significant that a servant of the king would identify himself by a name invoking Milkom.

The only recurring divine element in the names of Ammonite kings, as noted, is *ʾl* , and the king identified on the seal of *mlkm 'wr*, bears a theophoric name in which the divine element is *b ʾl*. These divine elements in royal theophoric names come into focus when one takes seriously the role

of the royal god indicated in the statuary and the national god's dominance in name-giving among the other groups of the southern Levant (see above). Like *b'l* "lord" in the king's name, onomastic *mlkm* in the name of a royal official serves as a fitting title for the same god invoked as *'l* in other royal names and in the overwhelming majority of Ammonite names generally speaking. It bears repeating that the etymology of *mlkm* makes it most suitable as a divine title with explicitly royal associations.

Conclusion: Milkom as a Distinctly Ammonite Title for El

The dominance of the theophoric element *'l* in Ammonite personal names suggests the importance of the deity El in the context of family religion. The most frequently invoked deities in Moabite, Edomite, and Hebrew theophoric names, and thus those who played a similar role in family religion among those language groups, also happen to be those recognized as national or "state" deities based on the total written evidence. What is more, in each group of theophoric names those leading deities tend to be referenced with roughly the same frequency. The occurrence of the Ammonite name element *'l* with approximately the same percentage as Kemosh, Qos, and onomastic forms of Yahweh in theophoric names in Moabite, Edomite, and Hebrew, respectively, suggests that among the Ammonites, too, the most popular family deity likewise corresponds to the chief national deity, in this case El.

The thoroughgoing devotion to El among the Ammonite population reflected in the onomasticon belonged to a more widespread and longstanding worship of the deity throughout Syria-Palestine. In contrast with the more traditional and widespread form of family piety expressed in personal names, the differentiation of Ammonite El in more nationalistic contexts like the Amman Citadel Inscription and in biblical texts, was expressed through the title Milkom—a title distinct to the Ammonite form of El in his capacity as royal god, a role reflected in the Ammonite statuary. The role of the royal god reflects a working notion of one god who was preeminent above others among the broader population, the same situation indicated by the dominance of the "El" personal names.

The role of the royal god would be most relevant to the Ammonite monarchy, whose names—in keeping with the broader Ammonite name-giving—tend to favor the divine element "El." At the same time, it is fitting for a royal official to identify himself by a Milkom name on the same seal that bears what might have been the royal iconography of the Ammonite kingdom. In sum, given the present state of the evidence, Milkom is best understood as a distinctly Ammonite form of El.[15]

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[15] The identification of the Ammonite god as both Milkom and El is at least in some degree analogous to the equation of Yahweh and El in Israelite religion, the nature and origins of which remain debated (see, e.g., Eissfeldt 1966; Cross 1973: 44-75; Smith 2002: 32-42).

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Crossing Jordan: Tracing Human Migration in Classical Period Jordan Using Strontium and Oxygen Isotopes

Introduction

Archaeologists traditionally track the movement of material culture or assess site patterning in order to quantify ancient migration patterns or mobility levels (e.g., Binford 1980; Hitchcock 1987; Kent 1991). Chemical signatures in human skeletal tissues such as strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta\ ^{18}O$) isotopes also have become additional powerful tools for investigating migration in ancient contexts. This paper discusses the applicability of these techniques in Jordan. First, the development of these two isotopic techniques and how they relate to human migration will be discussed. This will be followed by an assessment of the applicability of these techniques in Jordan, using data from the Nabataean site of Khirbat adh-Dharīḥ and the Byzantine site of Faynān.

Isotopes and Human Migration

The ratio of two strontium isotopes, ^{87}Sr to ^{86}Sr, reflects bedrock geological age. Strontium enters the food chain, and our skeletal tissues, through consumption of ground water, plant, and animal resources (Faure 1986; Faure and Powell 1972). Human dental enamel, once mineralized, retains the strontium isotope ratio absorbed from consumption of these resources during childhood dental development. Enamel in a particular tooth therefore reflects the strontium sources relied upon, and hence the geological region lived in, during its mineralization. An individual would be identified as an immigrant into a particular region based on a difference between their dental enamel vs. local $^{87}Sr/^{86}Sr$ values. Dental enamel of small mammals best reflects the local $^{87}Sr/^{86}Sr$ signature (Bentley 2006; Budd *et al*. 2000; Hoppe *et al*. 2003; Price *et al*. 2002), although researchers have relied on bedrock, soils, plants, and/or local water with varied success (Ezzo *et al*. 1997; Hodell *et al*. 2004; Schweissing and Grupe 2003; Sillen *et al*. 1995, 1998). The application of $^{87}Sr/^{86}Sr$ to investigate human migration has been applied in numerous contexts around the globe (e.g., Ericson 1985, 1989; Evans *et al*. 2006; Ezzo *et al*. 1997; Knudson and Price 2007; Knudson and Buikstra 2008; Montgomery *et al*. 2000, 2003; Price *et al*. 1994, 1998, 2006).

Oxygen isotopes vary according to climatologic and geomorphologic variables such as distance from the ocean, precipitation, temperature, elevation, and humidity/aridity (Gat and Lansgaard 1972; Yurtsever and Gat 1981). Similar to strontium isotopes, oxygen isotopes become incorporated into the mineral components of human bone (carbonate and apatite) through consumption of water sources and food (Luz and Kolodny 1989; Luz *et al*. 1984). Instead of local geology, these materials reflect the local environmental water, which is composed of both meteoric water falling as precipitation and recycled groundwater (Dansgaard 1964). The $\delta\ ^{18}O$ signatures in human dental enamel therefore reflect the water source(s) that the individual relied upon during dental enamel development and mineralization (see Dupras and Schwarcz 2001; Evans *et al*. 2006; Knudson and Price 2007; Prowse *et al*. 2007; White *et al*. 2004).

Geologic and Climatic Setting of Western Jordan

Strontium isotopes' utility for understanding migration depends upon: 1) considerable heterogeneity in $^{87}Sr/^{86}Sr$ values between geologic/cultural zones, and 2) significant homogeneity in $^{87}Sr/^{86}Sr$ ratios within these areas. The Hashemite Kingdom of Jordan occupies a geologically diverse region categorized by seven distinct geologic provinces: the southern mountainous desert, the Jordan rift

valley, the mountains and highlands east of the rift valley, the central plateau near al-Jafr and the Wādī as-Sirḥān system, the northern basalt fields, and the northeastern plateau near the Iraqi border (Bender 1975) (FIG. 1). Presumably strontium isotope variation would mirror variability in bedrock geology.

The probability that faunal remains recovered from archaeological contexts would accurately characterize regional geology in western Jordan was tested using 20 samples from 13 archaeological sites. Western Jordan was focused on during this initial phase due to its geologic complexity and plethora of ancient sites in this area. Western Jordan includes two of Bender's provinces: the Jordan rift valley and the mountains and highlands to the east.

Regional characterization of $^{87}Sr/^{86}Sr$ ratios in western Jordan relied upon dental enamel from 20 small rodents (*Rattus rattus, Myomimus personatus, Mus musculus,* and *Gerbilus dasyurus)* recovered from 13 archaeological sites in Jordan. Patterning of these data was tested using two techniques: 1) a t-test to compare strontium isotope ratio means between Bender's two geologic provinces to see if they were sufficiently heterogeneous, and 2) cluster analysis to identify patterns that may not conform to Bender's designations. First, the t-test did identify a significant difference in the strontium isotope ratio signature means between Bender's two provinces (mean difference = 0.0002, df=10.3, t=4.04, p=0.0022), but significant overlap existed between the two groups. Cluster analysis clarified this overlap by clustering strontium isotope values in into three north-south zones: the rift valley ($^{87}Sr/^{86}Sr$=0.70781-0.70786), the western highlands ($^{87}Sr/^{86}Sr$=0.70815-0.70834), and the wadi and mountain systems in between the valley and the highlands ($^{87}Sr/^{86}Sr$=0.70792-0.70810) (Perry et al. in press). Published data from Israel suggests that the western rift valley, and escarpment, and highlands follow essentially the same pattern as Jordan with the exception of the coastal region ($^{87}Sr/^{86}Sr$=0.70831-0.70925) and the Golan Heights ($^{87}Sr/^{86}Sr$=0.70529-0.70571) (Shewan 2004).

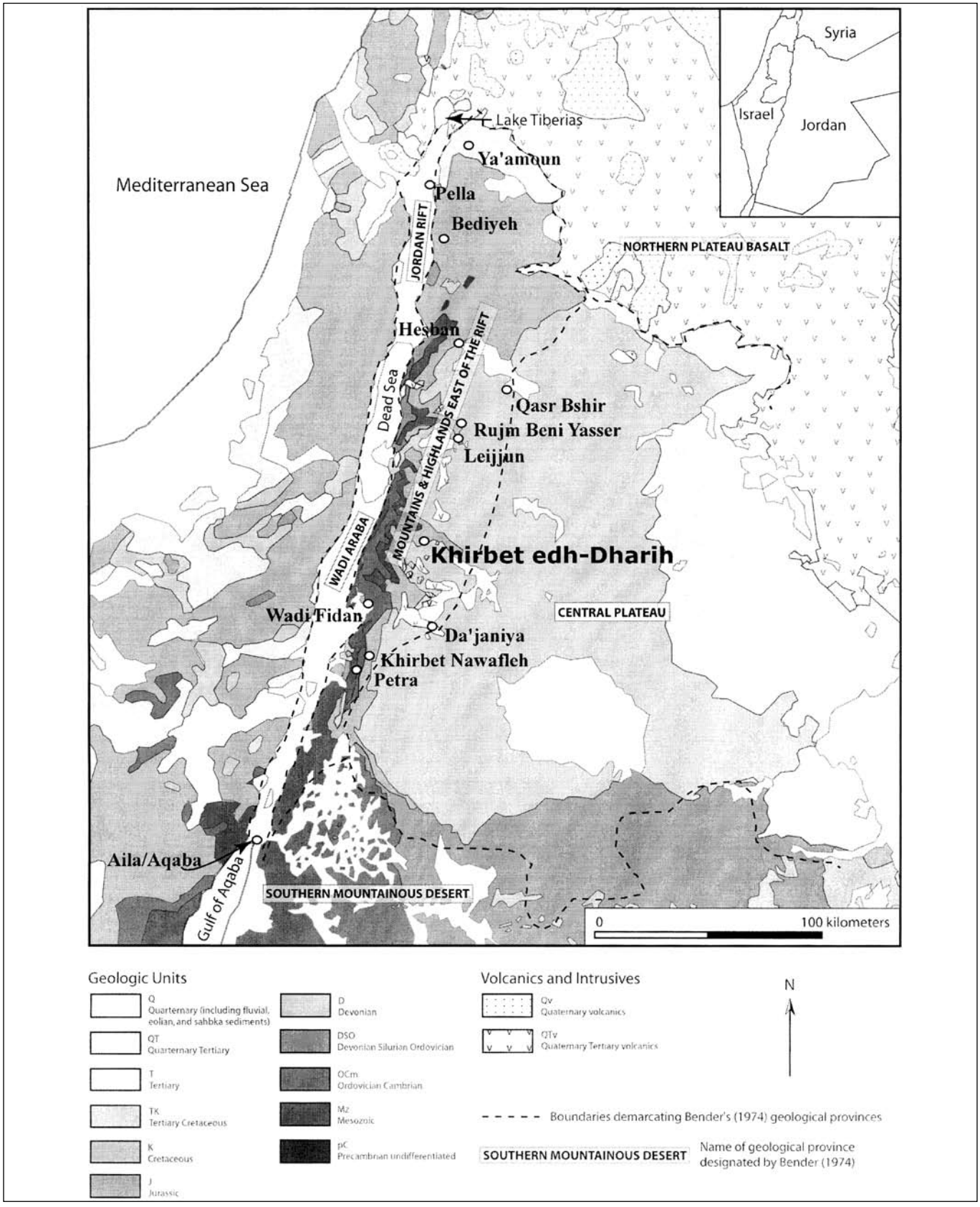
Oxygen isotopes' value for migration studies on the other hand generally depends upon regional variation in elevation, humidity, rainfall levels, and distance from major water bodies. The Levantine region generally follows a typical Mediterranean climate pattern with warm summers, mild winters, and seasonal rainfall lasting from September until April. As the systems spread inland from the Mediterranean into the mountainous regions in northern and central Israel, precipitation becomes continuously depleted of heavy isotopes (Gat and Dansgaard 1972). Rain in the lower lying areas on the other hand, such as the coastal plain and the Jordan Valley, is more enriched than in the higher elevations (Gat and Dansgaard 1972). This pattern reverses beyond the Jordanian side of the rift valley escarpment into the highlands, with increasingly lower precipitation $\delta^{18}O$ values as one moves from east to west (Bajjali and Abu-Jaber 2001). In the southern arid regions however, such as the Negev desert, precipitation $\delta^{18}O$ is strongly negative because of evaporation and relatively short duration of rainfall events (Gat and Dansgaard 1972).

Regional inhabitants additionally relied heavily on groundwater sources such as wells and aquifers in addition to constructed rainfall catchment features. Groundwater sources are largely replenished through surface runoff that varies from north to south. In the north, water is quickly absorbed into the surface. In the south on the other hand, surface runoff travels long distances over the loess groundcover, and as a result, is subject to greater evaporation and resulting enrichment (Gat and Dansgaard 1972). This combined effect of enriched precipitation and the relative importance of surface runoff as a water source in the south results in extremely enriched groundwater $\delta^{18}O$ values in southern Israel (Gat and Dansgaard 1972) (FIG. 2).

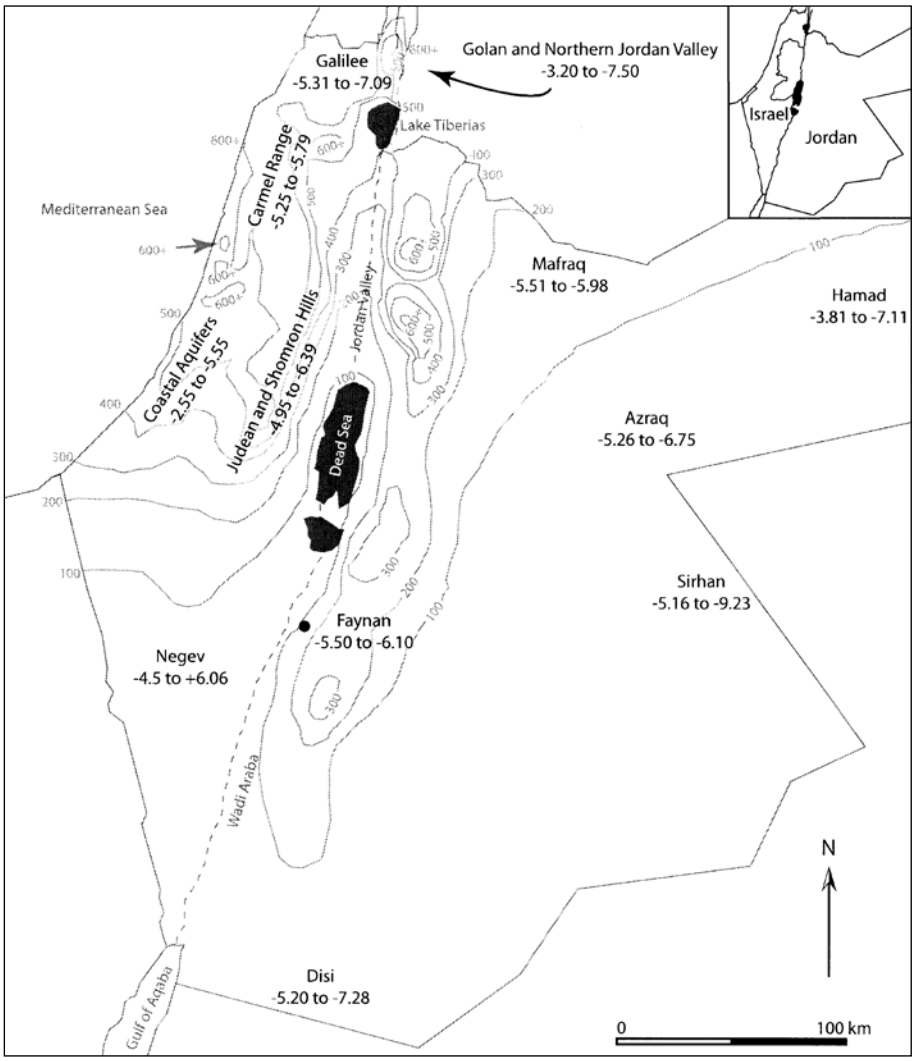
Thus, on the surface, Jordan seems to be an appropriate venue for isotopic investigations of ancient migration. Strontium isotope values vary strongly east to west, and oxygen isotopes have north-south variation as well as east-west variation. The efficacy of these techniques will be tested using isotopic data from two sites: Khirbat adh-Dharīḥ, and Khirbat Faynān (ancient *Phaeno*).

Example #1: Khirbat adh-Dharīḥ

Khirbat adh-Dharīḥ, located along the *Via Nova Traiana* north of Petra, was a small village and sanctuary during the Nabataean and Roman periods. Village residents included the family overseeing the sanctuary, possibly associated with a monumental family tomb discovered at adh-Dharīḥ, a large house near the sanctuary, and mentioned in an inscription from Khirbat at-Tannūr (al-Muheisen and Villeneuve 2005; Lenoble *et al*. 2001; Villeneuve and al-Muheisen 2003). Assuming that the



1. Map of Jordan showing bedrock geology and sampled sites (from Pollastro *et al.* 1997) in addition to geological regions identified by Bender (1974, 1975).

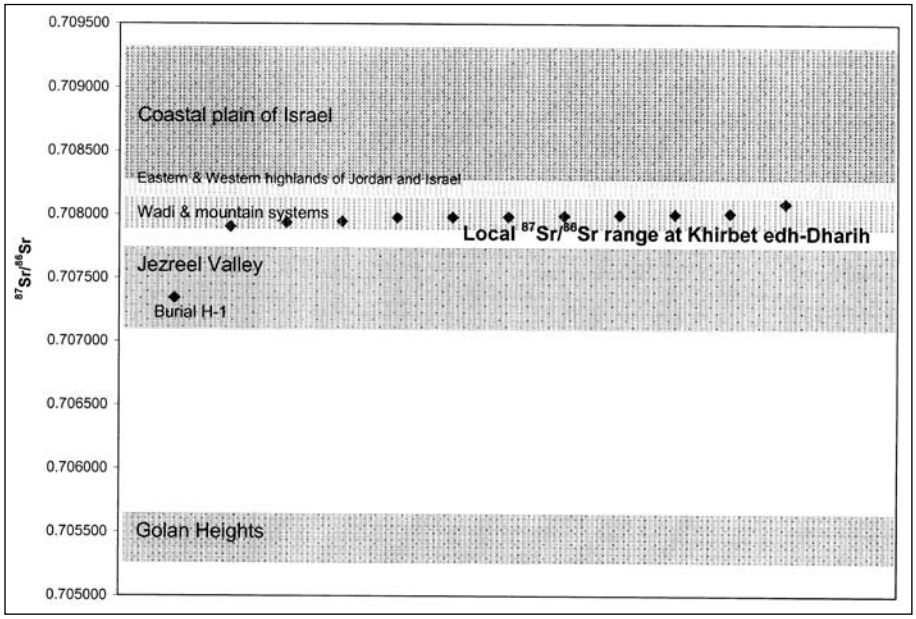


2. Isoline map showing mean annual precipitation (based on data from the Jordanian Ministry of Water and Irrigation, Palestinian Water Authority, and Israeli Hydrological Service, Middle East Water Data Banks Project. http://exact-me.org/overview/index.htm) with groundwater $\delta^{18}O$ variation in Jordan and Israel based on regional studies of Bajjali and Abu-Jaber (2001) and Gat and Dansgaard (1972).

religious sanctuaries were under centralized administrative control based in Petra, this family could have either been selected from the local population by authorities to administer the sanctuary or have been sent from an administrative center such as Petra. Excavators at the site hypothesize that Khirbat adh-Dharīḥ was settled by exiled elites from Petra. In this case, we used $^{87}Sr/^{86}Sr$ ratios of archaeological human enamel from adh-Dharīḥ to identify individuals, especially those in the monumental tomb, who did not originate from adh-Dharīḥ.

Dental enamel from the mid-crown of the first permanent molar of 12 adult individuals from the northern cemetery, southern cemetery, and monumental tomb at Khirbat adh-Dharīḥ, excavated by Yarmouk University, the Institut Français du Proche-Orient (IFPO), and Sorbonne University, was analyzed, reflecting residence from birth until approximately 2.5 years old (Moorrees *et al*. 1963a, 1963b). This sample includes one intact burial (V-5) from the monumental tomb (Tomb C1), likely interred in the years immediately following Roman annexation (Lenoble *et al*., 2001:127-128). Two rodent dental enamel samples also were collected to establish the local $^{87}Sr/^{86}Sr$ value. The samples were processed at the Bioarchaeology Laboratory at East Carolina University and treated and analyzed at the Isotope Geochemistry Laboratory in the Department of Geological Sciences at the University of North Carolina at Chapel Hill. Detailed results of these analyses are discussed in Perry *et al*. (in press).

Only one definite outlying value emerges through observing the distribution of the human dental enamel $^{87}Sr/^{86}Sr$ signatures (FIG. 3). This individual, an adult male buried in Tomb H in the Southern Cemetery, may have originated from the Jezreel Valley in northern Israel based on his



3. Results of $^{87}Sr/^{86}Sr$ analysis of the archaeological human dental enamel from Khirbat adh-Dharīḥ compared with ranges established by fauna and plants (Perry *et al.* in press; Shewan 2004).

$^{87}Sr/^{86}Sr$ signature ($^{87}Sr/^{86}Sr$=0.70734) (Shewan 2004). Comparing the remaining values with the range established from faunal dental enamel ($^{87}Sr/^{86}Sr$=0.70783 ±0.0004) only identifies one individual from the northern cemetery falling within the "local" range. The remaining 10 individuals from the northern cemetery, the southern cemetery, and the one individual from the monumental tomb have $^{87}Sr/^{86}Sr$ values slightly above the upper limit of the local range for adh-Dharīḥ. However, these individuals however fall within the values expected for the wadi systems and mountainous region to the east of the rift valley. These people thus originated from somewhere within the zone extending ca. 300km from north to south — and this could include adh-Dharīḥ or Petra. The faunal data therefore do not adequately reflect the broad range of actual strontium sources available at the site, which may vary from the local value through the consumption of strontium — and calcium — rich foods grown or raised in other regions. This can be clarified with further sampling of faunal dental and soil samples, in addition to detailed analysis of dietary sources and composition at the site. Other techniques, such as oxygen isotope analysis, may further clarify these results, as discussed below.

Example #2: Faynān

The example from Khirbat adh-Dharīḥ demonstrates the potential, and the limitations, of strontium isotope analysis in Jordan. Oxygen isotopes, however, often can clarify strontium isotope results. Recent analyses conducted by the author and Drew Coleman at University of North Carolina at Chapel Hill, assisted by Abdel Halim al-Shiyyab of Yarmouk University, on samples from the Byzantine cemetery at Faynān exhibits the potential of multiple isotopic techniques. The Byzantine Empire purportedly expended substantial funds and labor transporting prisoners to mining camps such as Faynān (*Phaeno*). The camp also certainly contained administrative staff or free mine laborers and their families, and possibly the families of the prisoners. The third - sixth century AD cemetery for instance held children under the age of three years whom Byzantine courts would have exempted, for example, from penalty (Robinson 1995). They thus lived with their parents, who resided at the camp for employment or punishment.

Dental enamel samples were collected from 31 of the 45 individuals excavated from Faynān's Southern Cemetery by Yarmouk University and the Council for British Research in the Levant (CBRL) in 1996 (Findlater *et al.* 1998). The sampled teeth from different individuals reflect the areas they lived in anywhere from 16 weeks *in utero* until 6.8 years of age. One rodent dental enamel and eight snail shell samples also were collected from Wādī Fīdān, ca. 10km to the west, to establish the local $^{87}Sr/^{86}Sr$ value. Strontium isotope analysis was performed at the Isotope Geochemistry Laboratory in the Department of Geological Sciences at the University of North Carolina at Chapel Hill, and oxygen isotope analyses on enamel carbonate

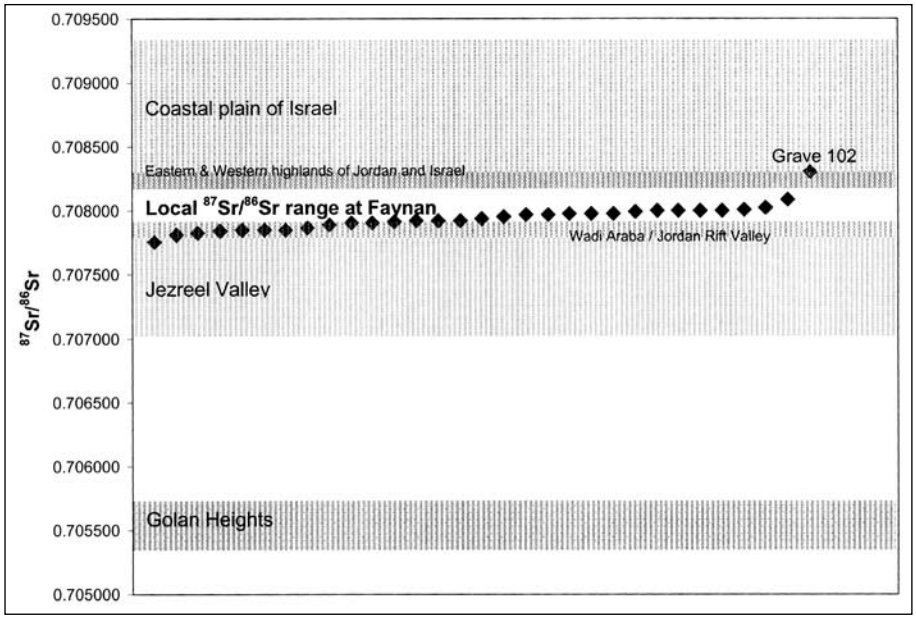
at the Stable Isotope Laboratory in the Department of Geosciences at the University of Arizona. The results from these analyses are discussed in more detail in Perry *et al*. (n.d.).

The estimated local $^{87}Sr/^{86}Sr$ value at Faynān based on local faunal enamel and snail shell samples ranges between $^{87}Sr/^{86}Sr$=0.70793-0.70814. Approximately half of the individuals from Faynān fall within this range, directly suggesting that they are of local origin (FIG. 4). The distribution of Sr isotope values, however, does not identify a clear boundary between individuals falling within the range and those just below it. According to the distribution of the values, only one 30-34 year-old male from Grave 102 ($^{87}Sr/^{86}Sr$=0.70830) is a true outlier.

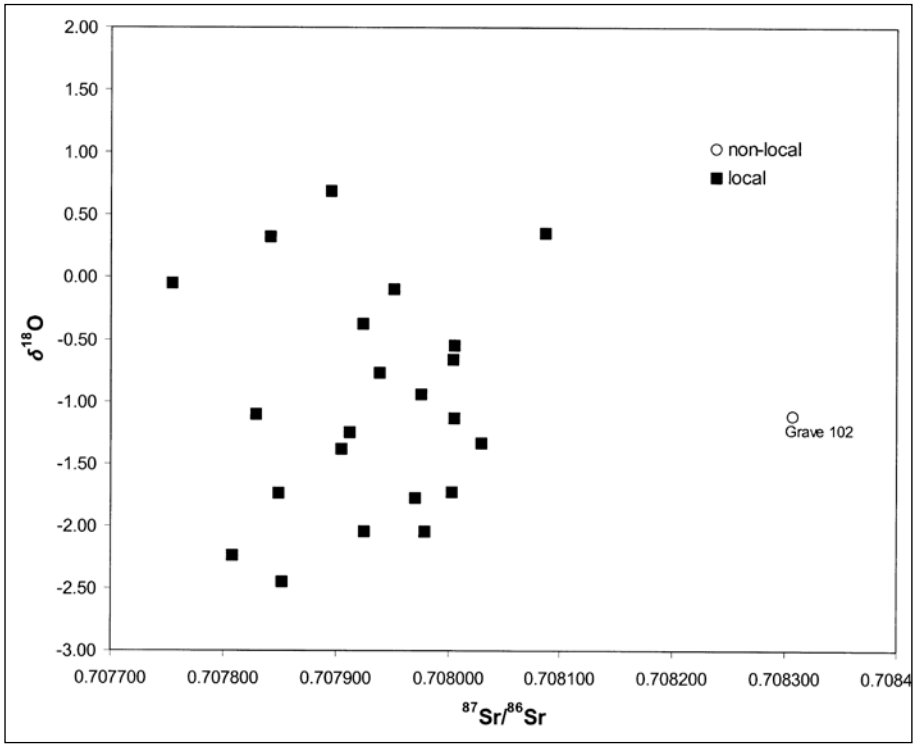
Therefore, similar to the Khirbat adh-Dharīḥ sample, the faunal and snail shell samples do not adequately reflect the local range of biologically-available strontium at the site. Furthermore we encounter the same problem interpreting the Faynān data as we do with the adh-Dharīḥ results — the two geologic regions represented by the $^{87}Sr/^{86}Sr$ values of Faynān residents stretch over 300km from north to south, and thus these individuals could have originated from any point within these zones. In addition there are other regions in the Levant that have geologic signatures similar to these two groups, such as the western (Israeli) side of the rift valley system. Oxygen isotopes may help elucidate whether or not these individuals originated in locales near Faynān, or in other areas with similar bedrock geology but a different elevation, distance from the coastline, precipitation pattern, or groundwater source.

Oxygen isotope analysis of 19 individuals from the southern cemetery at Khirbat Faynān reveals relative homogeneity in $\delta^{18}O$ values, and thus childhood water sources, in site residents (FIG. 5). The one possible non-local individual from Grave 102 has a $\delta^{18}O$ value of -1.12, not notably divergent from the other values. This person's $^{87}Sr/^{86}Sr$ signature indicates that they could have originated from areas to the north, such as the high plains in northwestern Jordan or the Judean Hills, the Carmel Range, or the Galilee regions in modern Israel and the West Bank (Shewan 2004). These regions generally receive greater rainfall and are in closer proximity to the Mediterranean then Faynān, and therefore should have water sources more depleted in $\delta^{18}O$. We plan to explore the $\delta^{18}O$ values at Faynān in more detail through comparing enamel carbonate $\delta^{18}O$ with enamel phosphate and soil carbonate $\delta^{18}O$ values to test for contamination or other factors that may have influenced the $\delta^{18}O$ values.

Strontium isotope values regardless do not imply that individuals were transported regularly from afar to staff and run the *Phaeno* mines. If prisoners were transported from the *Palaestina* provinces and surrounding regions, a wider array of $^{87}Sr/^{86}Sr$ values would be expected that reflect the varied geology of the coast and western highlands. The individual from Grave 102 could have been a prisoner or administrator transported to the camp under im-



4. Results of $^{87}Sr/^{86}Sr$ analysis of the archaeological human dental enamel from Khirbat Faynān compared with ranges established by fauna and plants (Perry *et al*. in press; Shewan 2004).



5. $\delta^{18}O$ values compared with $^{87}Sr/^{86}Sr$ signatures of individuals from Khirbat Faynān. The empty circle indicates the individual from Grave 102 with a non-local $^{87}Sr/^{86}Sr$ signature.

perial orders. He also could have been a miner born elsewhere, but forced to return to his hereditary homeland to work in the mine per Theodosius II's AD 424 decree (*Codex Theodosianus* 10.19.15). In this case, incorporating $\delta^{18}O$ data confirmed but did not necessarily broaden our interpretation of the strontium data. Combined oxygen and strontium isotope data indicate that *Phaeno* predominantly contained locally-derived individuals, suggesting that the mines were a locally-run venture staffed primarily by local residents.

Possible Confounding Factors

Strontium isotope ratios less accurately identify north-south movement than east-west migration in western Jordan based on results from analysis of faunal data from western Jordanian archaeological sites. Accurately characterizing local $^{87}Sr/^{86}Sr$ values is hindered by the small sample size of small mammals recovered from archaeological excavations in addition to a number of other confounding factors, discussed below. Furthermore, $\delta^{18}O$ values may not vary as strongly as expected in the region. Water catchment and storage, necessary in this arid environment, may dramatically influence $\delta^{18}O$ of consumed water that can mask expected climatological and geomorphological variation. Analyzing oxygen isotopes in local water and faunal samples would allow more accurate testing of $\delta^{18}O$ in ancient Jordanians. Furthermore, many factors besides contamination or local geology can influence an individual's $^{87}Sr/^{86}Sr$ signature. These factors include cultural vs. geological identification of "foreigners", the consumption of imported high-calcium and high-strontium foods, and climatological variables such as seasonal erosion and dust storms.

1) Would Strontium Isotopes Inaccurately Identify Foreigners?

One item to consider is whether or not strontium isotope heterogeneity across the region parallels ancient notions of "foreign-ness?" For example, individuals growing up in Wādī 'Araba very near Faynān could be identified as "non-locals" based on strontium isotope ratios, but may not have been considered outsiders or foreigners by Faynān residents. Significant variation between regions may identify someone considered "local" inaccurately as a foreigner. Individuals identified as "local" at both Faynān and adh-Dharīḥ also may have been considered an outsider if they had originated from the northern sector of the geological zone runs 300km along the rift valley escarpment. Intra-regional homogeneity of $^{87}Sr/^{86}Sr$ values thus masks some indigenous cultural differences that may

have existed between individuals. Therefore, careful construction of research questions considering these factors can strengthen the application of this technique. Furthermore, relying on other isotopes such as $\delta^{18}O$ and trace element concentrations (see Knudson and Price 2007) may clarify results from strontium isotopes.

2) Imported Diet

Dietary choices also may influence the $^{87}Sr/^{86}Sr$ signature of humans and must be considered in migration studies. Strontium and calcium-rich foods produce the majority of strontium in human skeletal tissue (see Burton and Wright 1995). Therefore, the consumption of imported foods high in these trace elements should be considered while interpreting human $^{87}Sr/^{86}Sr$ values. Meat provides more strontium to the local diet than cereal grains, for example (Lambert and Weydert-Homeyer 1993). Cereal grains, such as wheat, on the other hand have substantially greater concentrations of calcium than meat (Runia 1987), meaning that both sources consumed in equal amount may contribute similarly to bone Sr concentrations. Other high-calcium and high-strontium sources can include the treasured Roman condiment *garum* (fish sauce) that has been discovered at many inland Classical period sites such as Petra (Desse-Berset and Studer 1996; Studer 1994). Residents of inland urban centers and military forts also consumed fish from the Red or Mediterranean Seas (LaBianca 1990; Lernau 1986; Toplyn 2006). Dairy by-products from goats, sheep, and cattle can vary from the local expected $^{87}Sr/^{86}Sr$ value if they were herded long distances for trade with sedentary populations, such as at Aila (Parker 1996, 1998). Amphorae containing imported olive oil, wine, and other liquids, or pack animals used to transport goods also indicate the presence of other potentially calcium- and strontium-rich imported foods at many sites (e.g., Parker 2002, 2006; Toplyn 2006).

Water sources also have varied $^{87}Sr/^{86}Sr$ values, depending upon substrate geology and sediments they contain. Food production could similarly alter $^{87}Sr/^{86}Sr$ values, such as using imported grinding stones (Åberg *et al*. 1998) or additives to process food (Wright 2005). Any consideration of human (or rodent) $^{87}Sr/^{86}Sr$ values in thus must include any evidence for imported food and drink, extensive seafood consumption, or modes of food production in the archaeological record.

3) Climatic Variation

Intensity of seasonal dust storms can also influence strontium isotope ratios in western Jordan. Springtime low pressure systems originating in the Saharan desert (with $^{87}Sr/^{86}Sr$ ratios ranging from 0.7160-0.7192) send large *khamaseen* dust storms across the eastern Mediterranean and Near East. These storms variably influenced $^{87}Sr/^{86}Sr$ ratios during the past 220 kyr, producing intermittently higher $^{87}Sr/^{86}Sr$ values during dry periods (and thus more intensive atmospheric dust deposition) and lower $^{87}Sr/^{86}Sr$ ratios during wetter periods (Frumkin and Stein 2004; Krom *et al*. 1999). Thus biogenic strontium of organisms living during a period of intense dust storms may have a higher $^{87}Sr/^{86}Sr$ value than expected based on organisms that lived during wetter seasons.

Seasonal rainfall additionally results in considerable fluvial erosion in western Jordan, in particular in the wadi systems leading from the eastern highlands into the rift valley. Variation in annual rainfall amounts can result in variable annual erosion rates. Generally $^{87}Sr/^{86}Sr$ of alluvial material will combine, or "mix," the $^{87}Sr/^{86}Sr$ of its sources (see Bentley 2006; Montgomery *et al*. 2007). Differential weathering of bedrock, not only due to relative elevation of strata but also relative contribution of bedrock components, may also influence $^{87}Sr/^{86}Sr$ values of alluvial wash at different points along the drainage system. This variation additionally can influence groundwater $^{87}Sr/^{86}Sr$ values seasonally or annually.

Conclusion

Regional characterization of $^{87}Sr/^{86}Sr$ ratios in western Jordan reveals that east-west migration patterns are best explored using strontium isotope analysis. Significant differences in $^{87}Sr/^{86}Sr$ values exist between the Wādī ʻAraba-Jordan rift valley, the mountains and wadi systems along the rift edge, and the highlands to the east of the rift. Strontium isotopes may not identify a migrant traveling from north to south within a geologic zone, such as along the *Via Nova Traiana*, the major Roman thoroughfare in the highlands area. Researchers are encouraged to utilize multiple chemical techniques to best characterize ancient population movement. Investigators additionally need to consider the presence of imported foods, especially those, which contain high amounts of calcium or strontium, the location of water storage features, and the intensity of dust

storms and seasonal erosion in the area. Archaeological and historical evidence also should be incorporated in order to illuminate whether a geologically-defined "outsider" would in fact be classified as a "foreigner" by local populations. The studies presented here from Faynān and adh-Dharīḥ however demonstrate the utility and limitations of multiple chemical techniques in migration studies of archaeological populations.

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Between the Cults of Syria and Arabia: Traces of Pagan Religion at Umm al-Jimāl

Introduction

Umm al-Jimāl 's location in the southern Hauran puts it at the intersection of the cultures of Arabia to the south and Syria to the north. While its political geography places it in the Nabataean and Roman realms of Arabia, its cultural geography locates it in the Hauran, linked to the northern Hauran. Seen on a more economic cultural axis, Umm al-Jimāl is between Syria as Bilād ash-Shām, the region of agricultural communities, and the *Badiya*, the region of pastoral nomad encampments. Life of society on these intersecting axes brought a rich variety of economic, political and religious cross-currents that gave special meaning to the problem of security. While the political and economic dimensions were largely exterior, imposed by the policies of regional powers (Nabataean) and empires (Roman), the religious dimension of security could be more local, or, at least, could be given locally independent meaning.

While religion is the often treated in isolation from other cultural aspects (e. g., the classic by Sourdel, *Cultes de Hauran*) or as incidental to social and political dimensions of culture (e. g., the excellent works of Adam T. Smith and Villo Harle), I have chosen to treat religion as a central — possibly the central — component of the socio-political construction of security in ancient societies like those of Umm al-Jimāl . My operative definition of religion follows that of Peter Berger, "the establishment, through human activity, of an all-embracing sacred order, that is, of a sacred cosmos that will be capable of maintaining itself in the ever-present face of chaos" (1969: 51, further, 26-28). The language used is particularly apt because it places the issue of security in late paganism in the long tradition of the chaos-order paradigm of ancient Near Eastern myths.

Such a human construction of religion as a social mechanism to achieve security does not preclude the possibility that a religion may be based on theological eternal verities (Berger 1969: 180-181). However, it does open up the possibility of an archaeology of religion that transcends the customary descriptions of cult centers and cataloguing of altars, statues, implements and decorative elements. That is, it presupposes the possibility of a larger interpretive context for these "traces" of religion using the methodology of cognitive archaeology.

The term "traces" is meant in the technical sense of Assmann's theory of memory (2002: 6-11). At the core, these are the archaeological, material and inscriptional remains surviving at Umm al-Jimāl and its various geographic environments dated from the first to the fifth centuries AD. These not only testify directly to pagan religiosity known from symbolic shapes and the meanings of inscriptions, but also the larger archaeological socio-political context in which these specific traces had meaning. This context also testifies to the role of these traces in the "memory" of the succeeding phases of occupation.

The essay begins with a brief introduction of the nature of the political landscape — Nabataean and Roman hegemonies — to which Umm al-Jimāl belonged. The substance of the chapter will present the traces of paganism, limited to those artifacts and texts with direct references to deities and their role in society. The chapter will conclude with the long-term memory, which involved in fact a deliberate forgetting of their original religious functions and a recycling of these traces of paganism into the fabric of the Roman fortress occupation of the fourth century.

The results of this inquiry are expected to add insight into the social role of religion in the

achievement of local security under the domination of external regional and imperial power. It is the first part of a larger inquiry into the fate of local religiosity in a society subjected to imperial occupation — how communal religiosity may adapt and survive, but also how it may break down when the external source of security, imperial power, is replaced by destructive and fragmenting force (see de Vries 2007: 468-470).

I. Backgroung: the Political Landscape

The religious context of Umm al-Jimāl from the first to the fourth centuries is dominated by three socio-political circumstances: the local culture, Nabataean regional sphere of influence and Roman imperial domination.

A. Local Arab Culture

Evidences of the indigenous character of Umm al-Jimāl survive mainly in the Arabic names written in Safaitic, Nabataean and Greek scripts simultaneously (e.g., *Al-'Abd*, buried AD 208, Littmann 1913a: no. 275). In this, Umm al-Jimāl appears typical of the mixed agrarian culture of the Hauran and nomadic culture of the Badiya seen at many sites in the Hauran and territories immediately to the east. It is traditional to talk about Umm al-Jimāl in these centuries as "Nabataean" or "Roman". However, it is the premise of this research that the dominant aspect of its culture is local Arab, on which a veneer of Nabataean and Roman cultures were superimposed as these two polities enveloped the settlement into its respective hegemonic spheres.

B. Nabataean Phase (ca. AD 50 to 106 and Continuing Through the Third Century)

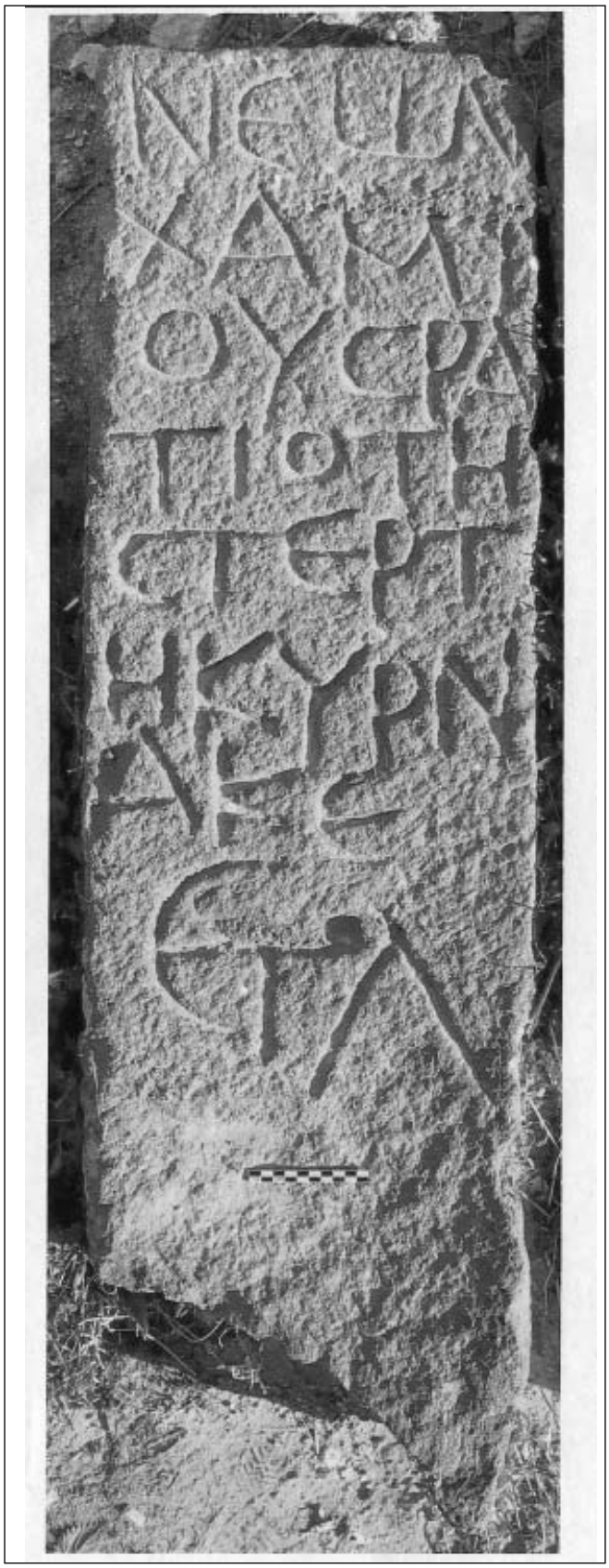
The town became "Nabataeanized" as later kings added the exploitation of the agricultural terrain of the southern Hauran to their economic interests, and made Bostra the administrative center of this northern Nabataea during the reigns of Aretas IV, Malik II and Rabbel II (de Vries 1986). In terms of power politics expansion to the north was triggered by a protracted power struggle over the region with the Herodian Tetrarchic rulers (the two Agrippas and Philip), with the result that the Hauran was split in two, with the northern part incorporated into Roman Syria as the Herodian puppet dynasty outlived its usefulness, while the southern portion survived under independent rule until it was folded into the Province of Arabia as part of the Nabataean political geography in AD 106.

Traces of this Nabataean veneer are visible at Umm al-Jimāl in the numerous Nabataean inscriptions dated from the mid first to the late third centuries AD, the survival of Nabataean-style architectural fragments, and the famous Dushara-Aarra text to be discussed below. In the larger political landscape of the southern Hauran, Umm al-Jimāl must be seen as a satellite village of Bostra. Inscriptional evidence of this is the identification of more than one person buried at the site as a member of the Bostra town council (Littmann 1913b: 343-344, no. 284).

C. Roman Phase (AD 106 to 411)

While local and Nabataean elements of cultural identity did not disappear, the Roman veneer imposed on this is most evident in several Latin inscriptions indicating the presence of Roman imperial authorities. These inscriptions mention the *Provincia Arabia* (Littmann 1913a: no 234), the construction dedication of the northwest gate and wall in the names of the co-rulers Marcus Aurelius and Commodus (Littmann 1913: no. 232), and the construction dedication of an unidentified *burgus* in the co-regency of Valentinian, Valens and Gratian in AD 371 (Littmann 1913a: 132, no. 233). Formal Roman imperial construction, though mostly visible in fragments cycled into the later Byzantine buildings, survives in the so-called Preatorium (Brown 1998). A Greek funerary text commemorating Neōn, son of Ka'mih gives uncommon evidence of a local conscript in the third Cyrenaica, the Roman legion at Bostra, the provincial capital (FIG. 1; Littmann 1913a: 178, no. 349).

Though it is easy to interpret the local evidence for religion as being "Hellenized" or "Romanized," it must be stressed that such outside influences have to be seen as a veneer which may have colored the outward appearances but did not penetrate to the core of local religious identity. This presupposition starts in the general perspective that the religious impact of Hellenization throughout the entire era from Alexander to Constantine remained superficial and that religion retained its Near Eastern character throughout, especially at the local level of society (that is, *pagan* in the original meaning of that word) in places like Umm al-Jimāl . Teixidor states this emphatically, "Popular religion must have remained practically unchanged in Greco-Roman times" (1977: 6). I would go further to say that



1. Neōn, son of Ka'mih, soldier in the Third Cyrenaica; found outside House 53 (Photo by the author).

Roman manipulation of local religious cults for imperial political purposes contributed to their abandonment in favor of competing popular religious movements from the second century on.

II. The Traces of Paganism: the Gods of Umm al-Jimāl

A. The Three Gods in Altar Dedications

The three gods named on altars surviving in the Byzantine ruins of Umm al-Jimāl (FIG. 2) are Dushara Arra, the God Solmos and Holy Zeus Epekoos.

1. *Dousares Aarra*

Dushara at Umm al-Jimāl is known from the famous bilingual on two sides of the altar die located in the debris of the House VI; it is 1.40m. high and 0.37m. wide at base (FIGS. 3, 4).

The Greek text is:

Masexos Aoueidanou Dousarei Aarra

"Masechos, (son) of Aweidanos of Dushara A'ra"

(Littmann 1913a: 37-38, no. 238; Sourdel 1952: 60).

The Nabataean text (FIG. 5) is:

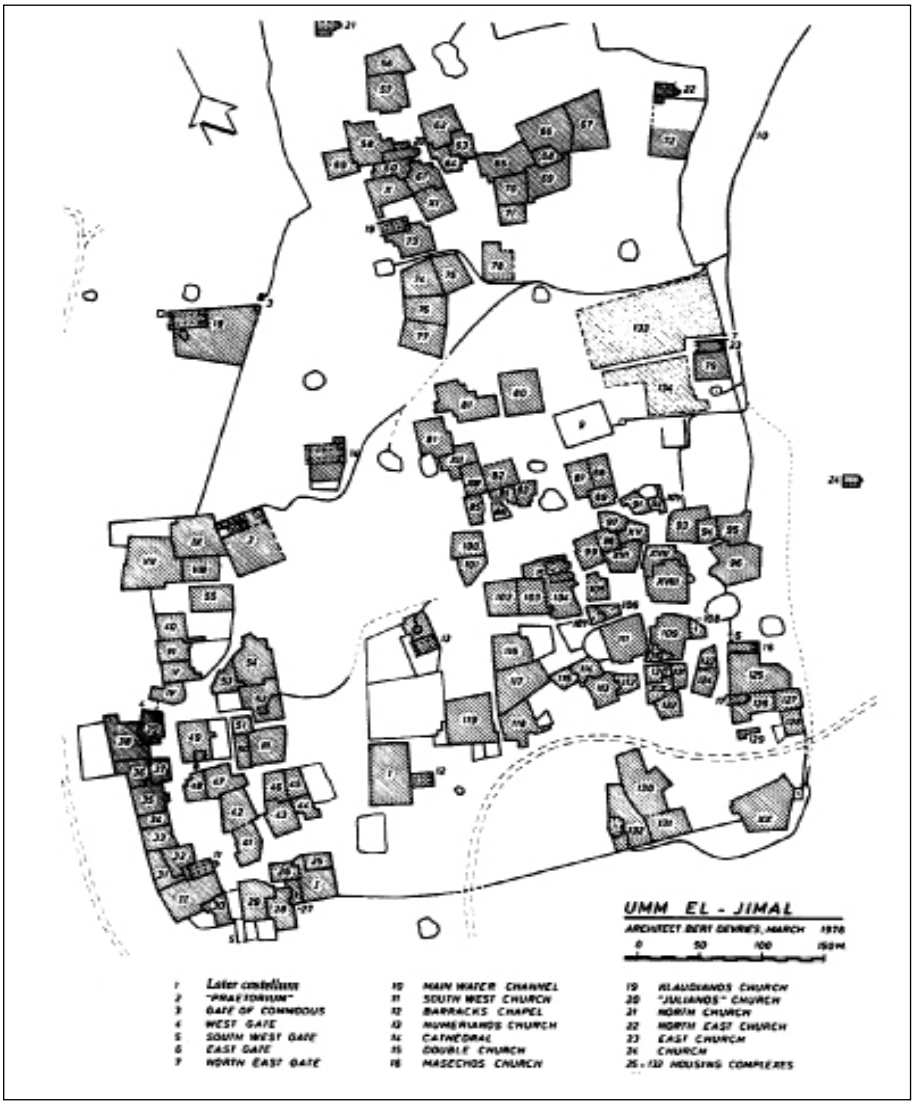
msgd' dy mskw br 'wyd' l-dwsr'

"The cult-stone which was made by Māsik, son of 'Awīdhā, for Dushara"

(Littmann 1914: 34-35, no. 38).

The date of the inscription is probably mid-second century AD. Littmann asserts that the orthographic style of the Nabataean characters fits the late first to early second century. However, the date could be after the Roman annexation if the Māsik of the Umm al-Jimāl stone is the same as Māsik, the father of Yamlik, the donor of an altar to Dusares-Aarra at Bostra in AD 147 (Littmann 1914: 34). The name *Masexos* is common at Umm al-Jimāl and throughout the Hauran; it reflects the Arab-Aramaic *msk*, attested both in the Hauran and the Safaitic Ḥarra, and is translated as "(god) has taken possession" (Sartre 1985: 216). It is, therefore, a truly indigenous name, representative of the cultural uniformity of the Hauran and Ḥarra regions of Syria.

Littmann's interpretation of *Aarra* as a stone *baetyl* ("idol" on which blood was poured (1913a: 138; Zayadine 2003: 59) was followed by Sourdel (1952: 60). In discussing the Nabataean text, he explains that *Aarra* (Gr.) is likely a transliteration of an Arabic term from the root *ghry* and conjectures that this is the true name of the deity, whereas Dushara (*Dhu esh-Shara*, "He of the Shara' Moun-



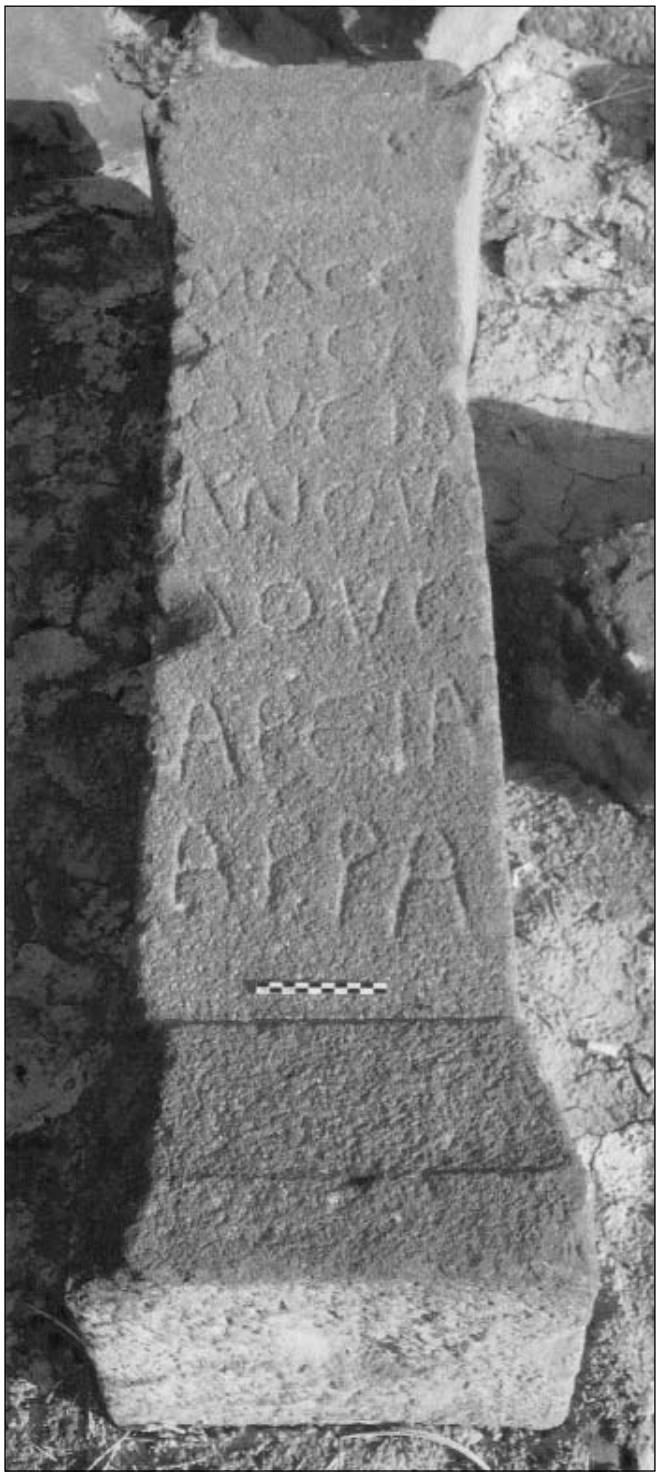
2. Schematic map of Byzantine-Umayyad Umm al-Jimāl referred to for locations of stones discussed in the essay (Drawn by the author).

tains") "was only the cognomen". He ventures that, based on this Semitic root the full name was *al-Gharriyyu*, who was worshipped at Petra (Littmann 1914: 35).

However, Greek *Aarra* is a direct equivalent of the Nabataean *A'ra*, and linked to the name Dushara, which became associated with Bostra in the reign of Rabbel II (Healey 2001: 97-98). "A'ra who is in Bostra, god of Rabbel" occurs first on an inscription at Mada'in Saleh, early in the reign of Malik II (Sourdel 1952: 59-60; Sartre 1985: 60; Healey 2001: 98). In the Hauran itself Nabataean inscriptions from the reign of Rabbel II comfirm this association. Another Hauran inscription states, Dushara A'ra, god of our lord, (god) who is in Bostra (AD 93, Healey: 2001: 98). Maurice Sartre argues that Rabbel's adaptation of A'ra as the god of Bostra meant supplanting the original patron goddess of the city, "Bostra", but interestingly both Allat and al-Uzza (Littmann 1914: 57-58, no. 70) have been identified as goddess of Bostra (Sartre 1985: 59-60).

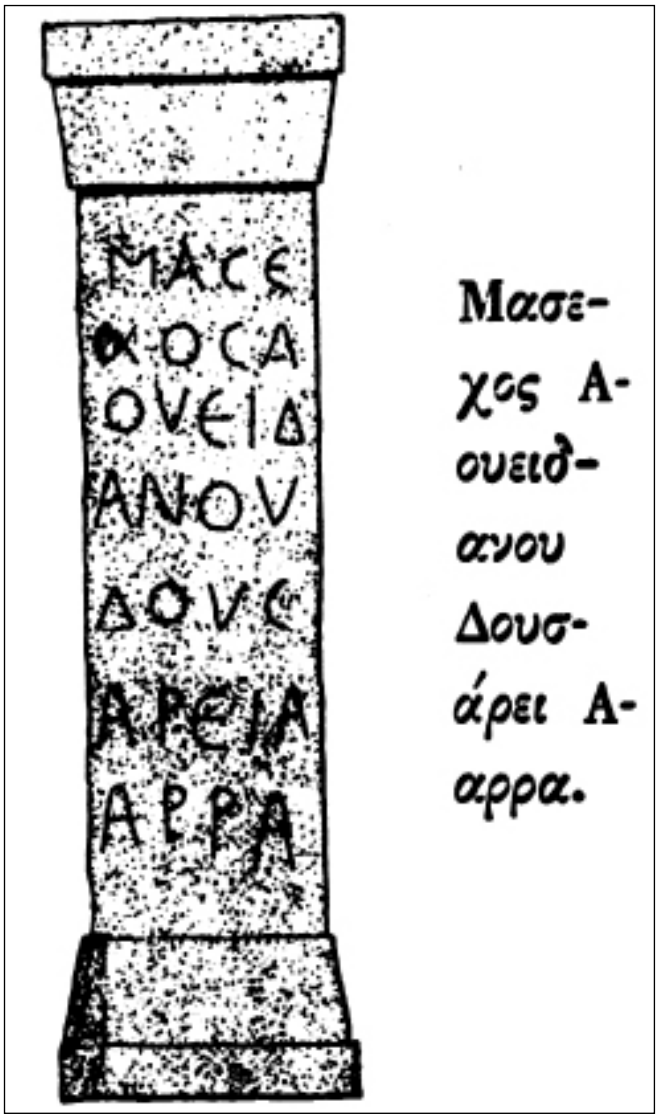
"Dushara, the god of Rabbel" occurs in a Nabataean inscription dated AD 75 from near Suwayda in the dedication of an altar by a Salamian, a designation indicating either someone from the village of Sulaym or from the tribe of Salam (Graf 1989: 364-365). The term Salamian also occurs in Nabataean at Umm al-Jimāl (Graf 1989: 365, note 78).

All this evidence appears to substantiate that the god Doushara Aarra on the cult-stone dedication at Umm al-Jimāl , is meant to be the specific manifestation of this deity in his cult center at Bostra. Doushara continued as the god of Bostra while it was the capital of the Roman province of Arabia. Coins from Bostra still depict Doushara as its deity



3. The "cult stone" dedicated by Masik to Doushara Aarra (Photo by the author).

during the reign of Commodus (Morey 1914: xxvii - xliv). In this political setting the god was presented in anthropomorphic form, and the Romans may have 'Hellenized' him with an association with Dionysus here and at Si'a (Butler 1916: 390, Ill 334, Frag P and 337). Beginning in mid-third century,



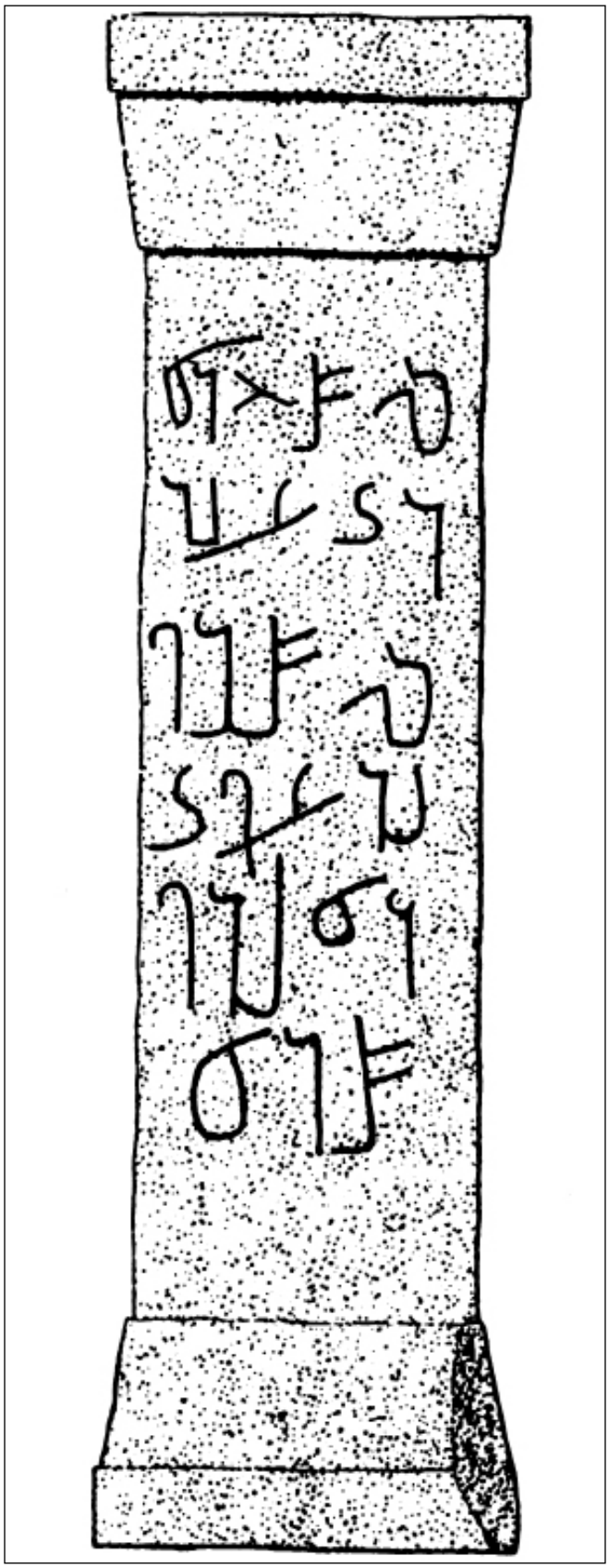
4. Greek version of Masik's cult-stone bi-lingual dedication (Littmann 1913a: 37, no. 238).

the *Dousaria* quadrennial games at Bostra were called *Dousaria Actia* on coins to commemorate the battle of Actium (Sartre 1985: 156-158), some of which are associated with the reign of Philip the Arab (Sartre 2005: 473, note 412; 515, note 51).

Finally, it is clear from the numerous occurrences of the name Doushara in inscriptions in Greek, Nabataean and Safaitic throughout the southern Hauran and eastern *Badiya* that the god became very prominent in the Bostrene sphere of influence after his late Nabataean import there.

2. *Solmos*

While evidence for Doushara is copious, that for Solmos is scarce. At Umm al-Jimāl the main reference is a dedication inscription on a carefully fin-



5. Nabataean version of the Masik dedication (Littmann 1914: 34, no. 38).

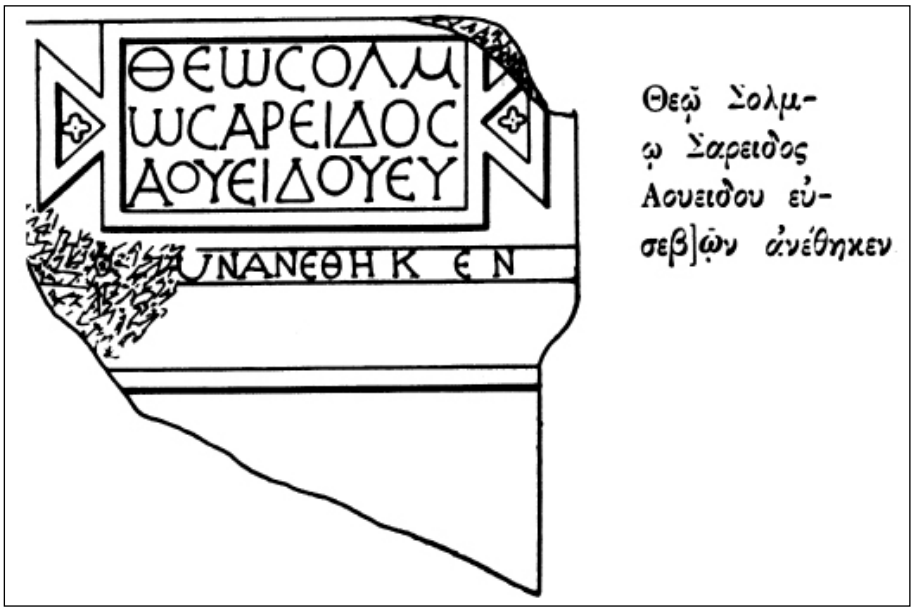
ished broken altar-stone with a Roman cartouche on the upper part — with small floral rosettes in the triangle — and a wreath on the die, located at the ash mound in the open area east of House 73 and the Klaudianos Church. Its cap dimensions are 0.60m. wide by 0.39m. high (FIG. 6). The inscription is written rather sloppily inside the cartouche and the last two words spill over onto the molding below it. The inscriber's skill clearly was not up to the same high standard as that of the stone mason.
Theō Solmō Sareidos Aoueidou eu[seb]ōn anetheken
Sareidos, (son of) Aweidos, dedicated (it) in reverence to the god *Solmos*
(Littmann 1913a: 139-132, no 239).

Sareidos, the dedicator, could be the same person who claims credit for constructing monumental Tomb no. 19 (*Sareidos Aoueidou epoesen*, Littmann 1913a: 159, no. 279; de Vries 1998: 33, fig. 15.) A two-word Nabataean inscription, *mwtbw slm* (Littmann 1914: 43, no. 45) gives a possible parallel for Solmos, but is difficult to interpret. *Salm* here could be a peace greeting, "Mautab! Greeting!" A remote alternative interpretation given by Littmann is "Throne of [the god] Salm" (1914: 43).

Sourdel found no equivalent occurrences of the name of this deity except for references to a god SLM (or SLMN) at Palmyra and the Jebel Sha'ar. He concludes from this scant evidence that the deity is at home among "*les milieux arabes*" (Sourdel 1952: 87). Another tentative possibility is that *Solmos* has an etymology connected to the *salm*, the word for "image, statue", which in inscriptions at Tayma in Arabia may have been the name *Salm*, the Moon-god worshipped centuries before by Nabonidus (Winnett and Reed 1970: 91-93; Teixidor 1977: 73-76). Though these alternatives are interesting, they do not counter Sourdel's thesis that Solmos was a deity venerated in local Arab society; I shall follow this hypothesis.

3. *Holy Zeus Who Listens*

A dedication to Holy Zeus Who Listens is on the die of a small altar found by Littmann "in the courtyard of a house to the east of the so-called 'Barracks' " of which only the top half is preserved so that all but the first letter of the name of the devotee is missing. Its cap dimensions are 0.25m. high x 0.34m. wide (FIG. 7). The Greek inscription is as follows:
Dii agiō epēkoō K…
"To Holy Zeus Who Listens (by) K[…] …" (Litt-



6. The altar Sarid dedicated to the god Solmos (Littmann 1913a: 139, no. 239).

7. The altar K[…] dedicated to Holy Zeus Who Listens (Littmann 1913a: 141, no. 241).

mann 1913a: 140-141, no. 241).

As expected, Zeus occurs frequently in Greek dedication inscriptions throughout Greater Syria. While some of these may refer to the Greek god of Olympus, most instances cover the identity of a variety of local and regional deities, whose degree of identification with the Olympian god may vary from none to a lot. A fine catalogue of occurrences is given by Sourdel (1952: 21-27). However, he gives this in a chapter on Baalshamin, on the assumption of the identification of Zeus and Baalshamin at his temple in Si'a (1952: 22). It seems more realistic to consider each instance of the use of the name Zeus as reference to a distinct deity defined by qualifying epithets. (On the distinction between Zeus Kurios and Baalshamin see Sartre 1985: 155). Thus the name-use may be generic ("ancestral deity"), local (Zeus of Phaena, see below) or defined

by qualifying characteristics, as in our case.

The epithet *Hagios* is specific to the Levant, especially Phoenicia, Palestine and their hinterlands (Sourdel 1952: 27, 98), and could be the Greek rendering of the Semitic "*qadosh*" (98, notes 1and 2). It is possible in those contexts that "Zeus" designates "Baal" in Greek.

The other epithet, "Who Listens" occurs frequently in the north in Syria, but especially in the Palmyra region (Sourdel 1952: 26, 98). It occurs twice in the Hauran region outside Umm al-Jimāl . An altar from Damatha (Dāmith al-'Aliyā) in central al-Lija is inscribed with: "To Zeus of Phaina *(Phainēsīou)*, Hearer of Prayer. Seleukos, son of 'Akarān (fulfills) a vow, in piety" (Littmann 1921: 434-435, no. 800(1)). The interesting thing here is that Seleucus dedicates this personal altar to the god of Phaina (Mesmīyyeh), the town 20km. north of Damatha. The other case is from an altar inscription stored at Souweida, a dedication to Zeus Epekoos (*Dii Epēkoō*) by Julianos, a cavalry soldier (Sourdel 1952: 26).

The impression one gets from these epithets is that the specific responses elicited by the attributes are personal: reverent in response to holiness and prayerful in response to approachability (cf. Saffrey 1986). In two of the above instances the devotees have Hellenized names and are away from home, perhaps using "Zeus" to reference their distant personal god.

Among numerous other "versions" of Zeus (according to epithets like *Kurios, Ammon, Megistos, Epikarpios*) one of special contextual significance is "Zeus of Safa" who is addressed in a petition at Bostra: Zeū *Safatēhnē, prokopē 'Archeláw 'Ioulíou,*"O Safathene Zeus, (grant) success to Archaelaos, (son) of Julius!" (Littmann 1913b: 246-247, no. 558). Interestingly, this Bedu god is petitioned by two sendentized persons with Hellenized names, Archelaos and Julios, whose father, however, is Masechos.

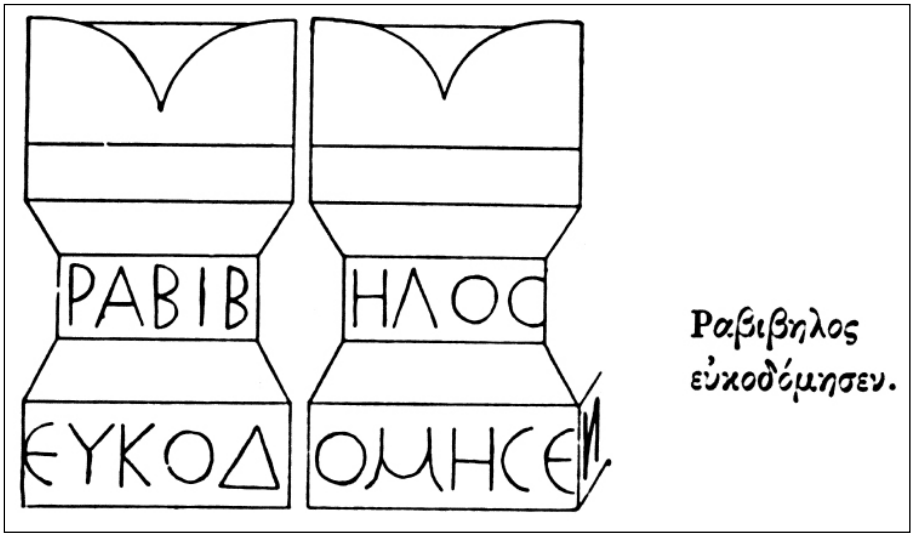
The diversity of epithets and contexts indicates that use of the name of Zeus in the Levant, though in general a product of Hellenization and Graeco-Roman imperial influences, is mostly merely a Greek way of designating one of a variety of local Levantine deities with underlying Semitic names. Umm al-Jimāl 's Holy Zeus Who Listens may be a regional god with central Syrian and Phoenician affinities. Given the reverent and pious nature of the epithets, he may also have been the object of personal devotion of an individual known only as "K[…].

4. *Altars Without Divine Names*

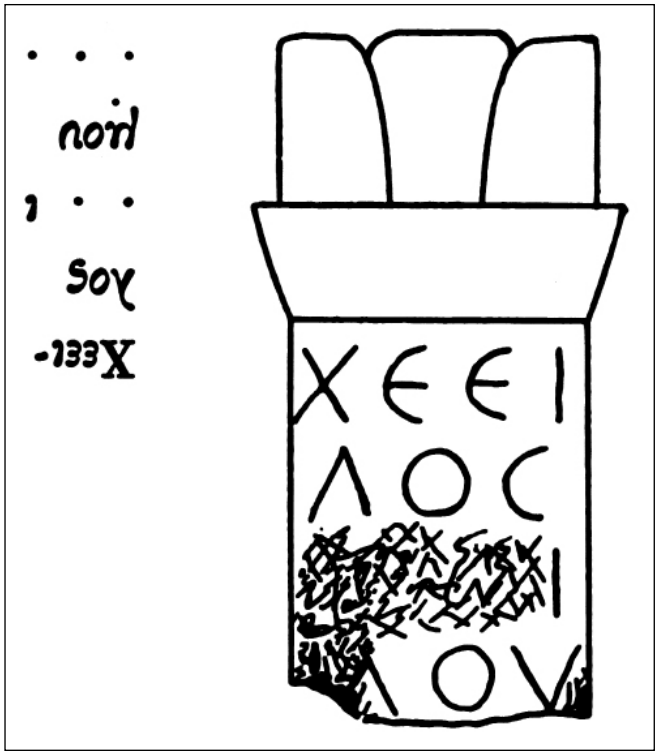
Littmann and Butler documented four additional small altars without attribution of deities. One found in the cloisters of the Numerianos Church, 0.47m. high by 0.26m. wide at cap (FIG. 8), is dedicated by Rabīb-'Ēl: *Rabibēlos eukodomēsen*, "Rabīb-'Ēl built (or edified) it" (Littmann 1913a: 140, no. 240). For the theophoric name, see below.

Another, from the courtyard of House 125, with cap dimensions 0.26m. wide by 0.20m. high (FIG. 9), is dedicated by *Xeeilos*..., "Kahīl..." (Littmann 1913a: 141, no. 242). This name also occurs on a tombstone, naming a Kahīl the father of the deceased woman Ta'mar (Littmann 1913a: 194-195, no. 413).

A very small uninscribed altar is described as



8. The altar Rabīb-'Ēl dedicated; no god mentioned (Littmann 1913a: 140, no. 240).



9. The altar dedicated by Kahīl; the god's name is lost (Littmann 1913a: 141, no. 242).

part of a stone slab, which H. C. Butler interprets as being of a type usually installed on a house doorpost: "The top has a slight depression and this suggests that they may have been actual altars of libation to protect the entrances from evil influences" (Butler 1913: 211, ill. 193).

B. The Nature of the "Altars" at Umm al-Jimāl

The altars described at Umm al-Jimāl are typical of numerous altars found in similar communities throughout the Hauran. In fact, small altars with a base, die and cap supporting a decorated emblem or ritual vessel similar to those in the Hauran are not unique to the area, but are fit into a typology with variants all over the Levant, with precedents as far back as the Neo-Assyrian period, and ranging east across Palmyra to Sassanid Persia and Ghandara (Invernizzi 1997: 51-67).

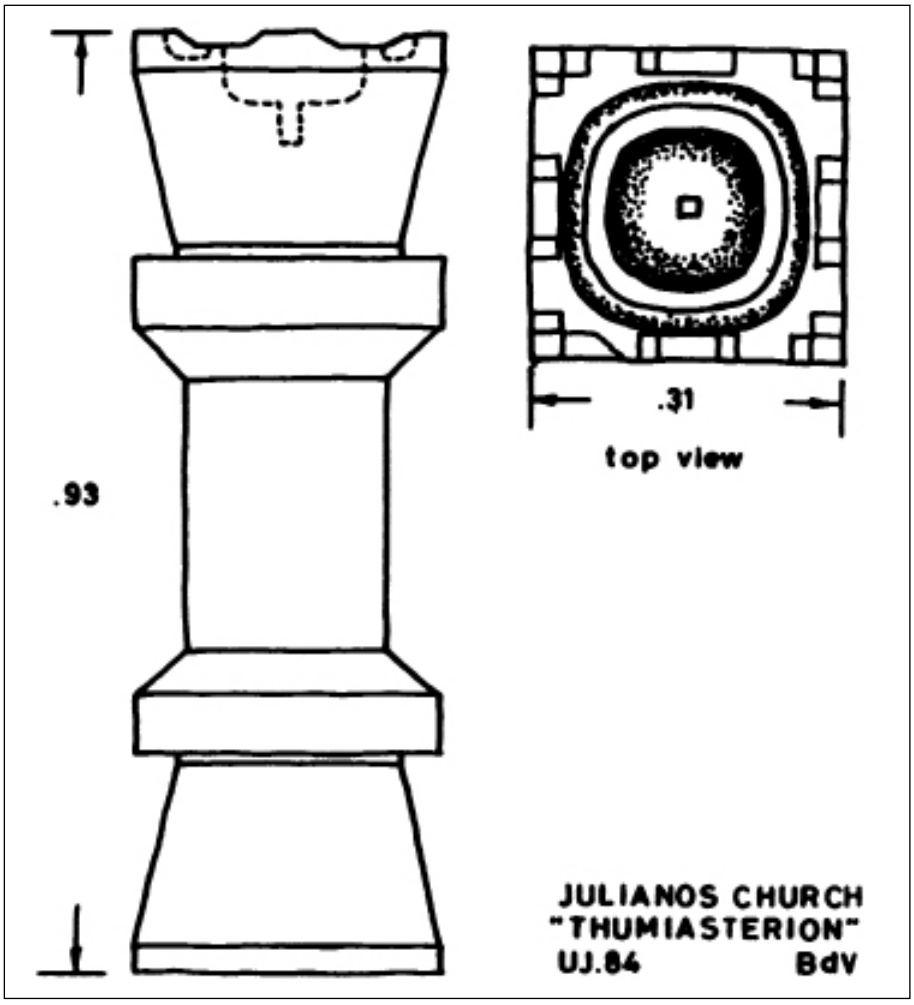
The names on these Umm al-Jimāl altars indicate they belong to the same social milieu as that of the numerous persons written on tombstones, that is Umm al-Jimāl 's society of the Nabataean-Roman period dated from the first to the third centuries. These altars may be explained as "liturgical" contributions by members of the family to the local cult of the community.

One explanation for the role of such small personal altars is that they represented the temple dedications contributed to a major cult-center by residents of outlying communities or mobile nomadic tribes without local temples of their own. Such a case for tribal "altars" may be made for the row located in the great courtyard of the Temple of Jupiter at Baalbek. K. Butcher displays them in a photograph (2003: 353, fig. 162) and calls them "dedicatory stone altars" in the caption. However, while some in the Hauran located in the context of local temples could be explained that way, others, like those at Umm al-Jimāl cannot be, for in that case you would expect them in a nearby cult-center like Bostra or Si'a.

At Umm al-Jimāl this could be explained by the fact that they were not found *in situ*, but in the collapse debris of the later Byzantine houses. However, given the re-dating of the so-called Nabataean Temple to a later period (see below), there is no evidence for the remains of any temple in which these altars may actually have stood. As the inscriptions indicate, these "altars" are the private dedications of individuals for whom these cult monuments may represent their private, rather than communal, relationship to these deities. In this case, these altars my symbolize / invoke the local presence of deities whose cult-centers were in fact distant, like Doushara-Aarra in Bostra, or Zeus Epēkoos in Phoenicia, or Solmos, in an unknown or non-existent location.

Another issue is whether all the so-called altars described above were really altars or cult-stones, actual images of the deity. A clear example of an altar at Umm al-Jimāl is the small *thumiatērion*, "incense altar", found in the interior collapse debris of Julianos Church during excavations in 1984 (FIG. 10, de Vries 1993: 437). This square pillar stands 0.93m. high and has a scooped receptacle for burning offerings in its top, with the typical "horns" of traditional altars at its corners. By contrast, the cult-stone of Doushara-Aarra stands 1.40m. tall, awkwardly high for servicing by an attendant. The cap has no receptacle and is squared off — without horns — at the top, unlike the other altars describes above. It is therefore more fitting that the Nabataean term, *msgd'*, which Littmann translates as cult-stone, be taken in the sense of image or *baetyl* of the deity as described above, rather than an altar to the deity.

It should be clear that this depiction of the de-



10. Uninscribed incense altar found in collapse debris of Julianos Church (De Vries 1993: 437, fig 5).

ity as a stone pillar is not a more primitive representation of the deity who *later* was presented in an "improved" anthropomorphic form. Such is the interpretation of C. R. Morey in his discussion of the image of Doushara on the coins of Bostra. Morey tends to discuss the various depictions of Dushara on a culture-evolutionary model (1914: xxvii-xxxv). He calls the *baetyl* images at Petra and Adraa "primitive idols" (xxxviii), "ancient and barbarous" (xxix). Thus the Roman assimilation of the Nabataean cult is given the weight of Rome's powerful civilizing impact: "One could still worship Dusares in the form of a pillar at Petra, and at Adraa as an ovoid stone, but at Bostra, the capital, it was to be expected that the god should appear in human form, under the steady pressure of Hellenistic materialism" (xxxix). To substantiate this, he cites René Dussaud that this Roman insistence on anthropomorphic forms was "en harmonie avec la civilization occidentale" (xxx).

This assertion about the exclusive anthropomorphism of Roman Bostra ignores the specific context, namely the depiction of the deity on Roman imperial coins, and ignores consideration of the possibility that in other contexts the deity might well be viewed in pillar form. An outstanding example of this is the Doushara "altar" at Umm al-Jimāl , which in fact is a stone pillar without any apparent sacrificial basin — or other accoutrement like oil-lamp receptacles. In Nabataean, this "altar" is called a "cult-stone" (*msgd'*), and could be interpreted as a *baetyl*, not an altar (Littman 1914: 34, no. 38) for which *bwmos* would be used in Greek. Though it is uncertain but likely that the cult-stone dedication dates to Roman era of Arabia (Littmann 1914: 34), it is at least clear that the version of the deity to which the cult-stone is dedicated is the God of Bostra.

That Umm al-Jimāl was structurally connected to Bostra under Roman rule is indicated by the funerary inscriptions with the *BB* (*Bouleutēs Bostrēnos*, "Senator of Bostra) title used on two Umm al-Jimāl tomb stones (Littmann 1913a: 248). Such relationships with residents of surrounding villagers are attested elsewhere. One such funeral dedication by a son from an unidentified village (the stone is broken) to his senator father was found at Bostra itself (Littmann 1913b: 240-241, no. 548). One would expect, therefore, that a member of Umm al-Jimāl 's elite, which one presumes Māsik son of Sarīd was, would be politically correct about the iconic designation of the divine patron of the realm.

The alternative interpretation to consider here is that the Roman coins depicting Dushara are propagandistic, and represent the deliberate transfer of authority from Nabataean kings as the recipients of Dushara's patronage to the Roman emperors' usurpation of such patronage. As such the anthropomorphic representation of the god combines the Roman habit of using Hellenistic imagery with the imperial expedient of incorporating defeated local deities into the Roman imperial constellation of gods. This Roman politicized iconography does not challenge the validity of the traditional depictions by local populations in their religious practices, but superimposes upon that the stamp of overriding Roman religio-political authority.

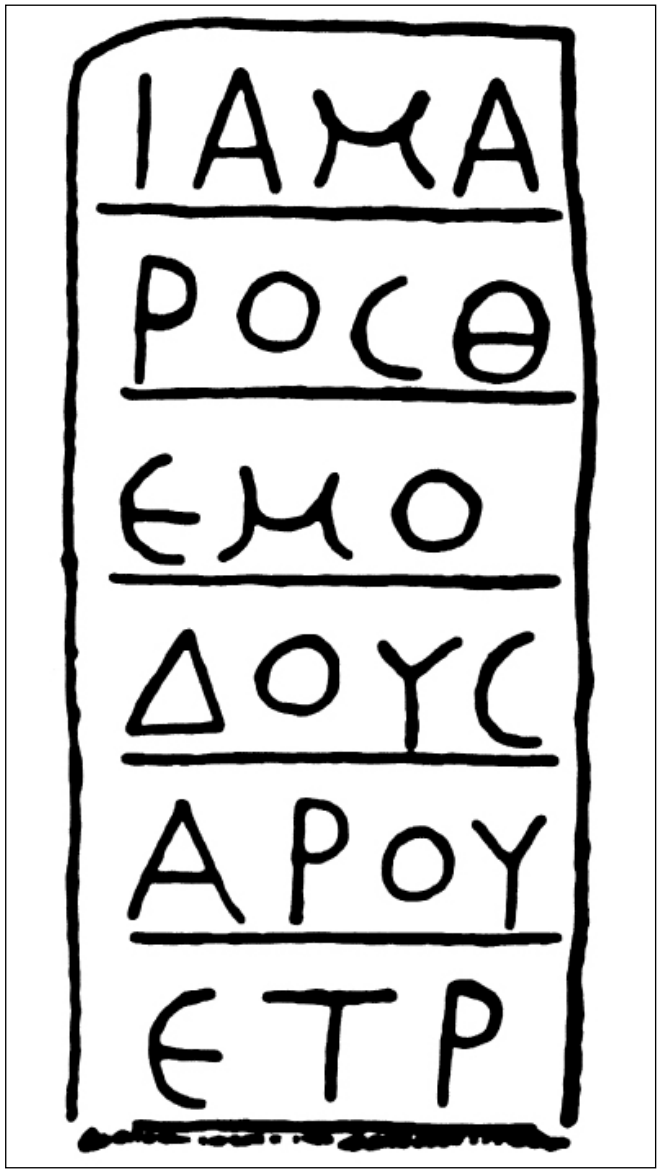
C. Theophoric Names

Personal names occur in large numbers in local texts throughout Syria and in the Hauran, many on building dedications of public civic and religious structures, of private ones, like houses and tombs, on altars like those described above, on walls, columns, doorways and statue pedestals. Even more numerous are names on tombstones, which nearly always give the name of the father and the deceased, sometimes permitting interconnected genealogies. Because the motives for name giving are complex and not well understood for local culture, one has to be careful not to draw superficial conclusions. Nevertheless, says Rey-Coquais, one can learn a lot from using onomastics to picture the broad cultural trends of Roman-era Syria (1997: 149). Because of the large trove of names available at Umm al-Jimāl and its neighboring communities, this is especially true for the southern Hauran, where a select body of names written in Nabataean is contemporary with more numerous ones written in Greek.

Among these names a large minority are theophoric. For these, too Rey-Coquais' caution is apt. Because a person's name is identified with a certain deity, it does not automatically follow that he or she is specifically devoted to the cult of that god. Nor does it necessarily mean that that person's community sponsors cult rituals in devotion of that deity.

An annotated catalogue of the theophoric names from Umm al-Jimāl , categorized by the divine element,follows. Much more can be learned from setting these names in the much larger context of the entire Hauran, but space does not permit that in this chapter.

1. *Taim-Doushara*, a name on a typical funeral stele 0.69m. high by 0.32m. wide (FIG. 11): *Iamaros*



11. Funeral stele commemorating Ya'amar, son of Taim-Dushara (Littmann 1913a: 219, no. 508).

The(i)mo-Dousarou, "Ya'mar, (son) of Taimu-Dushara" (Littmann 1913a: 219-220, no. 508).

The name, Greek derivatives of Arabic *Taim-Doushara* and *'Abd-Doushara*, "Servant of Dushara," occurs six times across the Hauran plain in locations not far from Bostra (Sourdel 1952: 61, notes 7-12). Other Taim-theophoric names at Umm al-Jimāl include Thaimalas (Gr.) = Taim-Allēh (Ar.) *Th[im]al[as A]bd[ou]* (Lithmann 1913a: 170-171, no. 318) and *Matheathē Themallou* (205-206, no. 456).

Other Umm al-Jimāl theophoric names with Allāh include: *Authallou* (Gr.) = Ghauth-Allāh (Ar.) (Littmann 1913a: 218-219, no. 504) (Ghauth also occurs in nos. 385 and 483) and *Zedalas* (Gr.) = Zaid-Allāh (Ar.) (Littmann 1913a: 208, no. 463). Note that the name 'Abd-Allāh also occurs commonly in contemporary inscriptions of the Hauran: a building inscription at neighboring Umm al-Quṭṭayn gives the earliest time-frame for the usage of the "Allah" theophoric names, the year 160 of the Bostrans = AD 265 / 266 (MacAdam and Graf 1989: 183, no. 7).

2. *Taim-Yitha'*, "Servant of Yitha'" (Littmann 1914: 48, no. 53) occurs on an Umm al-Jimāl Nabataean funeral stele reused as a corbel in House XIII: "Hāni', son of Taim-Yitha' ".

This deity, *yt'w* [ya-ta-'ayin-waw], was not previously known in Nabataean to Littmann, but occurs in Safaitic (*yt'* or *'t'* [aliph-ta-'ayin]) and in Greek Ethaos (1914: 48). In Safaitic texts in the Ḥarra east of Umm al-Jimāl studied by V. A. Clark, Yt' is appealed to for "vengeance and delivery from misfortune", for "relief and for "help", in the last case in the company of another Arabian god, Ruda (Clark 1979: 131).

3. *'Abd-'Obodat*, "Servant of (King) 'Obodat"

This name occurs in a Nabataean inscription at Umm al-Jimāl , on a lintel over the easternmost doorway in the south wall of the Julianos Church:

[…]h 'bd 'bd-'bdt bar Naqdhat. Slm

"This … was made by 'Abd 'Obodat, the son of Naqdhat (?). Peace!"
(Littmann 1914: 40-41, no. 42).

While not unusual in Nabataean, Littmann only recorded two examples in Greek, both at Bostra. (Littmann 1913b: 253-254, nos. 256, 567).

'Obodat was the famous Nabataean king after whom the Negev city 'Oboda was named and where the temple to 'Obodat the god was located. It is not clear to me whether the divine element in the personal name indicates the deified king, as is usually presumed, or the patron god of the city, or both. Lest we make too much of the unique deification of 'Obodat, note that 'Abd-Rabb-'ēl is also attested (at Jemarrīn (Littmann 1914: 70, no. 94)).

4. *Isi-Doulos,* "Servant of Isis" on a Nabataean inscription built into an Umm al-Jimāl house.

… I]sidoulos(?) of the tribe of Rawāh (Littmann 1914: 41-42, no. 43).

The inscription block is broken on the right and the *aleph* of Isi-Doulos is restored. According to Littmann there is a possibility that the "l" and "r" have been interchanged, so that the actual name could have been Isidōros. Nevertheless, the name could be a Nabataeanized rendering of the Greek name as a translation of *'Abd-'Is*, which occurs in Safaitic. The female equivalent, *'Alimat-'Is*, "Handmaid of Isis," occurs in Nabataean.

5. *Wahb-Allāhi,* "Gift of God," on a damaged stone in rubble of Umm al-Jimāl House XIII. The Nabataean text reads: "*Wahb-Allāhi* son of Mun'im of the tribe of Salam" (Littmann 1914: 42-43, no. 42).

Wahballah is well known from Palmyra and elsewhere. The tribe of Salam may be identical with Salamia mentioned in a Nabataean inscription from Hegra (Littmann 1914: 42). The name Wahb is known from a Safaitic inscription at Umm al-Jimāl , mentioned by Littmann: "By Wahb bin Shāmit of the tribe of Rawāh" (1914: 42). In Nabataean Wahb bar Shāmit occurs on a Umnm al-Jimāl funeral *stele* in the Byzantine ruins (Littmann 1914: 45, no. 49) and Wahb appears as the father of Zabūd on another (1914: 46-47, no. 50). Shāmit and especially Zabūd are recurring names in the genealogy reflected in the stele lining the *dromos* of the Nabataean Tomb (Littmann 1914: 52-55, nos. 60-67). One concludes that the Nabataean (and Greek) funerary inscriptions cover a significant Safaitic heritage at Umm al-Jimāl , and that this popular veneration of Allah is a component of that.

6. *Mathga Soemou*, "Handmaid of Gā', [daughter of] Suhaim" (Littmann 1913: 220-221, no. 512). The Greek *Mathga'* is the equivalent of Semitic *Amat al-Ga'*. At Umm al-Jimāl a parallel name is *M[a]thelē*, Math-'Ēl (Littmann 1913: 206-207, no. 457). Gā' is the same as Gadd, a Safaitic tribal deity of the 'Awīdh, Gadd-'Awidh and the Dhaif, Gadd-Dhaif (Graf 1989: 362, 363). "At Namārah, Gadd-'Awīdh is invoked by a member of the *d['*]

l slm" (Graf 1989: 365, note 78). Salam is a tribe associated with Umm al-Jimāl . Obviously, among the Safaites the tribal deity Gadd was worshipped alongside Dushara and other Nabataean gods. Note that the dedicators of the Dushara and Solmos altars, Masechos / Māsik and Sareidos / Sarīd, each have a father named Aoueidos / ʻAwīdh.

7. *Math-ʻĒl*, on a tombstone at Umm al-Jimāl : *M[a] thelē Seouadou*, "Math-ʻĒl, (daughter) of Sawād" (Littmann 13a: 205-206, no. 457). Another Eltheophoric is Hann-ʻĒl, builder of a tomb, known from a Nabataean inscription built into a wall near Umm al-Jimāl 's House VI:

This is the tomb (*nfs*) of ʻAn'am, son of Hūr, and of ʻUzzai, his wife, which was built by Hann-ʻĒl, their son (Littmann 1914: 36, no. 40).

Littmann dates the inscription to the first half of the second century on orthographic considerations (1914: 37). "Hann-ʻĒl was a favorite name among the Nabataeans and the Arabs of the Safā. In Safaïtic script it is written with the same letters, and also *hnn-ʻl*" (Littman 1914: 11). Finally, Rabīb-ʻĒl is the dedicator of an altar to an un-mentioned god discussed above.

8. *Ban-Allāt*. *Banalathē* (Littmann 1913a: 190, no. 394) at Umm al-Jimāl is the only allusion to the role of the goddess Allat.

9. Summary of divine elements used in theophoric names at Umm al-Jimāl

Nabataean:	Doushara, Obodat
Nabataean/Egyptian:	Isis (tentative)
Arabic:	Allah, Allat, ʻEl
Safaitic:	Yitha', Gadd

Thus, the fact that theophoric names at Umm al-Jimāl specify the names of at least nine different deities testifies only vaguely to what gods might actually have been worshiped at Umm al-Jimāl . This fact does, however, say a lot about the larger religious context of the gods actually revered, as known from altars for example. Notably, just about all the gods in these names are local and regional, with the exception of the (tentative) Isis. There is an especially strong interconnection in personal names and deities worshipped between Umm al-Jimāl and the Safaitic tribes of the Ḥarra. This substantiates D. Graf's thesis (1989: 379) that the Safaitic tribes were not marauding nomads, but an integral part of the social fiber of the north Arabian Arabs within the Roman province of Arabia. One can add that they were a foundational influence on the popular religiosity of society at Umm al-Jimāl in the southern Hauran.

Perhaps even more notable is that *none* is Greek or Roman. Thus, while local and regional deities were used, one may surmise that the gods of the more distant imperial powers, Greece and Rome had not penetrated to the level of popular and common name usage at Umm al-Jimāl .

By studying this data in a wider context, as planned, a lot more can be said about the role of Umm al-Jimāl 's populace in the larger religious landscape of the Hauran and Greater Syria, and the religious mobility of its population across that landscape. Such a study has been done as part of this research, and will be published in a monograph on religion at Umm al-Jimāl .

III. Towards a History of Religion and Society at Umm al-Jimāl

A. Gods and Society (First - Fourth Centuries AD)
The three gods on the altars discussed above symbolize three facets of local religiosity: Solmos represents the personal religion of a local Arab family. Dushara ʻArra represents Nabataeanized religion connecting local population to the urban — Nabataean — and eventually imperial — Roman — authorities at Bostra. Holy Zeus Epēkoos represents the larger Phoenician-Syrian religious world hidden under the veneer of Hellenistic nomenclature.

The imperial Roman veneer of the second and third centuries AD is more visible in political inscriptions than in religious texts or remains. Known remains constructed in this period are the Praetorium (Brown 1998: 166), the Commodus Gate and the large reservoir.

At Umm al-Jimāl , the imperial religion — patronized with temple architecture of power such as the Hercules Temple in Amman, the Artemis Temple at Jerash and the Jupiter Temple at Baalbek — is lacking. It is therefore a better barometer of the survival of local religiosity under imperial control than those larger cult-centers.

Like the more mobile Safaitic tribes, the villagers of early Umm al-Jimāl may have considered nearby cult-centers at Bostra as their sacred centers, to be visited during appointed times in the religio-political calendar, such as attending the imperial Actia Dousaria in the third century. In between

times, veneration of personal and clan gods, using locally dedicated cult-stones and altars, served ongoing routines of religious piety.

Deeper understanding of this symbiotic polarity between local and external religiosity is gained from the incidence of numerous theophoric names, which not only indicate the presence of a larger diversity of gods in the popular culture, but also an especially intimate connection with the group of gods the people of the sedentary Hauran village share with their Safaitic tribal "cousins" of the nomadic Ḥarra.

Not included in this paper, but to be published separately, is what I've called a "Theology of Death" — the socio-religious implications of the funerary inscriptions at Umm al-Jimāl . A tantalizing example is the recurrent formula *Thársi, 'oudeis aipi gē 'athánatos*, "Be of good cheer, no one on earth is immortal!" (Littmann 1913a: 160, no. 281-282) from the tomb of Sareidos described above.

B. The Traces of Pagan Religion as Fragments in the Transformation of the Third - Fifth Centuries

What follows is a brief outline of ongoing research, to be published as this study of religion and society progresses.

The assertion above that a temple was absent may be shocking to those who are aware of Butler's famous "Nabataean" Temple (Butler 1913: 1551-156). Interpretation of excavations done in 1977 and1981 have determined that this "temple" was constructed in the fourth century, and therefore belongs to the following phase in the history of Umm al-Jimāl (De Veaux and Parker 1998: 153-160). It is therefore better interpreted as an imperial Roman temple constructed to serve the troops at the Tetrarchic Castellum built to the east of the great reservoir (de Vries 1986), typical of the wave of Roman small-temple construction associated with the fortification craze of the fourth century.

In this period Rome replaced its policies of entente with local rulers and population groups being represented by the patronage of large temple construction (Antonine and Severan Dynasties) with more oppressive strategies of order keeping, *viz.* the pitting of local tribes against one another and resorting to an "Architecture of Power" (Adam T. Smith 2003: 161-169), the construction of monumentally towered and gated fortifications.

This strategy proved destructive to local cultures in the transitional culture zones located between the Levantine coast and the Arabian dessert. One indicator is that the writing of popular inscriptions and graffiti stopped (Graf 1989: 379-380) in the Nabataean and Safaitic text-regions. This includes Umm al-Jimāl , where last Nabataean text is late third century, and Greek texts expressive of communal and family life are largely absent from then until the sixth century.

In the process, much of Umm al-Jimāl 's built environment - the buildings and tombs of the first - third centuries - were destroyed and spoiled for the new fortification construction. Thus, the traces of religion described above became "collapse debris" and recycled masonry, that is, fragments that symbolize the "memory" of a former religiosity now deliberately ignored and replaced with the culture of Roman military power.

In northern Arabia and southern Syria, the end of paganism has to be attributed not to the coming of Christianity, but to the destruction of religio-cultural identity in the Roman suppression of rebellion and the subsequent establishment of army bases used to keep the populace of the surrounding countryside subdued.

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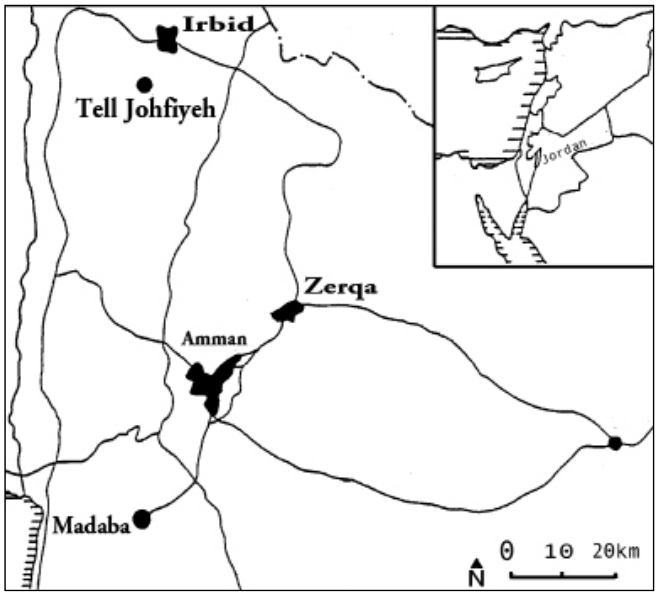
A Period of Peace and Prosperity in Gilead Tall Juḥfiyya and its Surrounding During the (late) Iron Age
A Report on the 2002-2004 and 2007 Seasons[1]

Introduction

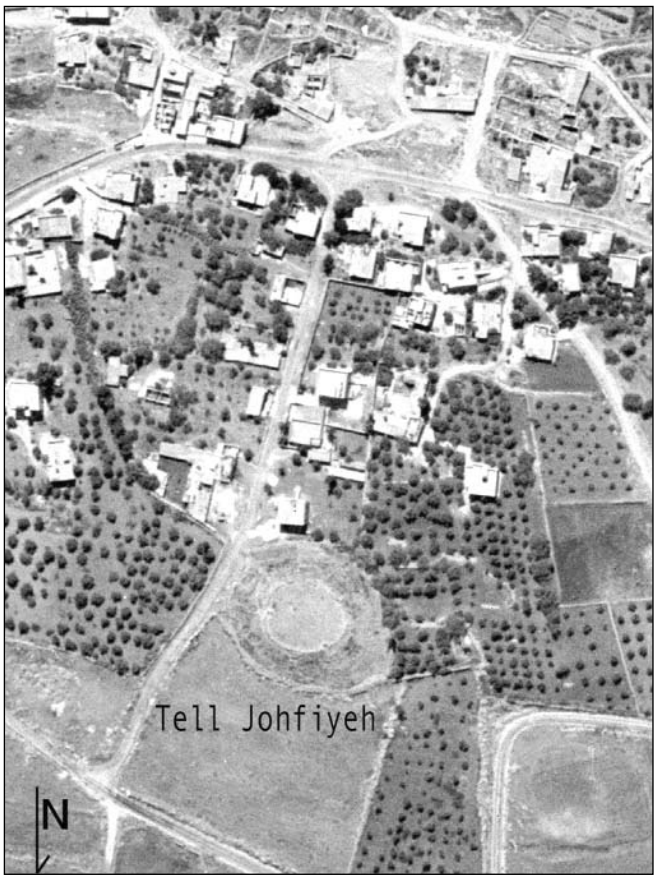
A few weekend trips to the surroundings of Irbid in northern Jordan made together with my dear friends and colleagues Ziad al-Sa'ad and Zeidan Kafafi during my time at Yarmouk University, Irbid, back in 1995 have been in some way the starting point of the joint German-Jordanian archaeological project at Tall Juḥfiyya (FIG. 1). The site is situated approximately 7.5km south-west of modern Irbid at the northern edge of the modern village of Juḥfiyya.[2] Its topographical location on the north Jordanian plateau is exposed. The site, 790m above sea level, is located within an agriculturally intensively used area where rainfed agriculture is possible (FIG. 2). It offers an excellent view in all directions. Nowadays the inhabitants of modern Juḥfiyya grow mostly grain and different kinds of fruit trees.



1. Map of Jordan showing Tall Juḥfiyya.

The Project

During the mentioned weekend trips to the surroundings of Irbid our attention was drawn to some small, until then almost unnoticed sites west and south-west of Irbid. A first analysis of surface pottery from Tall Juḥfiyya, Tall ash-Shiqāq, Dhahrat as-Sūq, Tall Bayt Yāfā and Tall Kufr Yūbā suggested, that most of these sites were founded and



2. Tall Juḥfiyya and the modern village of Juḥfiyya (Royal Geographic Society).

[1] Concerning the 2002-2004 seasons the article is following a lecture given and published already in the context of the Rencontre Assyriologique Internationale (RAI) 52, Muenster/Germany 2006.

[2] UTM-Zone 36, UTME 7652, UTMN 35986.

occupied mainly during the Iron Age (Lamprichs 1996a, b). Byzantine and Early Islamic pottery furthermore hints to a later resettlement.

Further analysis showed that none of these small sites have been a subject of systematic archaeological investigation so far. The information available comes almost only from early travel reports (Schumacher 1893; Steuernagel 1926; Abel 1967), the reports of Nelson Glueck (1951a, b), different site compilations (Zwickel 1990; Palumbo 1994) and thematic maps (Höhne 1981; TAVO B IV 6). There was almost no information available about the structure and function as well as the regional, historical and political settings of the sites. In addition the Iron Age on the north Jordanian plateau in general is still widely unexplored (Bartl *et al.* 2002: 95, 114-115; Herr and Najjar 2001: 323-330, 332, 334-335; Bienkowski 2001a: 349-352; Kamlah 2000: 145-148). Good evidence of the material culture, function and regional status of the Iron Age sites in the close vicinity of Irbid were not available. New studies and in particular new excavations were badly needed.

Based on this and on several visits to the area under discussion between 1995 and 2000 (Lamprichs 1997a, b, 1998a, b; Lamprichs and Kafafi 2000; Lamprichs and Bastert 2004) Ziad al Sa'ad from the Faculty of Archaeology and Anthropology of Yarmouk University and myself started a joint archaeological project at Tall Juḥfiyya in 2002 which was continued in 2003 and 2004 (Lamprichs 2002a, b, c, 2003a, b, c, 2004a, b; Lamprichs and al-Sa'ad 2002, 2003, 2004a, b, 2005).[3] A hitherto last campaign was conducted in spring 2007.[4]

Tall Juḥfiyya

The archaeological site of Tall Juḥfiyya which is slightly adjusted to the east-west at its base, covers only a total area of about 4000sqm. The leveled, almost round surface of the approximately 7,00m high tall covers even only an area of about 950sqm (FIG. 3). Traces of ploughing found there prior to 2002 did indicate an agricultural use of the tall's surface until recently. The slopes of the tall and its immediate surroundings were covered with many big and medium sized lime- and flintstones. Unlike similar sites in the neighbourhood, for example Tall Bayt Yāfā and Tall ash-Shiqāq, the general preservation of Tall Juḥfiyya was still very good. Smaller destructions and a few "illicit diggings" were found on the slopes and the top surface. Natural erosion was only of minor importance at Tall Juḥfiyya and has barely affected the site (Lamprichs 1996a: 325-342, 1996b: 10). A perimeter wall enclosing the almost round hilltop was still visible at the surface.

3. Tall Juḥfiyya (from west): situation 2004 (photo by H. Debajah).

[3] A final report on the 2002-2004 seasons is in print (Lamprichs n.d.) and will be released by the end of 2007.

[4] The 2002-2004 and 2007 seasons have been conducted under the joint directorship of Dr. Ziad al-Sa'ad and Dr. Roland Lamprichs. The excavations were carried out with the constant support of the Department of Antiquities of Jordan and I would like to express my gratitude to its director general, Dr. Fawwaz al-Khraysheh. My thanks are also due to Dr. Ziad Talafeh, the inhabitants of the village of Juḥfiyya, our excellent workmen and team members.

2002 Season[5]

In the frame of our first three week excavation campaign in early summer 2002, a topographical map of the site was drawn up and an artificial grid orientated to the north (10,00m x 10,00m) was laid over the Tall (FIG. 4). Two main phases of settlement could be separated then: Iron Age and Umayyad era. Remains of the latter were found exclusively on the southwestern slope of the tall and at the eastern fringe. Remains of the Iron Age, however, were found all over the site and belong mainly to domestic activities within an agricultural world. Numerous fire places, grinding stones, mortars, basalt pestles and scrapers, weaving weights, spindle whorls, a three footed basalt bowl with tools, numerous stone vessels, several arrowheads made of iron and a few beads made of carnelian were found.

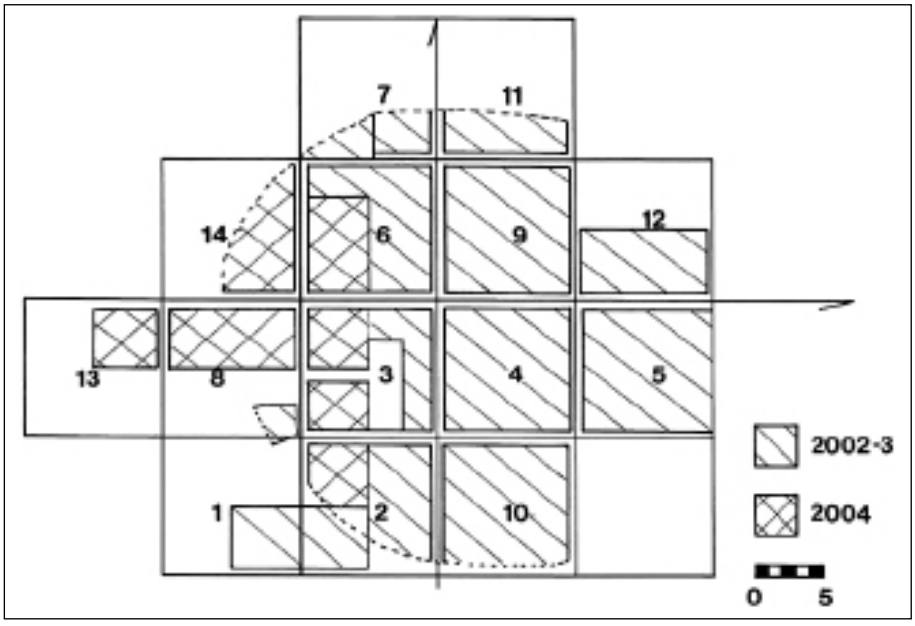
In addition more than 17000 potterysherds were registered during our first campaign at Tall Juḥfiyya. 1500 pieces were classified as diagnostics. Altogether 20 different wares were separated and classified into two main groups. Group 1 consists of wares 1-5 and has a share of almost 82% in our pottery assemblage. They are all dating to the Iron Age, mainly the late Iron Age. Their texture extends from fine to coarse. The temper usually exists of small white, grey and brown mineral grits. The colour varies from a light beige up to a reddish brown. Larger jars are often characterized by a greyish core. In addition to cooking pots, storage jars, jugs and juglets some cups, bowls, bottoms, handles, lids, spouts, decorated body sherds and lamps were registered. Group 2 consists of wares 6-20 and has a share of only 18% in the entire assemblage. They are of a non Iron Age date. Most of them probably belongs to the Early Islamic era.

2003 Season[6]

At the end of the 2003 season more than 600sqm have been opened and investigated within 12 squares. 200sqm in 2002 and more than 400sqm in 2003 (FIG. 4). In addition a deep sounding has been started and our knowledge of the site was considerably increased. Besides some poor remains of the Umayyad era the material was again mainly dating back to the late Iron Age.

The architectural remains and several in situ finds gave a first clue concerning the structure and function of the site. Following this, Tall Juḥfiyya, as well as the other mentioned sites in its vicinity, was most probably a family ran farmstead during the late Iron Age consisting of two different main units:

a. A storage and processing unit for agricultural goods situated in the southern and eastern parts of the tall, connected by a semicircular passageway (FIG. 5). This area consists of small rooms containing among other things silos, *ṭābūns* and



4. Area of excavation 2004.

[5] The 2002 season was jointly funded by the Faculty of Archaeology and Anthropology, Yarmouk University and the German Protestant Institute of Archaeology.

[6] The 2003 season was funded jointly by the German Protestant Institute of Archaeology and the Faculty of Archaeology and Anthropology, Yarmouk University.

storage jars.

b. The second unit consists of a "main building" situated in the northern part of the tall containing several rooms and a courtyard (FIG. 6). This area is characterized by larger rooms, domestic installations and many so called "luxury goods".

Almost 80% of the more than 23000 sherds registered in 2003 date back to the late Iron Age. The remaining pieces date mainly to the Umayyad period. In addition some pieces of the early Iron Age and Persian period have been recorded.

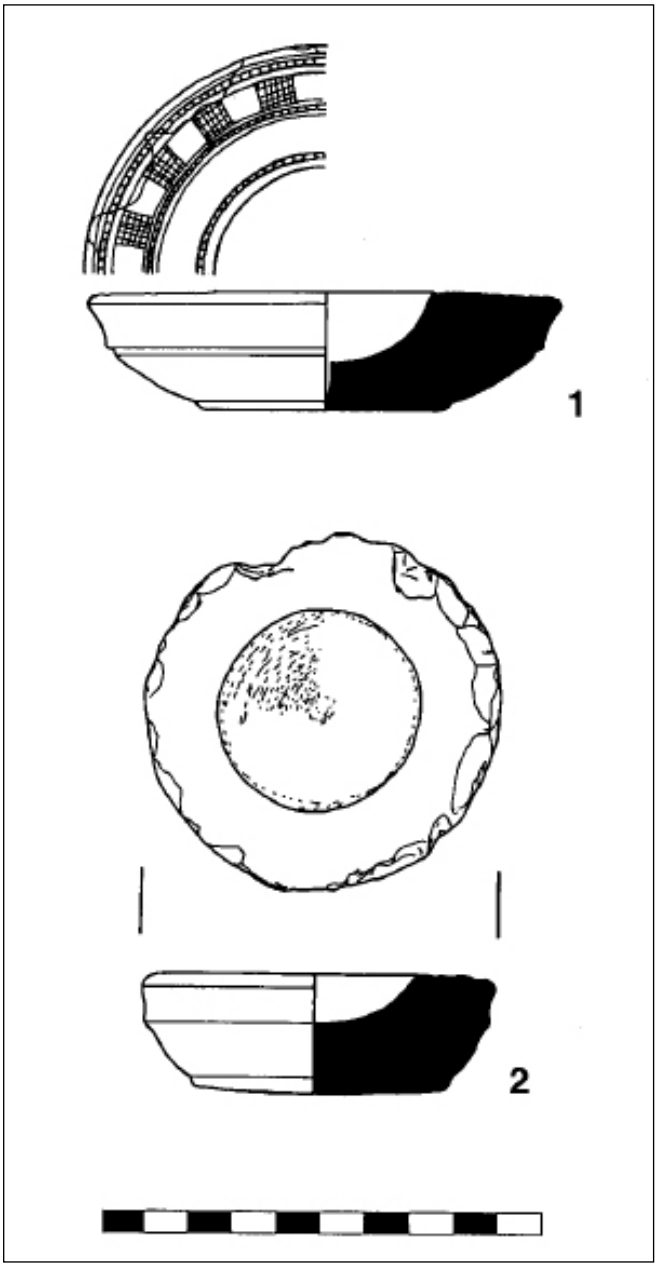
The otherwise excavated remains of the Iron Age belong again mainly to domestic activities within an agricultural world. The assemblage is dominated by pieces used for transportation, processing and storage of agricultural products. Apart from numerous fire places, *ṭābūns* and pottery vessels, a great variety of querns, pestles (round, cornered, conical), scrapers, mortars, bowls (round, cornered) and rubbers made of basalt as well as a

5. Storage and processing units (from southeast).

6. Main building (from northeast).

few weaving weights, spindle whorls, stone lids and stone vessels were found.

Furthermore the activities of 2003 at Tall Juḥfiyya produced for the first time some objects, so called "luxury goods", which were not exclusively used for farming activities. These are remains of jewellery made of carnelian and lapis beads, pierced stone discs and shells as well as a fibula made of bronze, two decorated cosmetic bowls made of polished limestone (FIG. 7), a small complete basalt bowl (tripod) for the preparation of cosmetics or spices (FIG. 8) and some arrowheads and a chisel made of iron. These finds, mainly made within and around the "main building" of the farm, indicate that the family who was in charge of the structure most probably belong to a local or regional elite who lived a prosperous and peaceful life during the late Iron Age.



7. Tall Juḥfiyya: Two (decorated) cosmetic-bowls made of polished limestone.

Furthermore the huge amount of pottery sherds and grinding tools found within the so called storage and processing unit fits well with the general association of farmsteads with periods of high intensity land use, demand for specialized economic goods and hightened security conditions. In addition the remains and finds may also represent the penetration of Tall Juḥfiyya and its surroundings by an arm of a regional or central based administration. A close link of Tall Juḥfiyya and the other farmsteads of the north Jordanian plateau to one of the regional centers, most probably Tall al-Ḥuṣn and Tall Irbid, is very likely.

2004 Season[7]

A third season of archaeological excavations at

8. Small mortar on three legs (basalt).

Tall Juḥfiyya was conducted in 2004. Within six trenches more than 175sqm were newly opened: Four trenches, including a deep sounding, within the perimeter wall and two trenches on the slope of the tall (FIGS. 3, 4).

Again almost 92% of the more than 22000 pottery sherds registered in 2004, date back to the late Iron Age. The remaining pieces date to the early Iron Age, Persian and Umayyad periods. In addition the lower layers of the deep sounding brought to light pottery sherds of a late Bronze Age date for the first time at Tall Juḥfiyya.

Furthermore new information concerning stratigraphy, dating, structure, function and socio-economic setting of the site were obtained. Within the already mentioned deep sounding which was dug for more than 6.50m below surface level seven different stratigraphic units could be seperated. They are representing altogether three main phases of occupation, which could be summarized as follows:

1. The first phase of "occupation" is characterized by a huge circular structure of still unknown function. It consist of several concentric walls made of huge stones. The space in between was partly filled with small stones and pebbles. Pottery found within this structure belongs mainly to the late Bronze Age "chocolate on white" typus. By the end of this period the surface of the megalithic structure was partly levelled and beside other activities a perimeter wall, surroundig the plateau area, was built.
2. The following subphase 1 of the second phase of occupation at Tall Juḥfiyya was characterized by small domestic structures dating to the early Iron Age (FIG. 9). They were built within the perimeter wall using some of the architectural remains of the late Bronze Age structure. Remains and objects like pestles, rubbers, mortars and clay vessels relating to these structures belong mostly to domestic and farming activities.

Subphase 2 is closely connected to the already mentioned structures excavated in 2002 and 2003. More storage jars, grinding stones, pestles and other objects related to farming activities as well as in 2004 newly discovered bronze fibulae (FIG. 10), decorated stone vessels, beads, finger rings and more so called "luxury goods" confirmed the already given interpretation of the site as a quite prosperous farmstead consisting of a main building in the north and a storage and processing unit in the southern part of the tall.

A first stratigraphic and chronological analysis of the excavated pottery and objects furthermore showed that the farmstead was most probably set up by the end of the eighth or the beginning of the seventh century B.C. According to our archaeo-

9. Small domestic structure in the northwestern part of the tall.

[7] The 2004 season was jointly funded by the Gerda Henkel Stiftung, Düsseldorf and Yarmouk University, Irbid.

10. Tall Juḥfiyya: Three bronze fibulae.

logical records it was in use at least until the end of the fifth century BC. It was only then, within the Persian period, probably connected to the death of Darius II, that the main building of the farmstead was abondened by its inhabitants.

During the following subphase 3, which is covering the remainig part of the Persian period, that is mainly the fourth century BC as shown by a complete attic saltcellar, only the so called storage and processing units in the southern part of the tall have been rebuilt and reused. A quantitative rise in open fire places, silos and garbage pits in the northern area does even not exclude a temporary use of Tall Juḥfiyya during harvest times only. By the end of the Persian period Tall Juḥfiyya as a whole was temporarily abondened.

3. It was only after a gap of more than 800 years that the fringes of the site were resettled during Umayyad times. Characteristic remains of the third phase of occupation at Tall Juḥfiyya are a cistern and several small rooms excavated mainly in 2002. By the end of the Umayyad period the site was finally abondened.

2007 Season[8]

A fourth and hitherto last season of excavation was conducted at Tall Juḥfiyya in 2007 (FIGS. 11, 12). The work was mainly aimed at studying the archaeology of the early phases of the site, documenting it remains and increasing our general knowledge and understanding of the late Bronze Age on the north Jordanian plateau.

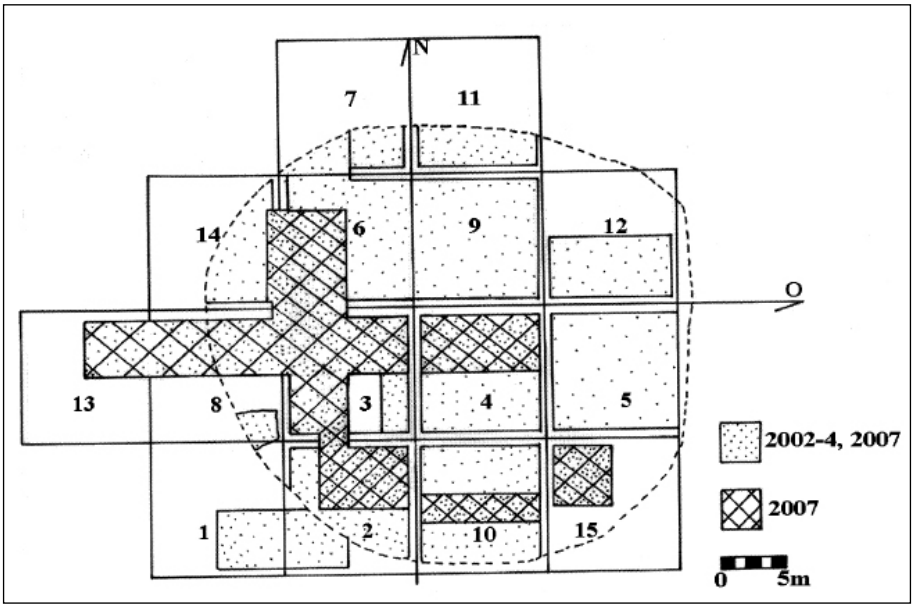
New and conclusive information on the stratigraphy and pottery-sequence of the early phases as well as the structure of the site's lower levels, considered to be a circular megalithic structure, have been obtained. As shown by the pottery, mainly "chocolate on white", the site was definetly founded on natural bedrock during the late Bronze Age. The affiliated architectural remains consist of several concentric walls (FIG. 13), forming a circular structure measuring more than 50.00m in diameter. The walls are "put inside one another" at a distance of approximately 2.00m each (FIG. 14). Their state of preservation is good and the excavated ones still have a hight of up to 4,72m. The spaces in between these concentric walls have been intentionally filled with medium sized lime- and flintstones. A layer of lime covered and "sealed" this fill (FIG. 15). Its function, however, is still uncertain and convincing parallels are hardly known.

Only the central(!) part of Rujm al-Hir (Kochavi 1989; Zohar 1989; Mizrachi *et al*. 1996), a site situated in the southern Golan area, has some features in common with the structure excavated in the lower levels at Tall Juḥfiyya. Based on this, an interpretation of Tall Juḥfiyya during the first phase of "occupation" as a late Bronze Age cairn seems possible. Further investigations and excavations, however, are necessary.

During Iron Age times the function of the site changed. The huge circular stone structure was lev-

[8] The 2007 season was again jointly funded by the Gerda Henkel Stiftung, Duesseldorf and Yarmouk University, Irbid.

11. Tall Juḥfiyya (from north): situation 2007 (photo by H. Debajah).



12. Area of excavation 2007.

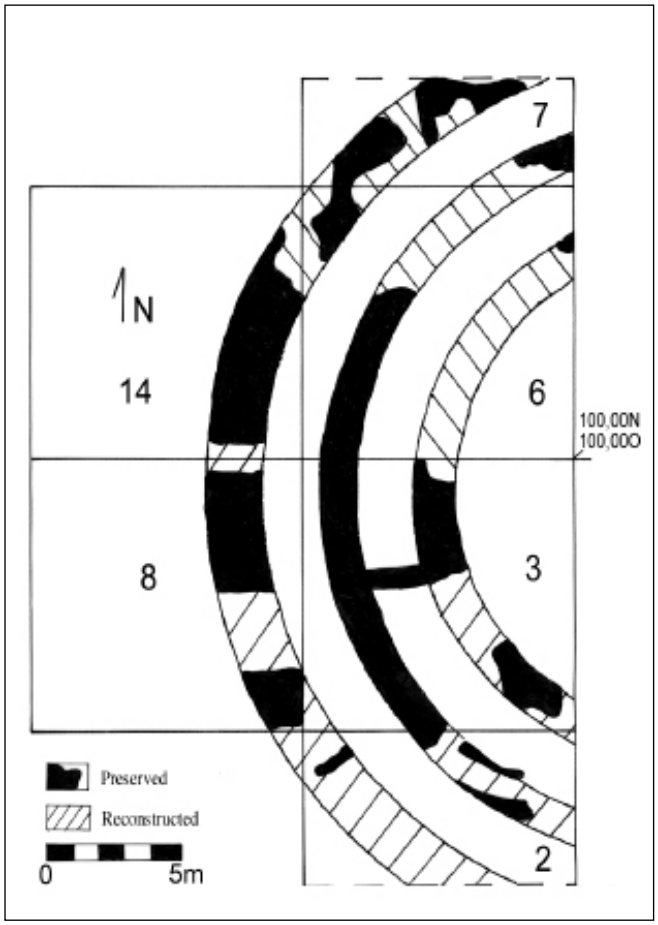
eled and most of the the late Bronze Age walls were reused as foundations for a "fortified farmstead" already excavated in the 2002-2004 campaigns.

Summary

Summarizing our results, we may say that the north Jordanian plateau during the late Iron Age was characterized by small, quite homogenous and prosperous sites like Tall Juḥfiyya, Tall Bayt Yāfā, Tall ash-Shiqāq, Dhahrat as-Sūq and Tall Kufr Yūbā. Each of these sites most probably represent a farmstead consisting of a main building and a storage and processing unit. A close link of these farmsteads and its inhabitants to one of the regional centers, Tall al-Ḥuṣn or Tall Irbid, is very likely. The finds, especially the so called "luxury goods", made within and around the main building at Tall Juḥfiyya suggest that the local families in charge belong to some kind of social or political elite who lived a quite peaceful and prosperous life during the late Iron Age.

Seen in the historic and archaeological context this phenomena, known as "pax assyriaca" in other regions (Ahlström 1993: 741), might be due to changes implemented in northern Jordan by the assyrians since the end of the eighth cenury BC (see Ahlström 1993: 642; Lamprichs 1995: 112-129).[9] A great demand for specialized economic goods

13. Excavated walls (1 – 3): a detail view from north.



14. Circular structures.

and hightend security conditions, both guaranteed by the main power of the region offered excellent conditions for the development of flourishing farmsteads. In return the small farmsteads of the north Jordanian plateau like Tall Juḥfiyya and the families in charge had to make their contributions to the food supply of the respective central or regional power. In addition a political behaviour in favour of the latter was surely taken for granted. As shown by the archaeological record of Tall Juḥfiyya the assumed reorganizing of farming activities in northern Jordan by the assyrians, proved to be very successful and was therefore most probably carried on by the following powers of the region, the Babylonians and Persians (see Ahlström 1993: 805; Worschech 1991: 204; Bienkowski 2001: 270, 2001a: 347-349).

Following the archaeological record of Tall Juḥfiyya and its surrounding one may assume, that the assyrians, often labeled as cruel, barbarian and merciless, brought a period of peace and prosperity to northern Jordan that lasted for almost 300 years from the beginning of the seventh until the end of the fifth century BC.

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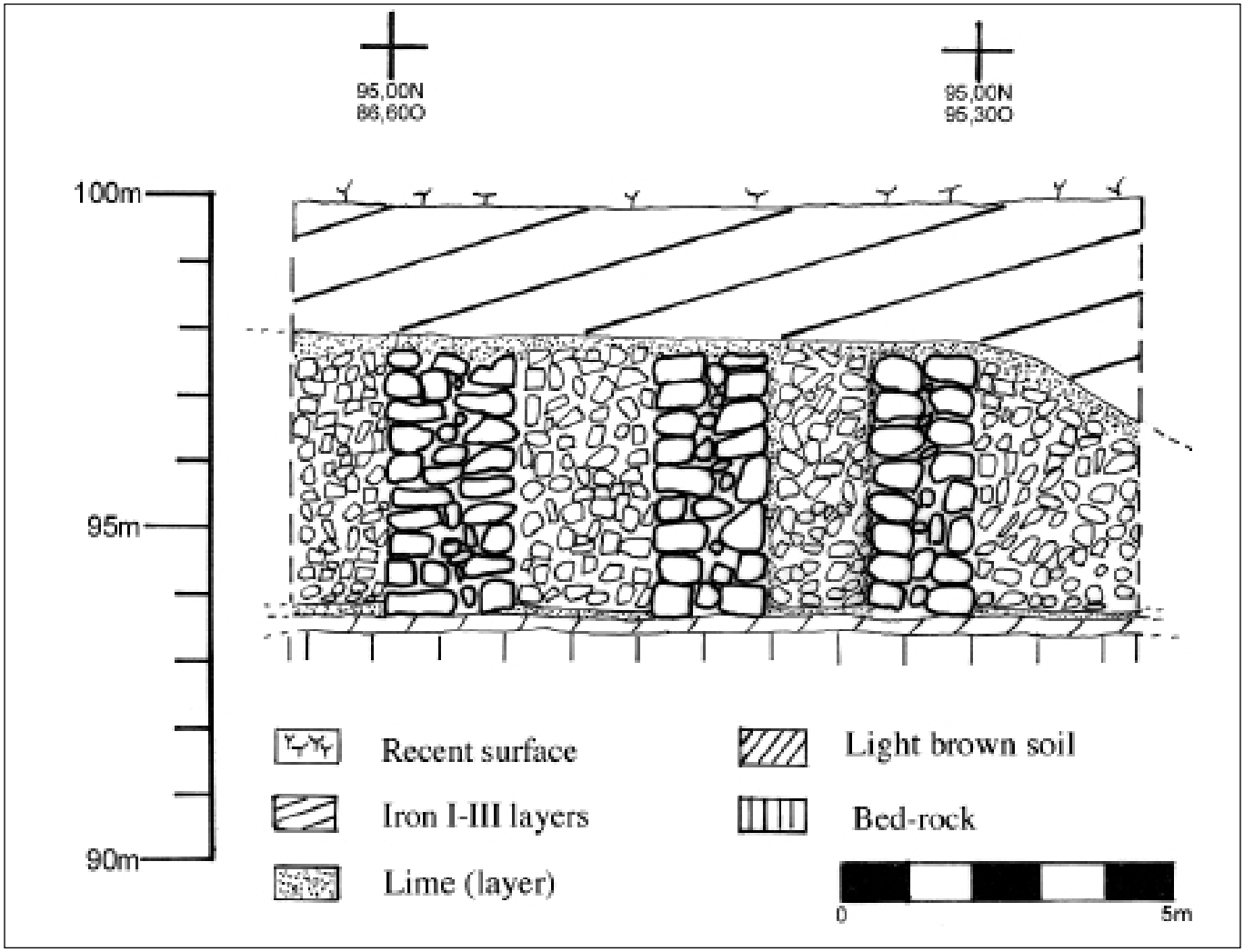
[9] Concerning the status of northern Jordan (Gilead) within the assyrian empire see also Bienkowski (2000, 2001: 269).



15. Artificial section (showing the structure of the "circular remains").

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New Results from the Jarash Cathedral Excavation[1]

1. Survey of the Cathedral Propylaeum (WB/SM)

Introduction

The propylaeum (FIGS. 1, 2 and 3), like the remainder of the cathedral and the adjacent church of St. Theodore, was originally excavated by the British-American expedition between 1928 and 1930.[2] Prior to excavation, the propylaeum appeared as "an unintelligible pile of débris" in which could be discerned two standing columns and the lintel of a monumental doorway. The columns were subsequently revealed to belong to a portico, composed of eight rather unevenly spaced columns that continued the line of the colonnade in front of the Nymphaeum to the north. The two central columns are separated by a slightly wider intercolumnation that articulates a great axial entrance marked by a monumental doorway. The lintel of this doorway was surmounted by a pediment with lateral *ancones* (found in the rubble and subsequently re-erected) supported by columns. The doorway opens onto a flight of some 32 steps that lead to a terrace in front of the eastern wall of the cathedral itself, against which is placed a small shrine dedicated to St Mary. A series of rooms belonging to various different structural phases are present on either side of the staircase and are partly terraced into the rock of the hillside. The presence of four columns on the staircase itself suggests the presence of a gallery which linked two raised porticoes on either side of the stairs (as shown in Fisher's reconstruction drawing and also that of Browning).[3]

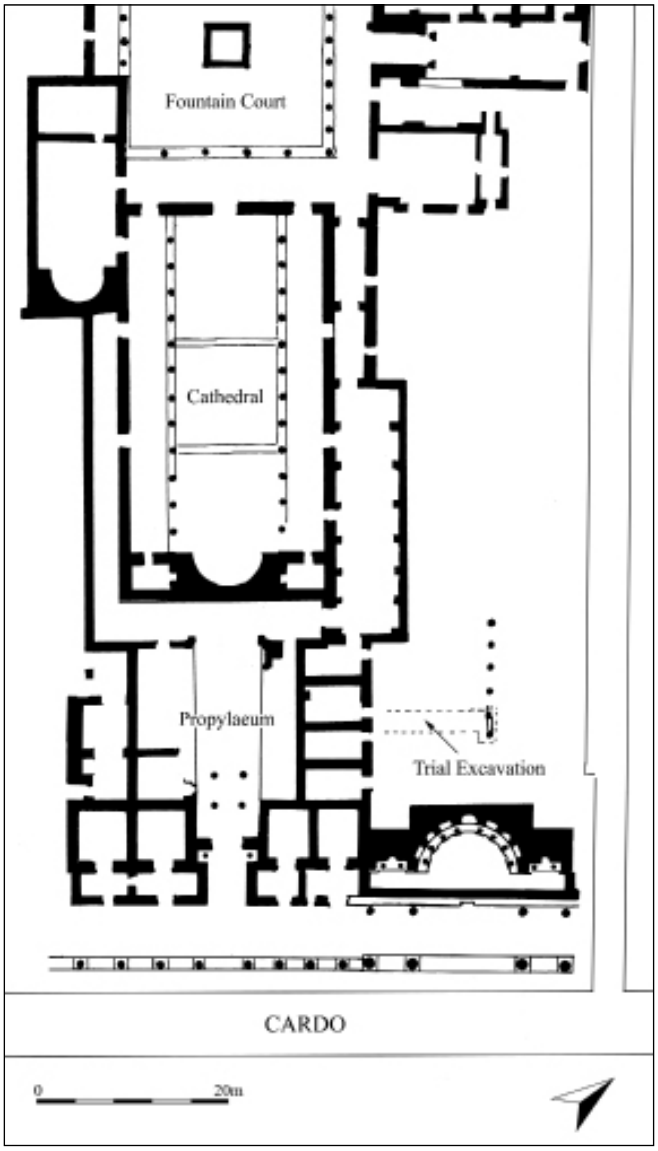
Crowfoot's excavations beneath the terrace at the top of the staircase revealed the presence of an earlier flight of stairs on the same alignment. These extended under the terrace and were consequently less steeply sloping than the present stair-

1. The propylaeum seen from the east (WB).

[1] The first part of this report is a contribution by William Bowden and Sally Martin (WB / SM). I added a brief summary of our activities during 2005 and 2006. I cordially thank my collaborators of the 2000 and 2003 seasons (WB / SM) and the 2005 and 2006 seasons (Andrea Angellini and Federico Giletti). I thank the Gerda Henkel Stiftung in Düsseldorf and the Max Geldner Stiftung in Basel for their generous financial support. The excavations were carried out with the full collaboration and warm-hearted support of the Department of Antiquities in Amman, especially its Director General, Dr Fawwaz al-Khraysheh, and the staff in Jarash who have extended the warmest hospitality to the Project.

[2] The excavation of the cathedral complex is described by J. W. Crowfoot in C. H. Kraeling (ed.), *Gerasa, City of the Decapolis* (New Haven 1938): 201-25.

[3] Kraeling, *Gerasa*: Plan XXX; I. Browning, *Jerash and the Decapolis* (London 1982: 179).



2. Plan of the Cardo, Propylaeum, Cathedral and Nymphaeum (WB).

case. Crowfoot suggested that these earlier steps formed the approach to a temple, of which other elements were recovered during the course of the earlier excavations. The existence of this structure was proved beyond doubt by the discovery of part of the temple podium during the 1996 season of the present Project.[4]

The new survey of the propylaeum was intended to identify any structural phases associated with this earlier temple complex and to determine how the monumental entrance to the temple was altered by the construction of the Christian complex on the site of the pagan structure. During the course of this work it was established that the monumental second century doorway that dominates the street frontage of the propylaeum is in fact a *spolium*, probably placed in its present position when the cathedral complex was erected in the fifth century.[5] The careful dismantling and re-erection of such a substantial doorway raises a number of issues relating to Late Antique attitudes towards the monumental remains of the past.[6]

The Temple Propylaeum

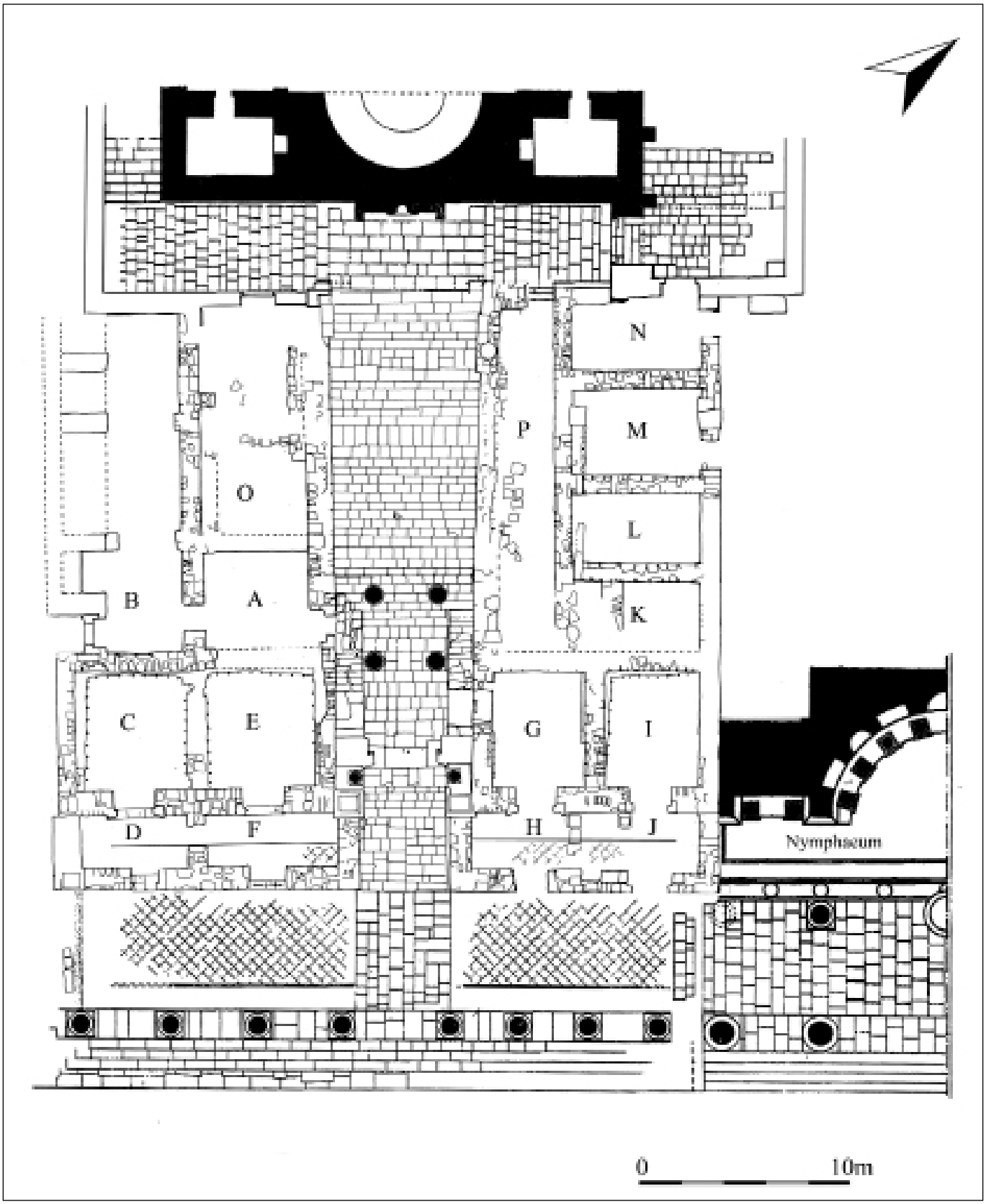
The dating evidence associated with the temple podium uncovered beneath the cathedral in 1996 indicated that the temple was earlier than the nearby temple of Artemis, and probably dated to the start of the second if not to the first century AD. The earliest elements of the propylaeum complex, however, are slightly later and probably date to the latter half of the second century. These consist of two pairs of rooms positioned on either side of the stairs (FIG. 3 rooms C, E, G and I, FIG. 4). They were terraced back into the slope of the hill with the lower sections of the walls cut back into the bare rock. It is clear that they originally supported an upper storey, for which the corbels and a recess for floor planks remain visible in rooms G and I (FIG. 4). This upper storey would have been on the same level as any buildings on the upper terrace to the west. Access to the upper storey may have been via an internal flight of stairs from the rooms below or alternatively from the level of the terrace behind.

The façade of the structure was clearly built in a manner commensurate with its position on the cardo of the city. Access to the rooms from the street was provided by four substantial doors for which the carved stone mouldings survive more or less

[4] C. Jäggi, H.R. Meier and B. Brenk, 'New data for the chronology of the Early Christian cathedral of Gerasa: the third interim report on the Jarash Cathedral Project'. *ADAJ* 41 (1997): 311-20.

[5] For the re-dating of the cathedral complex see Jäggi, Meier and B. Brenk, *ADAJ* 41 (1997).

[6] A similar reuse of a carefully carved portal and of a bronze door (both taken from a second century building) in a new architectural context of the fourth century is visible in the so-called temple of Romulus on the Forum Romanum in Rome, which is in fact a vestibulum or entrance to a hall of the Forum Pacis. This hall of the Forum Pacis was riveted with marble in the fourth century and connected with the Via Sacra. See B. Brenk, Türen als Spolien und Baureliquien: *Nova construere, sed amplius vetusta servare*, in Künstlerischer Austausch, Artistic Exchange. Akten des XXVIII. Internationalen Kongresses für Kunstgeschichte Berlin 1992 (ed. Th. W. Gaehtgens) 45 figs.1, 2, 4; B. Brenk, Zur Einführung des Kultes der heiligen Kosmas und Damian in Rom, in Theologische Zeitschrift der theologischen Fakultät der Universität Basel 62 (2006): 303-320.



3. Plan of the propylaeum incorporating data from the new survey. Details of the upper terrace and east portico are taken from the earlier plan by C.S. Fisher (WB).

intact. The remainder of the façade was articulated with a series of huge pilasters, two of which defined the entrance to the staircase and the temple beyond (FIG. 5). The pilasters were surmounted by ornate capitals of which two can now be seen on the site although they are no longer *in situ*. There were almost certainly similar pilasters at each end of the building. One is visible at the southern end of the complex, reused in a later structure (FIG. 6), while its northern equivalent can be seen reused in the Late Antique wall in the northwest corner of room J, revealed by recent work to install an electricity cable.[7] This ornate façade was slightly at odds with the interior of the building which can never have been particularly impressive, with the lower sections of several of the walls composed of roughly cut and unfaced bedrock.[8] The portico in front of the façade was paved with "red and white mosaics laid in a simple lattice pattern" although almost nothing now survives of these.[9]

The relationship between the propylaeum and the nymphaeum (completed *ca*. 191AD) is not entirely clear, although the evidence supports Crowfoot's suggestion that the propylaeum was the

4. Interior of room G, showing corbelling for upper floor and put-log hole for the second phase upper floor (*ca* 0.50m below earlier floor) (WB).

5. North side of propylaeum with the nymphaeum visible in the background. The second century pilaster can be seen on the left, clearly abutted by the Late Antique structure in the centre of the picture. The pilaster capital now sits on the corner of the later structure (WB).

[7] *Contra* Crowfoot, who suggested there was never a northern pilaster (Kraeling, *Gerasa*: 203).

[8] As also discussed by Crowfoot, who suggested that the lower rooms functioned as shops (Kraeling, *Gerasa*: 205).

[9] Kraeling, *Gerasa*: 202.

6. Southern pilaster base reused in Late Antique structure. The door of the original second century façade can be seen in the background (WB).

earlier building, the design of which was altered prior to completion in order to accommodate the nymphaeum. This theory is supported by a number of factors. In particular, rooms G and I to the north of the stairs (each measuring *ca*. 4.40m across) are slightly smaller than rooms C and E to the south (which are each around 5m across). This certainly indicates that the space available to the north of the stairs was restricted. It is perhaps most likely that the presence or construction of the nymphaeum forced the builders of the propylaeum to adopt the expedient of adapting the northern rooms to fit the space available. Crowfoot also suggested, incorrectly, that the absence of the northern pilaster discussed above indicated that the builders of the propylaeum were aware that the nymphaeum was under construction. Most importantly, as Crowfoot noted, the last column of the nymphaeum portico has a bracket placed off-centre to support the last section of the architrave of the propylaeum portico, thereby indicating that the nymphaeum columns were cut with the pre-existing structure in mind. This chronology is also supported by the narrower intercolumnations between the four northern columns of the propylaeum portico, which means that the portico is not quite symmetrical with the façade (see FIGS. 2 and 3). This suggests that the portico was rebuilt when the nymphaeum was erected. The four northern columns were moved in order to accommodate the nymphaeum portico while the architrave was left at its original length with its northern end supported by the nymphaeum portico. It seems unlikely that these anomalies will ever be entirely explained, but it is clear that by the end of the second century the temple was accessed via a flight of steps that led from a monumental street frontage that was fully in keeping with the other grandiose public buildings that dominated the hill slope on the western side of the cardo.

The Cathedral Propylaeum

The propylaeum subsequently underwent a series of major alterations associated with the remodelling of the entire area to accommodate the cathedral complex. The steps were foreshortened by at least 2.15m by the addition of a paved terrace immediately in front of the east wall of the basilica. This expedient was presumably adopted in order to maintain the monumental entrance from the cardo, which necessitated the creation of an access route around the sides of the church as the presence of the eastern chancel meant that the orientation of the complex had to be reversed from that of the earlier temple. This led to a rather awkward arrangement in which the great flight of steps led directly to the blank eastern wall of the church (FIG. 7). The size and layout of the church itself was at least partly dictated by the pre-existing temple structure.[10]

The Door

The frontage of the new propylaeum was dominated by a second century pedimented doorway that was presumably dismantled and transported from its original location before it was carefully re-erected

[10] Jäggi, Meier and Brenk, *ADAJ* 41 (1997): 316.

7. Photograph of the cathedral after excavation and before restoration, seen from north-east (Dumbarton Oaks).

as the centrepiece of the new façade (FIG. 1). This door has always been considered to be part of the original second century phase of the propylaeum and is treated as such in all studies of the city.[11] However, careful examination of the gate and its relationship with the surrounding structures reveals that it can only be a secondary addition.

First, it is immediately apparent that the relationship between the door and the second century pilasters described above is extremely awkward. The door appears to be too large for the space available, to the extent that the columns that support the lateral *ancones* would have been entirely hidden behind the pilasters. More significantly, the pilasters are clearly abutted by the blocks that support the pedestals of the lateral columns, which have been roughly cut to fit over the base moulding of the pilaster (FIG. 8). Second, the door clearly abuts the second century wall to the north, although the slightly more ragged appearance of the ashlars on the south side of the door suggest that an attempt was made to key in the door structure to the lateral wall to the south. Third, the blocks which form the door jambs themselves appear to have been re-cut to fit their new position. This is particularly apparent on the south side of the doorway, where only very short lengths of stone have been left on the door jambs in order to key them into the surrounding masonry, in a fashion that is not replicated on any of the earlier Roman doors in Jarash. Last, the door itself is not at right-angles to the stairs and is also slightly skewed in relation to the second century pilasters, with the space between the pilaster and door being some 10cm wider on the northern side.

The combination of the factors outlined above can leave little doubt that the door was originally made for a wider entrance elsewhere and appears in its current position in a secondary usage.[12] Although we have no absolute date on the insertion of the door, apart from the *terminus post quem* provided by the adjacent second century structures, it seems most likely that it was contemporary with the construction of the cathedral, which itself is wholly constructed of *spolia*. Indeed in the context of the rest of the cathedral and the fountain court

[11] E.G. Browning, *Jerash and the Decapolis*: 176-79.

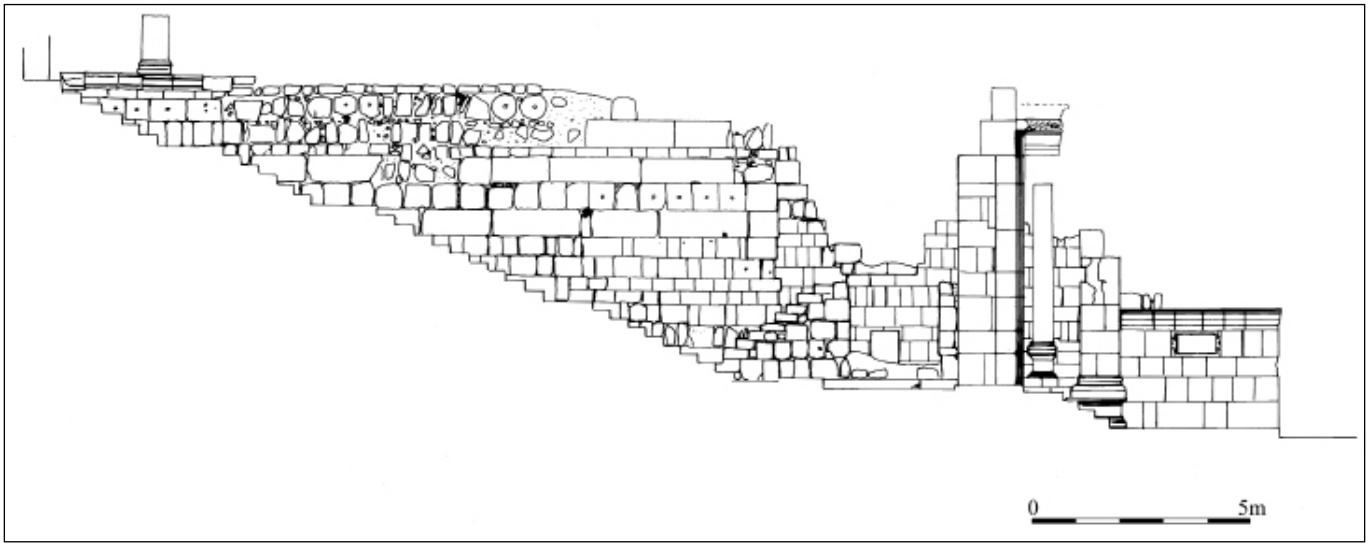
[12] This possibility was also discussed by Crowfoot, who eventually decided that the gate's awkward relationship with the surrounding structures could be explained by poor second century workmanship. He was also of the opinion that the projection of the doorsill to the outer edge of the mouldings demonstrated that it was in "the place for which it was originally made", as in "Christian doors at Gerasa the sill is always set back to the line of the wall and the mouldings of the jambs project beyond it" (Kraeling, *Gerasa*: 206). However, we would argue that the evidence presented here outweighs this factor. It may also be that changes in research agendas regarding Late Antiquity make us more willing to accept that the door is a *spolium*. Interestingly, the phases shown on the plan of the propylaeum in Crowfoot's *Early Churches in Palestine* (London 1941) suggest that the doorway is a Christian addition although this point of view was not upheld in the text.

8. Detail showing the relationship between the column pedestal of the monumental doorway and the second-century pilaster (WB).

(where the fountain itself is a *spolium*) there is little difficulty in accepting the door as a Late Antique insertion.[13]

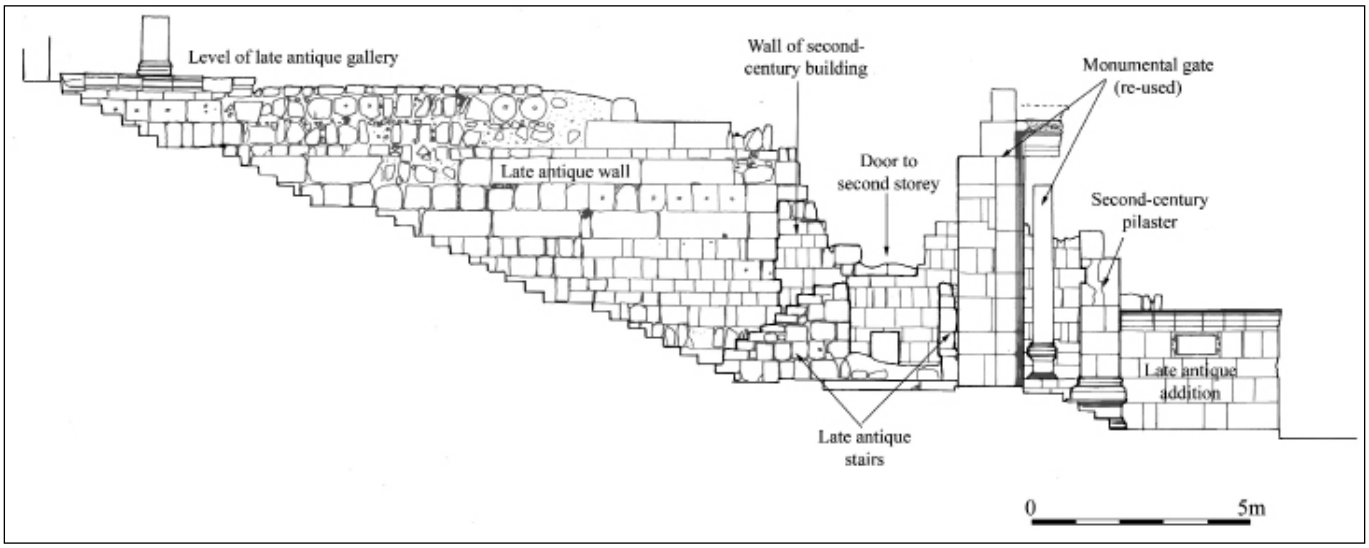
The Gallery and Associated Structures

The new and steeper flight of stairs was delineated on each side by substantial walls built entirely using *spolia*, including column drums laid horizontally and sections of squared pilasters in which the holes for iron fixing rods can be seen (FIGS. 9, 10 and 11). On both sides of the stairs, these walls can be seen to clearly abut the second century buildings described above. These walls almost certainly supported a three-sided porticoed gallery that ran above each side of the stairs before crossing behind the new monumental door. Traces of the portico remain at the western end of the north wall, where a single column base can be seen above a series of mouldings that define the top of the wall. Sections of paving stones from the portico also survive in this northern wing. The gallery crossed the stairs supported by four columns surmounted by Corinthian capitals, of which the western pair of columns was positioned rather awkwardly on the



9. Elevation of north wall of Propylaeum (WB).

[13] See B. Brenk, C. Jäggi and H.R. Meier, 'The Fountain Court at Jarash Cathedral Reconsidered: the First Report of a New Swiss Research Project', *ADAJ* 38 (1994): 351-357.



10. Interpretative elevation of north wall of Propylaeum (WB).

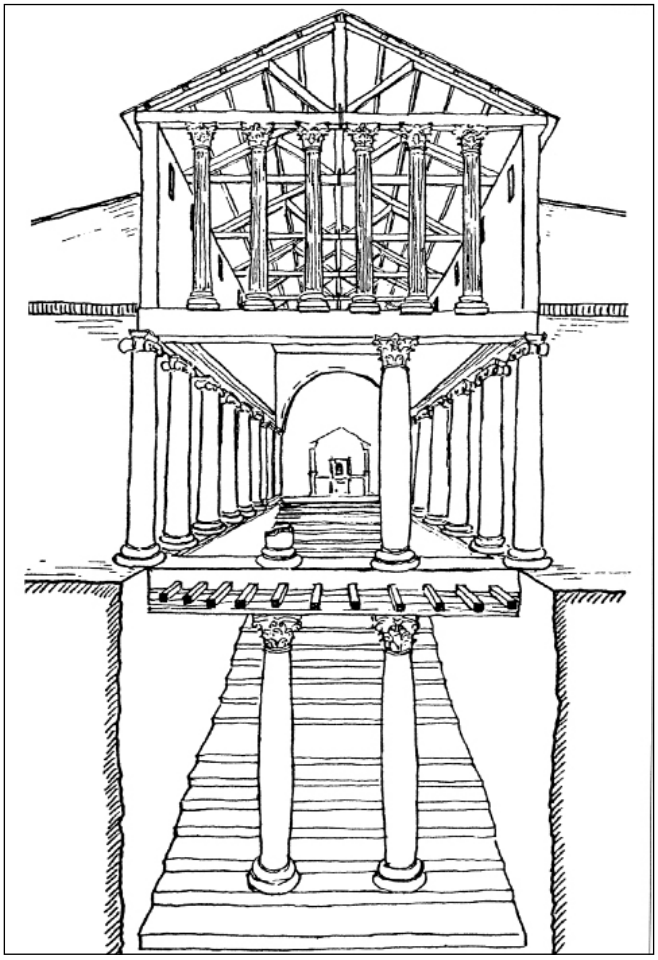
11. The lateral wall of the staircase seen from room C. The columns supported a gallery that crossed above the steps (WB).

stairs themselves, at a slightly higher level than the columns to the east. The gallery would have run behind the pediment of the door and it is possible that anyone using the gallery may have been visible to spectators on the cardo to the east, indicating that it may have served an important role in processions (FIG. 12).

The north and south wings of the colonnaded gallery were of unequal width and it is unclear as to whether the range of rooms to the north (rooms K, L, M and N) were directly accessible from the gallery. These rooms certainly post-date the wall that delineates the northern side of the complex, which may be part of the second century phase.[14] The walls of these rooms are of uneven construction showing frequent use of *spolia* and are at least partially bonded with clay. As they formed the back wall of the portico, they are presumably contemporary with the remodelling of the propylaeum associated with the construction of the cathedral.

No trace of equivalent rooms survives on the southern side of the complex, where rooms A and B represent a level that was midway between the 'street level' rooms to the east (rooms C to J) and

[14] Fisher's plan shows this wall as a later addition abutting the second century structures, although this relationship is now obscured (Kraeling, *Gerasa*: Plan XXIX).



12. Reconstruction of the gallery on the eastern section of the Propylon (Crowfoot).

the gallery level described above. As well as providing support for the gallery level above, using a series of vaults visible in room B, these were also important rooms in their own right, providing direct access from the south of the complex to the monumental staircase. Both the north and south entrances were marked by fine stone door surrounds that had presumably been removed from elsewhere, while an inscription can be seen on the left side of the exterior of the southern door.[15]

The upper storeys of the second century rooms (rooms C, E, G and I) on the east side of the propylaeum remained in use, entered directly from the steps via two small sets of stairs placed against the inside of the monumental central doorway. In the rooms to the north (rooms G and I) where the upper levels survive, it seems that a new upper floor was inserted *ca*. 0.50m lower than the original floor. This is indicated by a series of put-log holes cut into the walls below the level of the original corbelling (see FIG. 4).[16] Sections of the upper walls in these rooms also show signs of rebuilding. The date of these modifications is unclear, although the two staircases positioned behind the monumental doorway certainly post-date the other alterations to the complex and appear to be of poorer workmanship.

The Eastern Rooms

A further series of structures (rooms D, F, H and J) were added to the eastern end of the propylaeum complex, encroaching on the area of the earlier eastern portico and covering part of the portico's mosaic pavement. However, although these new structures at least partly covered the earlier façade, the monumentality of the axial entrance was retained. The additional buildings were constructed entirely of *spolia*, mainly consisting of huge ashlar blocks that had presumably been removed from other public buildings along the cardo. A series of mouldings were used to articulate the upper parts of the structure adjacent to the central steps, suggesting that the additions were only single storey buildings, which would have left the upper parts of the original façade visible at the rear. Pairs of doorways mirrored the doors of the earlier structure that lay behind, although earlier Roman door surrounds were not used in this case. Instead, door pilasters were cut into the ashlars. The original purpose of these buildings is unknown, but immediately prior to their eventual abandonment they were used for industrial purposes. According to Crowfoot, the northernmost room was used by a blacksmith who used the second century room behind (room I) for storing charcoal, while two unfinished capitals in the southern inner room (room C) may indicate the presence of a stone mason.[17]

The Propylaeum in its Context

The remodelling of the propylaeum was part of a much more wide-ranging series of modifications that accompanied the transformation of the earlier temple building into the cathedral, which started the apparent 'Christianisation' of a large section of one of the central insulae of the town. The retention

[15] C.B. Welles, 'The Inscriptions' in Kraeling, *Gerasa*: xyz.
[16] Also noted by Crowfoot (Kraeling, *Gerasa*: 204).
[17] Ibid. The 'blacksmith's shop' also contained around 70 coins, including a hoard of fifth century coins, five sixth century coins and an eighth century Umayyad coin, which Crowfoot suggested provided a date for the final abandonment of the building.

of the monumental staircase that originally led to the temple and the aggrandisement of this entrance through the addition of the great second century door are clearly important in understanding something of the complex relationship between the Church and the physical fabric of the Roman city. This relationship, which is one of the defining characteristics of Jarash as it appears today, was one that involved the demonstration of dominance over the fabric of the urban landscape whilst at the same time demonstrating an explicit lineage with the Roman city.

Control of the cityscape was evoked particularly through the overt use of *spolia*. All the Christian buildings of Jarash are entirely constructed of the reused architectural members of earlier monuments, including both the more decorative elements such as architraves, capitals and doors, and the more utilitarian ashlar blocks. While there was undoubtedly an element of pragmatism attached to this reuse, the use of entire sections of earlier buildings such as the monumental door of the propylaeum suggests that *spolia* must have worked on many different levels as part of a dialogue between the builder and his audience. It is likely that the propylaeum door was recognisable to the inhabitants of the city as a piece of earlier masonry, and was perhaps even recognisable as deriving from a familiar structure. The use of the doorway established an explicit link with the monumental Roman city, whilst at the same time demonstrating the ability of the Church to commandeer large sections of former public buildings for its own use. The significance of this practice is particularly marked in the cities of the East, which had not suffered from the loss of monumentality that became the hallmark of the Late Antique city in the West. Indeed, all the evidence indicates that cities such as Jarash were thriving urban centres, suggesting that the impact of 'Christianisation' was all the more marked.[18] The churches were not erected in a cityscape in which public areas had fallen from use (as was the case in some parts of the Balkans and the West), but instead appeared in an environment that was in many ways very similar to that of the second century.

The power to redefine the urban landscape was also demonstrated through the relationship between the new buildings and their surroundings. This included the placement of buildings above earlier monuments, which in the case of the cathedral appears to be very deliberate.[19] A similar ideological motive may also be implied by an inscription above the west atrium door of St Theodore that tells of the church being erected over "a former eyesore" where there was "the grievous stench of cast-out quadrupeds worn with toil", which some commentators have suggested implies the presence of a pagan sanctuary on the site.[20] Other Christian buildings in the city may also reflect the locations of earlier structures, although until now most of the Jarash churches have been excavated in isolation and thus little is known of their context.

The retention of the monumental steps leading from the cardo to the cathedral is particularly interesting in terms of the relationship between the cathedral and its surroundings. The builders of the cathedral went to considerable effort to not only retain this access from the cardo but also to aggrandise it with the addition of the great door and porticoed gallery that ran above it. Maintaining this eastern entrance necessitated the creation of a shorter and steeper flight of steps in order to leave sufficient space for a terrace that led to two lateral passages that allowed access to the church and the fountain court beyond. The result was a rather awkward arrangement in which anyone approaching the church from the cardo climbed the stairs to be met by the blank east wall of the church, which was only alleviated by the small shrine to the Virgin placed at the top of the steps. From the terrace at the top of the stairs, the visitor could turn either left to enter the church via the south aisle or turn right to proceed down a rather narrow passage to the north door of the church or alternatively continue through to the fountain court. This northern passage was vaulted and is likely to have been dark and rather restricted. Indeed, it could be questioned whether it was ever intended to allow general public access at all.[21] In this

[18] For a recent overview of the eastern cities in Late Antiquity see J.H.W.G. Liebeschuetz, *The Decline and Fall of the Roman City* (Oxford 2001).

[19] The ideology of building placement in Late Antiquity is questioned by L. Lavan, "Late antique urban topography: From architecture to human space", in L. Lavan and W. Bowden (eds.), *Late Antique Archaeology: Theory and Practice*. (Leiden 2002): 170-93 at 174.

[20] Others have opted for a more literal interpretation, suggesting that the inscription implies the presence of a rubbish tip. On this inscription see also C. B. Welles, 'The Inscriptions' in Kraeling, *Gerasa*: 477.

[21] Crowfoot suggests that the south passage was intended as the mens' narthex while the wider eastern section of the north passage was intended as the womens' narthex (Kraeling, *Gerasa*: 214-215).

context we can also note the two doors that closed either end of the corridor.

2. The Area West of the Nymphaeum (BB)

The area west of the Nymphaeum (FIG. 2) has never been touched by excavators, even though six fragmented columns without capitals protrude from the ground. The irregular diameter of the columns and intercolumnia demonstrate that these columns belong to Late Antiquity. Such irregular measurements are uncommon in classical architecture. South of the Roman Nymphaeum is the propylon and the monumental stairway leading from the Via Porticata of Jarash up to the level of the former temple and 'cathedral'. Four rooms open off to the north of this stairway, i.e. on to the area with the six fragmented column shafts. Thus, the supposition that these four rooms once opened on to a portico or a court with porticoes and that they were built contemporaneously with the columns is confirmed.

The area behind the Nymphaeum was limited to the north by a 5m high wall which runs along the *vicus* (FIG. 13). This vicus separates the area of the temple of Artemis from the small temple we uncovered under the cathedral. The high wall is constructed with reused blocks[22] which include two second century inscriptions. The wall is 122cm thick and has a door (145cm wide and 258cm high) leading into a square room open to the sky. The east side of this square room is not visible because it is covered with rubble. Its western wall retains fragments of paint and stucco, and a door leading into a hitherto unexplored vaulted room to the west. This appears to have been part of an earlier building to the west of the Nymphaeum. The southern wall of the square room was added in order to create a service room accessible from the *vicus*. This service room was probably connected with the upper level, associated with the above-mentioned six columns, by a wooden staircase. It took advantage of the pre-existing walls which most probably belonged to the Nymphaeum complex.

The Christians remodelled the whole area west of the Nymphaeum in order to create a level building plot which was easily accessible from the cathedral and its eastern staircase.

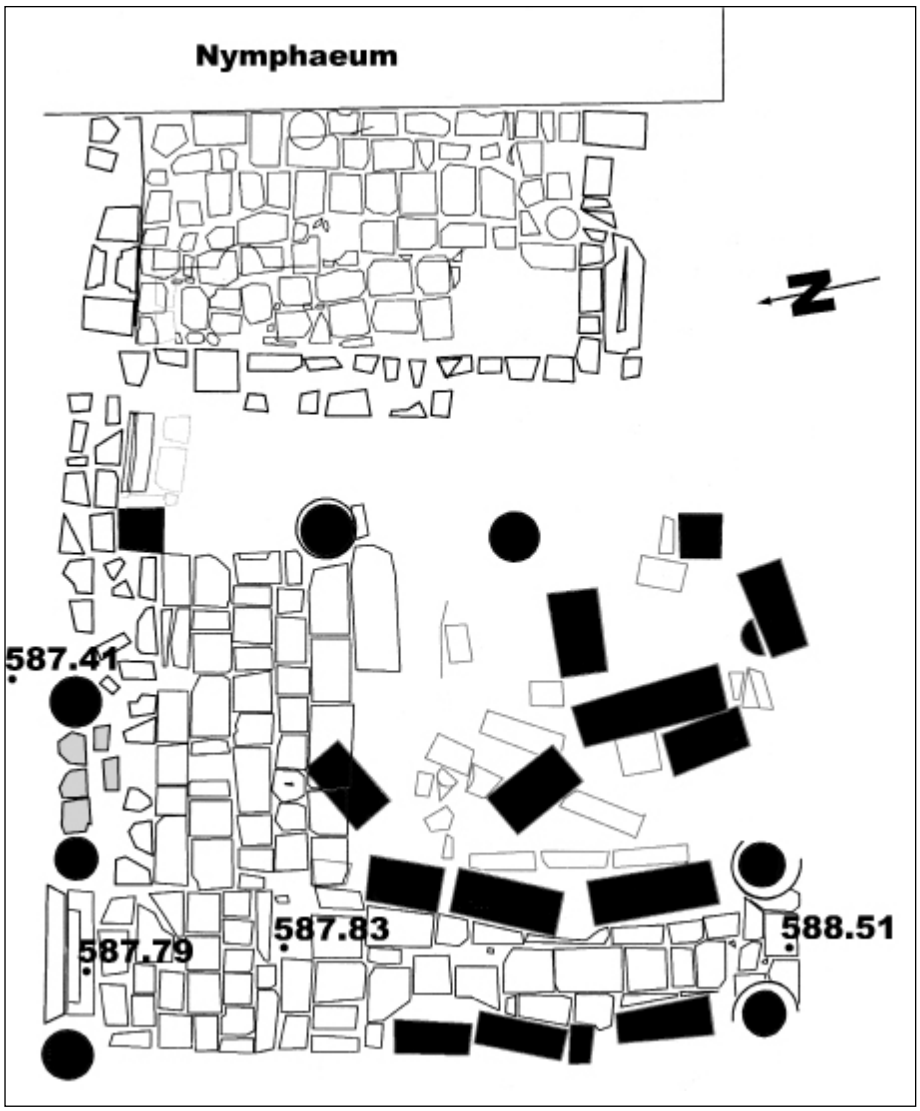
In sum, the whole area west of the Roman Nymphaeum and propylon were totally reconstructed by the Christians in the first half of the fifth century. Since this was a major undertaking which dramatically altered the appearance of 'downtown' Jarash, only a bishop, as opposed to a private patron, could have been responsible. If a bishop was indeed responsible for all this impressive building activity, the church would certainly have been the cathedral, although a baptistry has not yet been found.

I conclude with a brief description the area to the west of the Roman Nymphaeum, where we ex-

13. North wall of the quadriporticus and east wall of the nymphaeum (BB).

[22] One of the two inscriptions is mentioned by C.B. Welles, 'The Inscriptions' in Kraeling, *Gerasa*: No.70 (plate XXII.44.2).

cavated a quadriporticus (FIG. 14) with an open court in the middle. Since the problems of stratigraphy are rather complex I will summarise the most important results. The court was 8.30m wide and covered with reused flagstones. The flagstones we excavated belong to a second, late, phase. The first phase, which most probably dates to the first half of the fifth century, can be seen on the north side of the porticus where six columns stand *in situ* on a lower level. In contrast, the columns on the south side were erected at a higher level, though without fundament, which led to their fall during the earthquake of 748AD. These columns were 4.37m high. Their capitals were *spolia*. Some capitals were taken from the temple of Zeus, as Jacques Seigne pointed out. We found a remarkable early Imperial capital (FIG. 15) and also an *ex novo* sculptured capital of the fourth or fifth century (FIG. 16). The latter is particularly interesting because until now scholars have thought that production of capitals in Jarash came to an end during the third century. The porticoes around the court had a second storey which was paved with white floor mosaics. Such a floor mosaic fragment was found in a layer which preserved material from the collapse of this upper floor. The second porticus must have been rather elaborate with its variety of different capitals. Strangely enough it had no stone or marble architraves, which must have been made of wood. The whole porticus was in use until the eighth century, perhaps later. This is demonstrated by various datable coins of the seventh century. The most recent coin that we found was recovered from a room associated with the administration of the cistern and the water conduits, immediately to the west behind the nymphaeum wall. In a channel of this room we



14. Plan of the excavated quadriporticus and cortile (Angellini / Giletti).

15. Augustan capital (BB).

16. Late Antique capital (BB).

also uncovered a very nicely preserved glass flacon together with the Early Islamic coin of 706AD (FIG. 17). This coin is a clear proof of the Muslim presence at Jarash.

It was not the well-known earthquake of 748AD which marked the end of occupation within the quadriporticus.[23] A careful stratigraphic excavation revealed a 30cm thick dump immediately on top of the flagstones. This dump contained many animal bones and plenty of glass, ceramic and metal fragments, including some typical eighth century oil lamps. In other words it seems that the ecclesiasti-

17. Early Islamic coin from Damascus *ca*. 706AD (BB).

[23] D. Kalner-Amiran, A Revised Earthquake Catalogue of Palestine. *IEJ* 1 1950: 50-51; K.W. Russell, The Earthquake Chronology of Palestine and Northwest Arabia from the second through the mid-8th century AD. *BASOR* 1985: 37-59; A.A. Ostrasz, The Hippodrome of Gerasa: A Report on Excavations and Research 1982-1987, in Jerash Archaeological Project 1984-1988 II. Fouilles de Jérash. *Syria* 66 (1989): 75; Y. Tsafrir, G. Foerster, The Dating of the Earthquake of the Sabbatical Year 749 C.E. in Palestine. *Bulletin of the School of Oriental and African Studies*, University of London 55(2) 1992: 231-235.

cal activities conducted in the quadriporticus came to an end before the earthquake of 748AD, probably some time during the first half of the eighth century.

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The Jordan Museum: Exhibiting the Archaeology of Jordan

Development of a National Museum for Jordan

Ideas for establishing a National Museum in Jordan have been developing since the 1960s. Architectural plans commissioned by the Department of Antiquities for a National Museum at ‘Ammān Citadel were ready as early as 1979 (Brawne and Associates 1979; see also Al-Azzawi *et al*. 1995: 330-331), but concerns about locating the proposed museum on such an archaeologically rich site prevented their implementation.

In 1980, HRH Crown Prince al-Hassan Bin Talal held the First Conference on the History and Archaeology of Jordan at Oxford. Conference papers recommended the establishment of a National Museum and, by 1989, a previously established committee of concerned individuals, government officials and university representatives had formed the “Society of Jordanian Culture”, chaired by HRH Prince al-Hassan. This society worked on several topics that were eventually incorporated into the National Museum general concepts (Ibrahim 1991).

The main obstacle to the establishment of the National Museum was lack of funding. Between 1994 and 1996, the Japan International Cooperation Agency (JICA) conducted the “Study on the Tourism Development Plan in the Hashemite Kingdom of Jordan”, which recommended the implementation of seven tourism development projects, including the National Museum. This was followed by funding from the Japan Bank for International Cooperation (JBIC) for “Special Assistance for Project Formulation” and a detailed JICA study of the projects. In December 1999 these culminated with the signing of a Japanese loan agreement for financing the “Tourism Sector Development Project”.

With the launching of the “Tourism Sector Development Project”, work on achieving a National Museum for Jordan was finally underway, with the aim of establishing a museum adhering to international modern standards that would present the history and cultural heritage of Jordan to Jordanians and visitors alike.

King Abdullah the Second Bin Al Hussein issued a royal decree on 16 May 2002 by which a National Museum, having financial and administrative independence, was established in Jordan. On 1 July 2003, His Majesty also accredited the National Museum bylaw (no. 71 for the Year 2003, issued according to Item 31 of the Law of Antiquities no. 21 for the Year 1988).

On 12 January 2005 the governing Board of Trustees, chaired by Her Majesty Queen Rania Al-Abdullah, held its first meeting. On 2 October 2005 Queen Rania laid the cornerstone of the Museum building, designed by Jordanian architect Jafar Tukan, and the Board decided upon the name of “The Jordan Museum” for the new institution.

General Concept, Mission and Objectives of the Jordan Museum

The general concept of the exhibition plan for the Museum is “A Story Telling of Jordan: Land and People”, from the Palaeolithic to modern times. This general concept has remained unchanged since the summer of 2003, when the National Museum Technical Team started work on the upgrading of the exhibition (see Barghouti *et al*. 2007).

The mission and objectives of the Museum can be summarized in five main points:

1. To be a **cultural landmark** and symbol of pride for Jordan, reflecting its history and cultural heritage;
2. To serve as a facility for **creating awareness** among Jordanians of the importance of their national heritage;

3. To serve as a tourist attraction in order to **promote tourism** and to provide visitors with an overview of Jordan, land and people;
4. To serve as a **research and study base** for academics and scholars; and
5. To serve as an **educational facility** for school children from across the nation in order to establish in their minds the continuous cultural links of successive civilizations.

The educational role of the Jordan Museum is seen as one of its distinctive aspects, whereby programs are planned and designed to foster an understanding of the national heritage. Education is of course for all age groups, but children are perceived to be the main beneficiaries of these programs. Programs and interactive workshops, aimed at creating and broadening awareness and understanding of Jordan’s heritage and history, started well before the opening of the museum in order to help foster a sense of national identity. It is hoped that this will help in the national effort to preserve our cultural heritage.

Building, Functions and Activities of the Jordan Museum

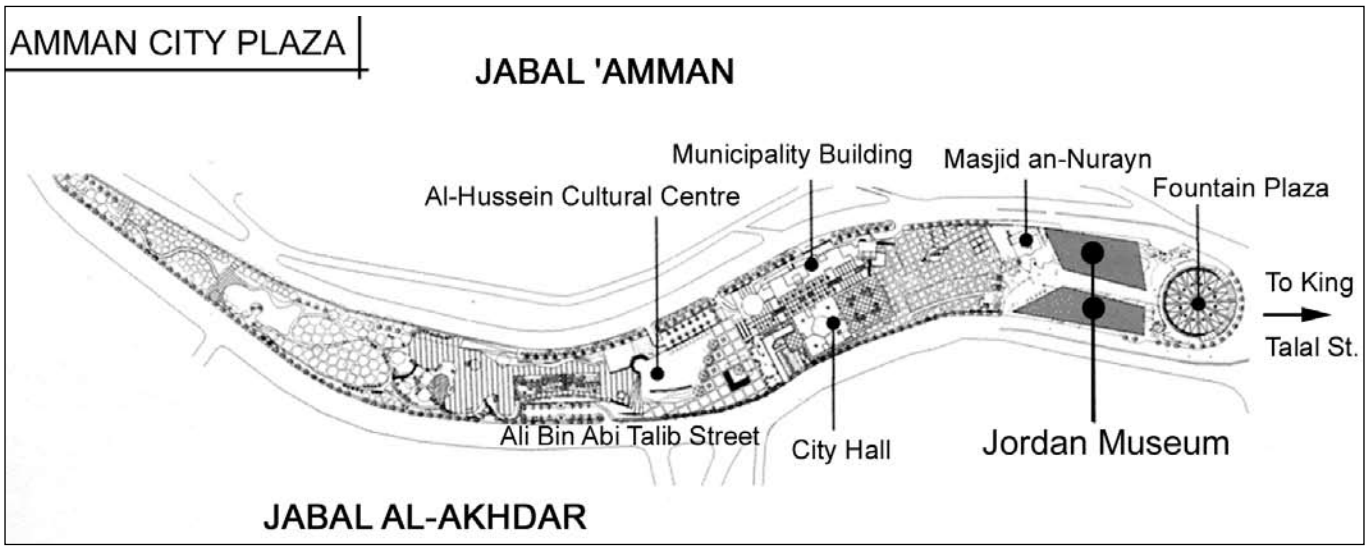
The Museum is currently under construction in downtown ‘Ammān, within the present City Plaza at Rās al-‘Ayn (FIG. 1). It is perceived as a major component of a cultural centre connecting east and west ‘Ammān. The structure has a total floor area of 9500m^2, where five main interlinked functions will be carried out: 1. exhibition; 2. artefact collection and conservation; 3. research and archiving; 4. education; and 5. visitor services (see TABLE 1).

TABLE 1. Floor areas for the different in the Jordan Museum

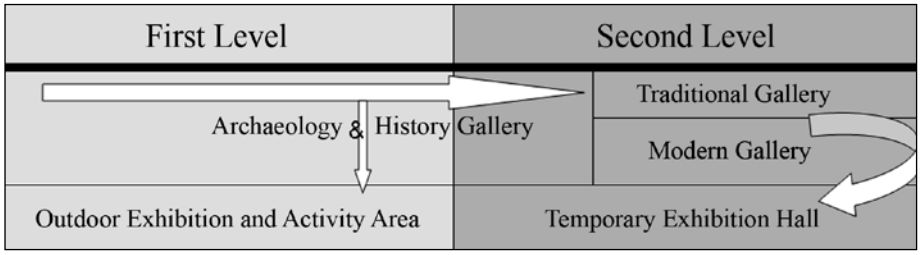
Exhibition Galleries	2400m²
Collection Management – storage and others	2400m²
Research / Study Hall – including lecture hall	1200m²
Administration & Operation / Maintenance	600m²
Visitor Services	1000m²
Auxiliary Services (circulation and mechanical rooms)	1900m²
TOTAL	**9500m²**

The first function, the exhibition, spans two floors of the building (FIG. 2). Its design is dictated by all other functions, especially research and education.

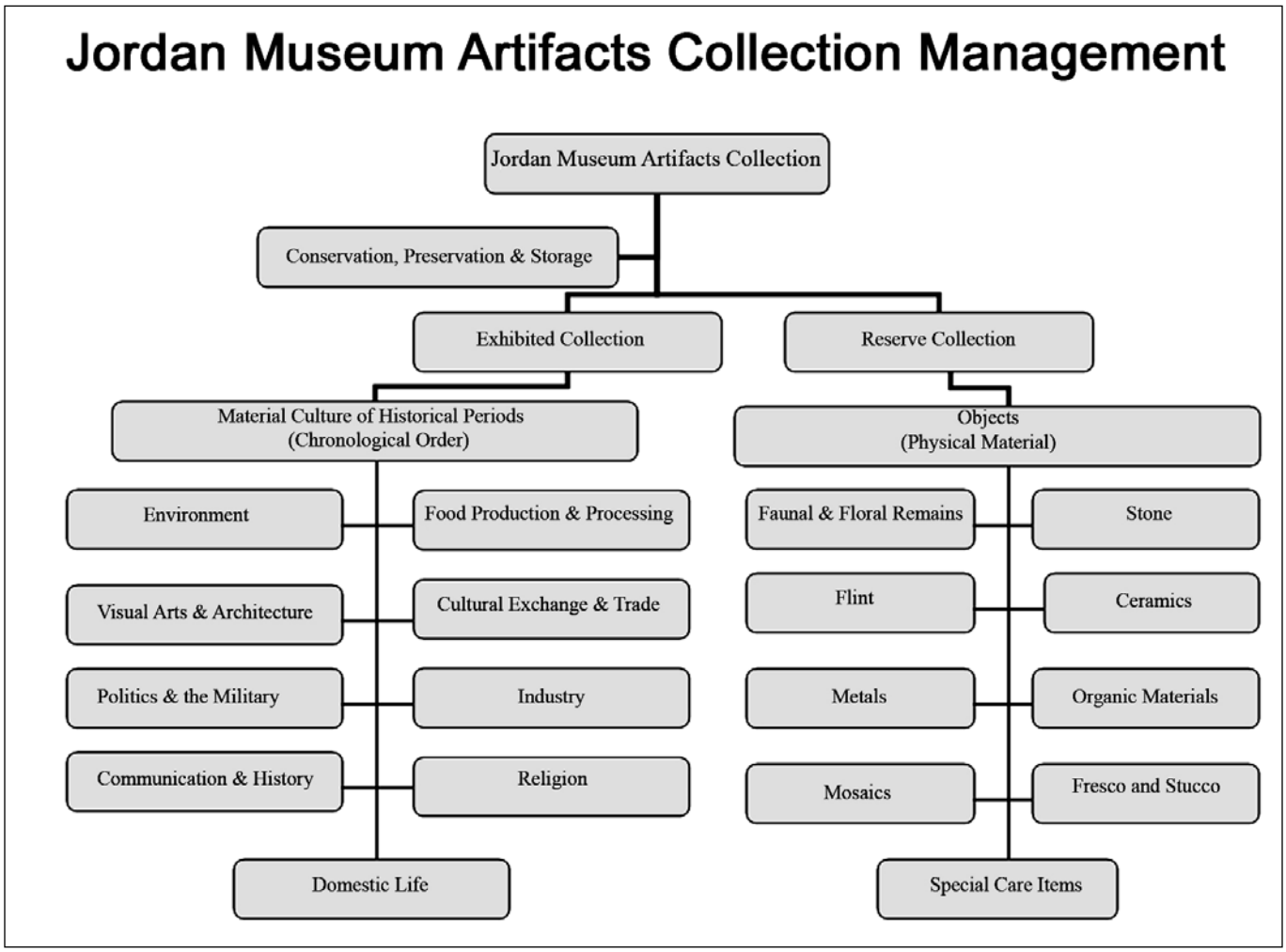
The Jordan Museum artefact collection is perceived as falling into two main categories, the exhibited and reserve collections, with a special emphasis on conservation and preservation. The exhibited collection is categorised according to the material culture of the various historical periods, in chronological order, and is presented in accordance with nine main themes that span and connect the periods. The reserve or storage collection is categorised by physical material in order to facilitate its preservation (FIG. 3).



1. Location of the Jordan Museum.



2. Jordan Museum exhibition layout.

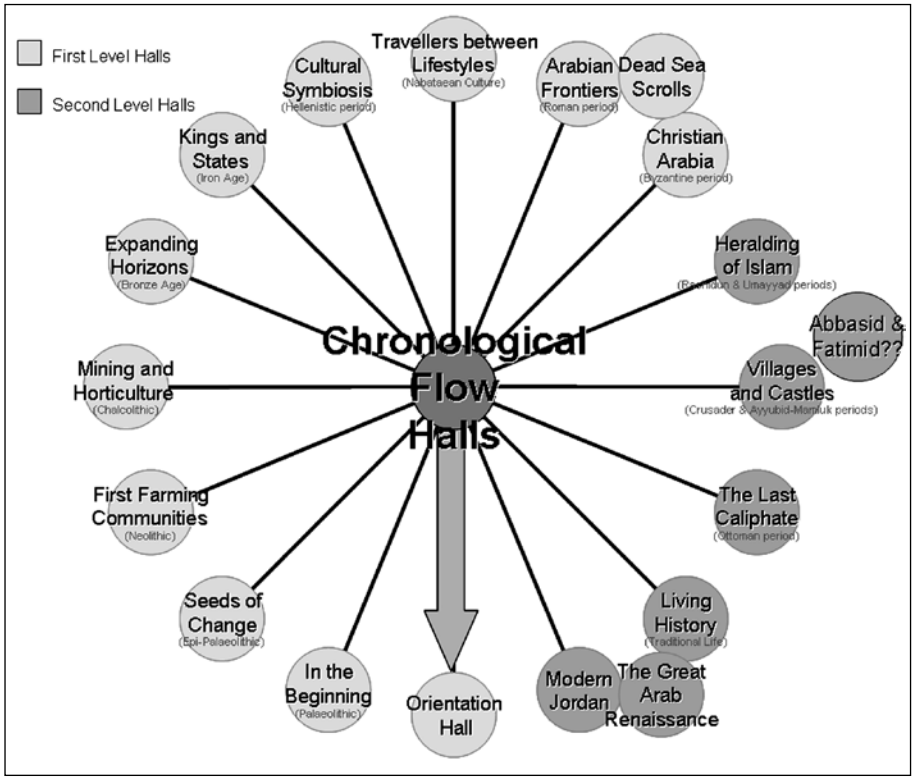


3. Jordan Museum collection management.

The Exhibition

The exhibition in the Jordan Museum is divided into two main parts: the *Chronological Flow Halls* and the *One-to-One Theatres*. These are preceded by an *Orientation Hall* that presents background information on Jordan's geography and geology, and general guidance regarding the exhibition halls. Starting here, exhibitions are used to encourage visitors to explore not only the Museum, but also cultural sites in Jordan.

The *Chronological Flow Halls* are divided into three main galleries: 1. The Archaeology and History Gallery; 2. The Traditional Life Gallery; and 3. The Modern Gallery. The main historical periods are presented in terms of socio-cultural development, a concept previously used in Jordan at the Museum of Jordanian Heritage, Yarmouk University. The names of the halls were chosen to reflect the periods they present and also to be attractive to visitors (FIG. 4, noting that no appropriate name is yet available for the Abbasid-Fatimid Hall).



4. Jordan Museum *Chronological Flow Halls*.

The concluding main gallery, the *Modern Gallery*, covers Jordan’s modern and contemporary history from the Great Arab Revolt of 1916 up to the present, and describes the collective efforts of the Hashemites and Jordanian people to build a modern and reformed country.

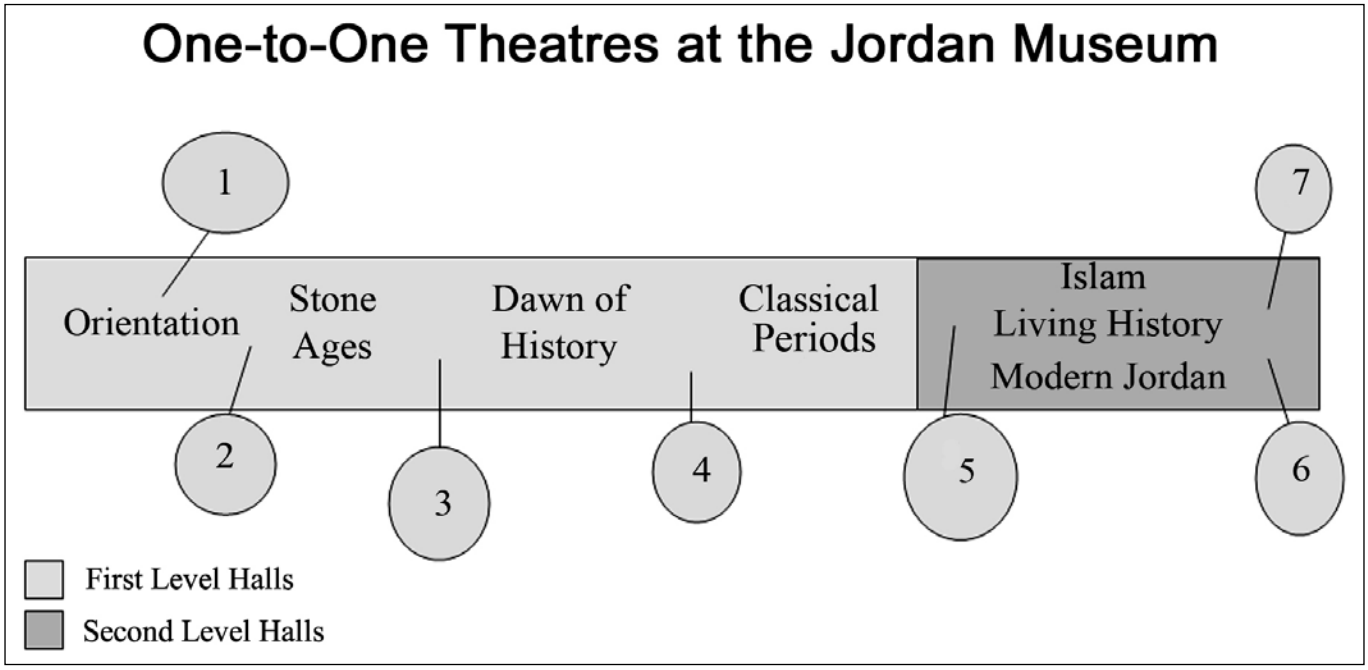
The *Traditional Life Gallery* overlaps and connects the Archaeological and Modern exhibits. It presents traditional heritage — Jordan’s “Living History” — with the aim of linking today’s generation of Jordanian youth with their national heritage, highlighting elements relevant to modern Jordanian society.

In terms of space, the *Archaeology and History Gallery* is the largest gallery in the Museum, presenting Jordan’s history and culture from the Palaeolithic until the end of the Ottoman era in four main sections: 1. The Stone Ages (Palaeolithic, Epipalaeolithic, Neolithic and Chalcolithic); 2. Dawn of History (Bronze and Iron Ages); 3. The Classical Periods (Hellenistic, Nabataean, Roman and Byzantine periods); and 4. Islamic Periods (Rashidun, Umayyad, Abbasid-Fatimid, Ayyubid-Mamluk and Ottoman periods), that is to say from the “In the Beginning” through to “The Last Caliphate” halls in FIG. 4.

Although the divisions described above have remained little changed in their essentials since we introduced the notion of the *One-to-One Theatres* back in 2003, many details and concepts have been evolving over the years (for example, compare FIG. 4 to Barghouti *et al*. 2007: 144, FIG. 5). It is our vision that this *process of evolution* will continue even after the opening of the museum.

The Archaeological Exhibits

Thanks to the help of the Department of Antiquities and museum curators, we have been able to record thousands of objects from all time periods and regions of Jordan for potential display. These are on loan from the Department of Antiquities and include some of the treasures of Jordanian archaeology, including ‘Ayn Ghazāl statues, the Tulaylāt al-Ghasūl wall painting, the Pella ivory box, Khirbat adh-Dharīḥ Nabataean statues, and the bronze brazier of al-Fudayn, as well as others that are currently on display at the Jordan Archaeological Museum at ‘Amman Citadel. As for the regional archaeological museums, it is our policy not to weaken their exhibits so therefore the vast majority of artefacts requested for loan are from their reserve (storage) collections. All objects that are regarded as ‘icons’ of specific sites, such as the *Ilahat Ḥayyan* idol of Petra and the *Tyche* statue of Umm Qays, were not requested for loan but are represented at the Jor-



5. Jordan Museum *One-to-One Theatres*.

dan Museum by photographs in order to encourage people to visit the sites and to see these objects where they belong.

As for the development of the exhibition, we were guided by three main principles:

1. The museum experience should be holistic and reciprocal, for us and for our museum 'guests'. The museum is a home of our culture and people coming into this home are therefore our guests;
2. The objects on display were made and used by people like us and like our guests. They are special objects to care for and understand; and
3. Familiarity negates alienation, of the guests and of the exhibits. This can only be achieved by emphasising contexts and relations.

Thus, we regard the Museum as a place to enjoy learning as well as **communication.** For this purpose we use *interactive* devices and films in all halls, varying from the simple "See and handle how archaeologists date by stratigraphy and pot sherds" or "Engrave your own inscription", to elaborate computer programs that answer questions on archaeometry and dating techniques, allow you to dress up as a resident of 'Ayn Ghazāl or even write your name in Aramaic and Greek.

Objects are not displayed as mere *objets d'art* but are considered as words in a story. Objects for exhibition in each hall are *contextualized*, grouped and presented in accordance with the narrative themes in FIG. 3. Of course, these 'words' have to be beautifully presented to make the story more appealing.

A main consideration in the exhibits is the *importance of size*. While plans and maps are used to represent large structures and regions, no small-scale models are used and all physical reconstructions are at a scale of 1:1. This means that no structures can be reconstructed in full within the museum, owing to space constraints. Instead, what is presented are 'cut-models' of structures with reconstructed elements that cannot be seen in their original natural settings, e.g. there are cut-model reconstructions of houses from Epipalaeolithic Wādī al-Ḥamma, Neolithic 'Ayn Ghazāl and Chalcolithic Abū Ḥāmid that show standing walls, and a reconstruction of the sugar cane crushing mechanism of mediaeval Ṭawāḥīn as-Sukkar.

A major innovation at the Jordan Museum are the *One-to-One Theatres* that compliment the main *Chronological Flow Halls*.

The One-to-One Theatres

1. Spaces that present special thematic exhibitions as 'time capsules', irrespective of historical period;
2. Dispersed among the *Chronological Flow Halls*, they complement the main exhibition galleries (FIG. 5, compare to Barghouti *et al*. 2007: 144,

Fig. 6).

3. The main interactive spaces in the museum, where emphasis is placed on interpretation and guest participation. They embody the principle of “please touch”, as opposed to the “DO NOT TOUCH” emphasis of the *Chronological Flow Halls*;
4. The exhibits address all age groups simultaneously, in simple terms that respect their intelligence.

The theatres start with *The Earth*, which explains the means by which we obtain archaeological data about the past and the major earth resources used by the people of Jordan to produce the artefacts on display in the galleries. They also describe the characteristics that differentiate *Humans* from other members of the animal kingdom, discuss the development of ways of life through *Nomadism* and *Writing,* the development of technology in *lighting* and, finally, bridge into the future through the *Children of Jordan* and *Exploring our future*.

Acknowledgements

The Jordan Museum is very much the result of cooperation between hundreds of individuals. First of all, we are grateful to the many scholars who generously gave us their time, effort and knowledge.

The Ministry of Tourism and Antiquities, the Ministry of Public Works and Housing, the “Tourism Sector Development Project” Management Unit, our technical advisors from JICA, our exhibition contractor “PICO International” and our consultants “Pacific Consultants International” are all directly and crucially involved in the accomplishment of the Jordan Museum.

Without the efforts and collaboration of Dr Fawwaz al-Khraysheh and the employees of the Department of Antiquities, our main partner, nothing would have been achieved.

The creative and non-conformist ideas of Yusuke Namba were a significant help to us in the development of the exhibition.

We are also very lucky to have benefited from Jordanian talents, institutions and firms who, through our international contractor, are working with us on the creation of the exhibition, not forgetting the children of Jordan who shared their ideas with us by means of workshops held by the Jordan Museum and local educational institutions.

Special thanks to our driving force, Dr Faris Nimry, whose determination, concern and innovative thinking are making a real difference to the evolution of our work.

Last, but not least, we are grateful for the support of our Board of Trustees and especially to the Vice-Chairperson, Princess Sumaya Bint El Hassan, who devotes much of her time and insight towards the development of the Museum.

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Rājil: The Cairn of The Mermaids

The Site and its Surroundings

In the course of a survey of the area of Qā‘ al-Muqalla (the lowland), which is ca. 40km east of al-Azraq, Leslie Quintero and Phil Wilke re-located a site along part of a valley called Wādī al-Rājil (Wilke 1999); the site was first identified by A.V.G. Betts (1982). During the rainy season water drains into this valley and forms lakes in a flat-bottomed area called Qā‘ (basin). The Cairn of the Mermaids is along the sandy shores of one of these dry lakes sites (FIG. 1).

Toward the east of the wadi there are several cairns at the tops of the hills as well as large round and rectangular structures with round and curved corners possibly corrals, can be seen on the shoulder of the hill and closer to the wadi. Opposite our site and to the west of the watercourse is bare land, covered with gravel; but if water were available, it could be used for agriculture.

Over the millennia, groups of rocks in this area were attractive to the nomads of the desert and they arranged the stones into circles and into groups called a cairn, which is simply a pile of stones in a cone shape (FIG. 2). In Jordan, there are thousands of such cairns in a variety of sizes, most commonly about 5m in diameter and 2m in height. Some have around them more than a hundred stones with inscribed texts and figures. Several long boulder walls and corral-like structures representing possible game traps can also be seen in the vicinity of some of these installations. The function of these cairns is not yet established. Some investigators have seen them as a sort of desert lighthouse, as rallying points or as camping sites or as burials sites.

The overall objective of the Cairn of the Mermaids Project is to completely document one such site (among ca. 12 other sites in the area); this includes documenting all the inscribed stones[1] and the layout. I conducted excavations in 2005 with the assistance of Jerome C. Rose and Philip Wilke. The Department of Antiquities representative was Salem Diab. The excavations were an effort to determine whether the site was used for burials, but no burials were found. However, Dr. Wilke's survey revealed activities in the vicinity of the site going back to PPNB and up to the Byzantine era.

1. View of Rājil: Cairn of the Mermaids (Photo by Pierre M. Bikai).

2. View of a cairn in the Rājil (Photo by Pierre M. Bikai).

[1] Every stone with text, drawing, or other mark was numbered, RCM-1, 2, 3, etc.

On the 77 stones analyzed, there are drawings that include wild animals such as ostrich, oryx, deer, onager, cat and ibex. These reflect the environment of their time. Domesticated animals include camel, horse, dog, donkey and goat. The rock art includes also men, women, hunting scenes and caravan scenes. On those 77 stones there are also 125 different inscribed texts, all in Safaitic, which belongs to the north Arabian branch of South Semitic script. The language is an old Arabic colloquial type that was used by the tribes of the eastern Jordan desert. The largest of our texts has 84 letters, a very long text for Safaitic. Some 37 of the stones have figures. What appear to be tribal marks and the seven dots or stars are included in most of the drawings and texts. Some of the texts have a line encircling the work, others have the sun symbol.

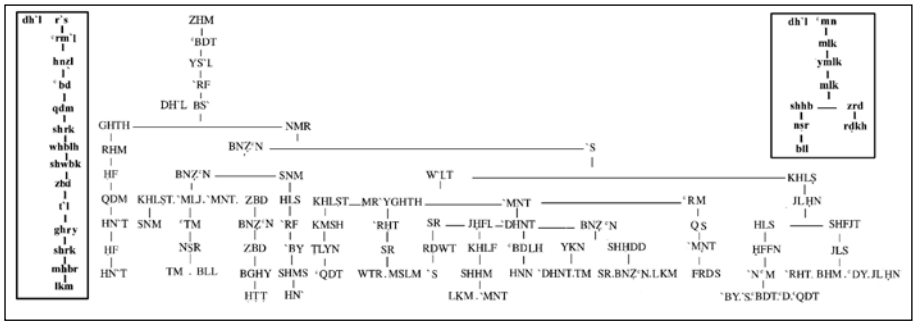
In general, the stones reflect messages left by members of the tribes for persons who were apparently related. So far, the name list includes no less than 206 different persons, 85 of them belonging to one family consisting of 13 generations (FIG. 3). The largest group is related to BS', who is not the eldest of the family, rather the fifth from the top. A second grouping can be compiled from three texts with nine different names from the tribe of ‘MN and there is a third list from one text with 14 generations that belong to the tribe of *R'S*. The three groups may be contemporaneous with each other. It is suggested here that the groups moved to the area during the 10th to the 13th generation, because most of the persons who wrote the texts or to whom the texts are addressed, or those "who caused sorrow" (died), belong to the last three generations. The largest list of personal names belongs to the 12th generation with 23 personal names. By the 13th generation, the list shrinks to 9 when one would expect it to grow.

In the following text, a selection of the stones is presented, showing the diversity of subjects in the assemblage. That catalogue is followed by a list of the personal names and a lexicon.

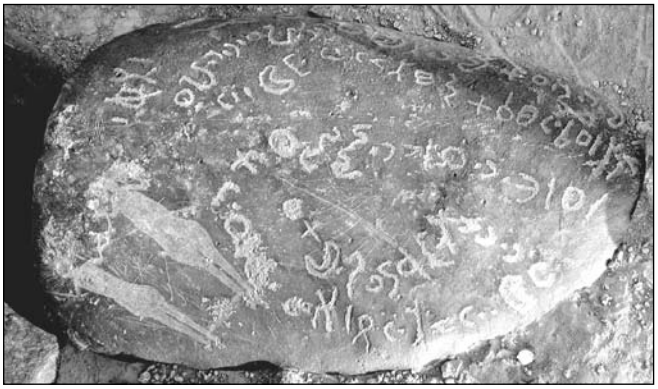
A Selection of Stones

- RCM-1 (FIG. 4): *l 'bn bn 'fkl bn nfl bn 'ktr bn m‘d bn 'bjr w wjm‘l bnh (w) ‘l tḥsn w‘l zbd bn shmln bn ghny f h dshr 'ws w ghnmt*.
  For 'Aban son of 'Afkl son of 'ktar son of Mi‘ad son of 'Abjar, and I grieve (silently with anger) for his son (and) for Tahasun and for Zubayd son of Shamlan son of Ghany. O Dushara grant compensation and easy prey.
- RCM-2 (FIG. 5) has two texts and two figures of naked women with hair standing out from their heads; they are either holding hands or holding an object between them. Their arms are held out from the body and are flexed at the elbow forming a V shape. This is the most common stance in the drawings of nude women.
- RCM-2a: *l tm bn (n)ṣr bn ‘tm bn 'mlj bn bnẓ‘n bn bnẓ‘n bn nmr bn bs' w shty w bny ‘l 's*.
  For Taym son of Naṣr son of ‘Utum son of 'Amlaj son of Binẓa‘in son of Binẓa‘in son of Nimr son of Basa' and I stayed the winter (in this place) and I built on the 'awas.

4. Rājil: Cairn of the Mermaids No. 1 (Photo by Pierre M. Bikai).



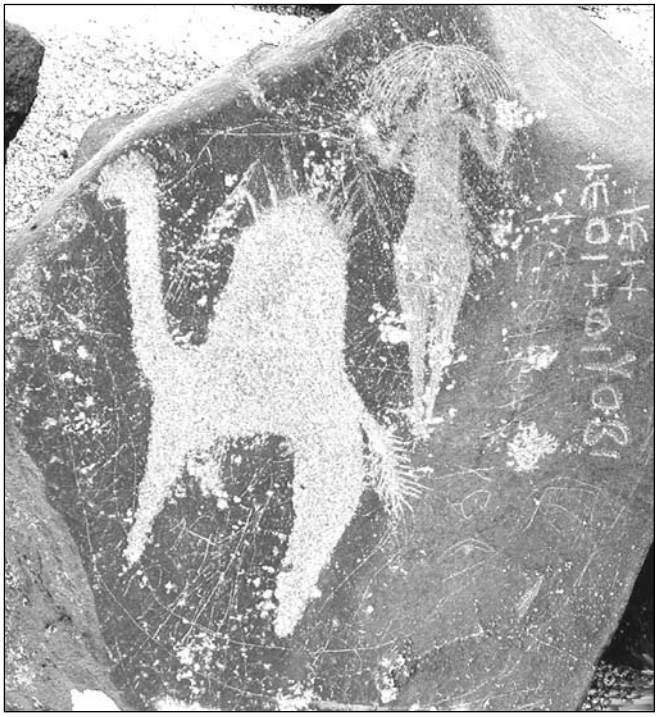
3. Family trees.



5. Rājil: Cairn of the Mermaids No. 2 (Photo by Pierre M. Bikai).

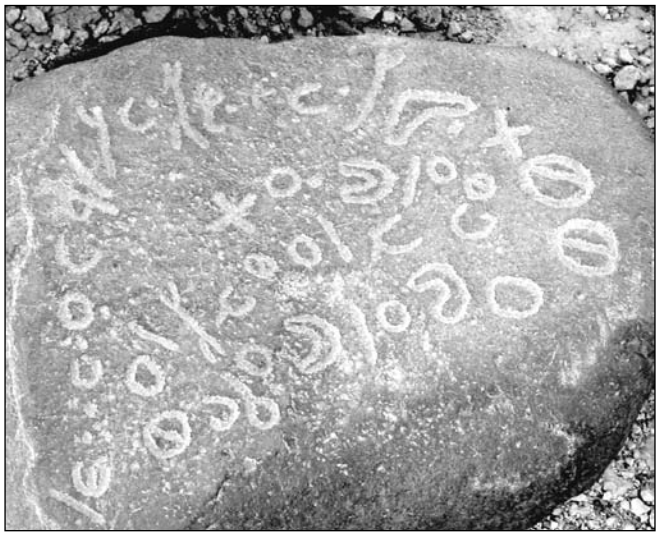
- RCM-2b: *l jlhn bn jls bn shf‘t bn (jlhn) bn khls bn’s bn nmr bn bs’ f dshr ghnmt*.
  For Jalhan son of Julas son of Shafi‘at son of Jalhan son of Khales son of ’Awas son of Nimr son of Basa’ O Dushara grant easy prey.
- RCM-3 (FIG. 6): *l bll bn nṣr bn shhb bn mlk bn mlk bn ymlk bn mlk dh’l‘mn*.
  For Bilal son of Naṣr son of Shahab son of Malek son of Malak son of Yamluk son of Malak from the tribe of ‘Amun.
- RCM-4 (FIG. 7): *l ḥjlt w lh jml*.
  For Ḥajlat and for him a camel.
  The writer initially misspelled Ḥjlt and started again with the correct spelling. The same text is repeated with a fine line. There is a play here from the drawing of a naked lady and a camel. The Arabs use the metonymy by surname, so the woman is called gazelle, wild cow, cow, cat and many other names. See (ath-Tha‘ālibī s.v. faslun fī kinayāt al-mar’at).

6. Rājil: Cairn of the Mermaids No. 3 (Photo by Pierre M. Bikai).



7. Rājil: Cairn of the Mermaids No. 4 (Photo by Pierre M. Bikai).

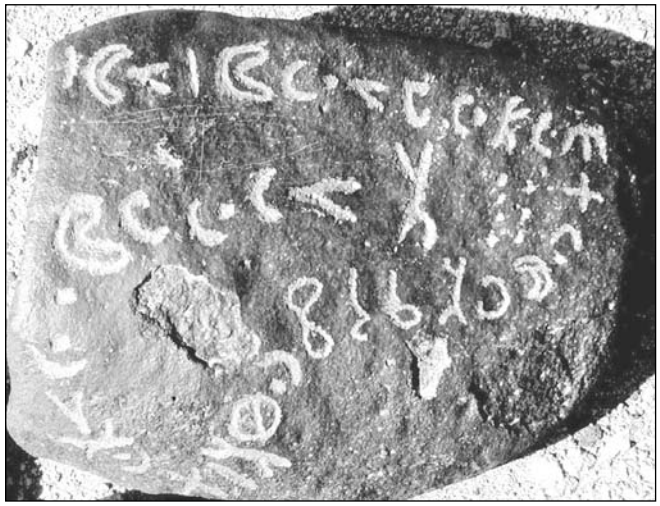
- RCM-5 (FIG. 8): *l ḥnn bn ‘bdlh bn ’dhnt bn ’mnt w wjm‘l m‘yr w ‘l ’s w ‘l sr w ‘l mn‘t*.
  For Ḥunna bn ‘Abdullah bn ’Udhaynat bn ’Aminat and I grieve for Mi‘yar and for ’Awas and for Sur and for Min‘at.
- RCM-8: Dedicated to the same person (Watar) as RCM: 39d. He is the brother of Muslem mentioned in RCM 9 (*infra*).
  l wtr bn sr bn ’rḥt bn mr’yghth bn w’lt w wjm ‘l



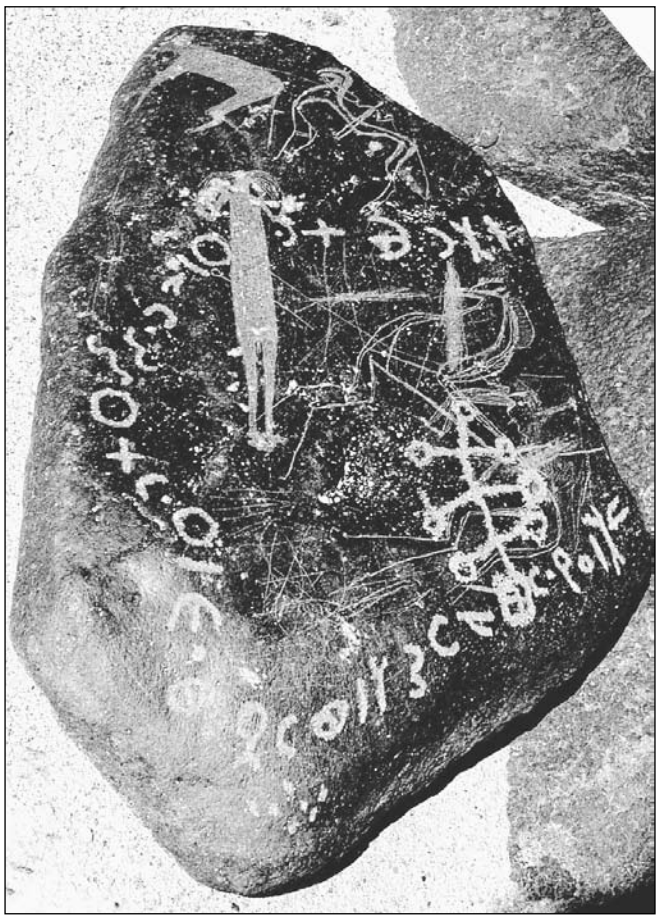
8. Rājil: Cairn of the Mermaids No. 5 (Photo by Pierre M. Bikai).

’bh w ‘l ’khh w ‘l ’khh.
For Watar (or Watru) son of Sur son of ’Ariḥat son of Mar’yaghuth son of Wa’ilat and I grieve for his father and for his brother and for his brother.

- RCM-9 (FIG. 9): Dedicated to the same person as RCM: 19e (Muslem), the brother of Watar (or Watru) of RCM8.
l mslm bn sr bn ’rḥt bn mr’yghth bn w’lt bn ’s bn nmr bn bs’.
For Muslem son of Sur son of ’Ariḥat son of Mar’yaghuth son of Wa’ilat son of ’Awas son of Nimr son of Basa’.
- RCM-14 (FIG. 10): *l ’rḥt bn jls bn shf‘t bn jlḥn w nṣr w lh frs w bny ‘l ’s.*
For ’Ariḥat son of Julas son of Shafi‘at son of Jalḥan and Naṣer and for him a horse and I built on the ’awas.
- RCM-17 (FIG. 11): This stone has three figures and the seven dots and seven lines; the sun; and four texts (only one of which is presented here).
RCM-17-a. *l rb(‘ w) lh ghnmt bn ḥkm.*
For Rabi‘ and for him (these) spoils (or booty) son of Ḥakam.
- RCM 19 (FIG. 12): A stone with multiple inscriptions as well as figures.
RCM-19-a: *l mṭrn w ḥḍr fh dshr ’bl ldh rjl w bny ‘l ’s.*
For Maṭirun I attend (or I come?) and then this is Dushara (I swear to Dushara to sacrifice) camels for such a man and I built on the ’awas.
- RCM-19-b: *l ’rḥt bn jls bn shf‘t bn jlḥn bn khlṣ bn w’lt w wjm ‘l sr.*
For ’Ariḥat son of Julas son of Shafi‘at son of Jalhan son of Khaliṣ and I grieve for Sur.



9. Rājil: Cairn of the Mermaids No. 9 (Photo by Pierre M. Bikai).



10. Rājil: Cairn of the Mermaids No. 14 (Photo by Nancy Coinman).

- RCM-19-c: *l’dm bn mḥl bn s‘dlh fh lt w dshr ghnmt.*
For ’Adam son of Muḥil son of Sa‘da’llah and then this is ’Allat and Dushara grant easy prey.
- RCM-19-d: *l lkm bn shḥdd bn bnẓjn bn ’mnt bn w’lt bn ’s w wjm ‘l m‘yr w ‘l ’s w ‘l rḍwt w ‘l sr dh’l bs’ w bny ’nfs w str.*
For Lakam son of Shuḥdud son of Binẓa‘in son of ’Aminat son of Wa’ilat son of ’Awas and I grieve for Mi‘yar and for ’Awas and for Raḍwat and for Sur from the Basa’ tribe and I built gravestones and I concealed them (with stones).
- RCM-19-e: *l mslm bn sr bn ’rḥt bn mr’yghth w wjm ‘l ’mh w ‘l ’bh w ‘l ’khh w ‘l ’s.*
For Muslem bin Sur bin ’Ariḥat bin Mar’yaghuth and I grieve for his mother and his father and his brother and for ’Awas.
- RCM-25 (FIG. 13) has three texts in different styles. The Raḍakh mentioned is from a different tribe; he is the son of Zubayd the nephew of Shahab bin Malek (see RCM-3).

11. Rājil: Cairn of the Mermaids No. 17 (Photo by Pierre M. Bikai).

- RCM-25a: *l rḍkh bn zbd bn mlk bn mlk bn ymlk bn mlk dh'l 'mn w shty w hdshr slm w ghnmt*.
  For Raḍakh son of Zubayd son of Malek son of Malak son of Yamluk son of Malek from the tribe of 'Amun and I stayed the winter (in this place) O Dushara salam and grant easy prey.
- RCM-26 (FIG. 14): All the names belong to the tribe of Basa'. See the family tree, FIG. 3.
- *l jlḥn bn jls bn shf't bn jlḥn bn khlṣ bn 's bn nmr w wjm 'l sr w 'l shr w 'l mr'yghth w 'l 's w 'l qs w*

13. Rājil: Cairn of the Mermaids No. 25 (Photo by Pierre M. Bikai).

14. Rājil: Cairn of the Mermaids No. 26 (Photo by Pierre M. Bikai).

12. Rājil: Cairn of the Mermaids No. 19 (Photo by Nancy Coinman).

‘l mn‘t w ‘l m‘yr dh’l bs’.
For Jalḥan son of Julas son of Shafi‘at son of Jalḥan son of Khaliṣ son of ’Awas son of Nimr and I grieve for Sur and for Shawr and for Mar’yaghuth and for ’Awas and for Qays and for Mani‘at and for Mi‘yar from the tribe of Basa’.

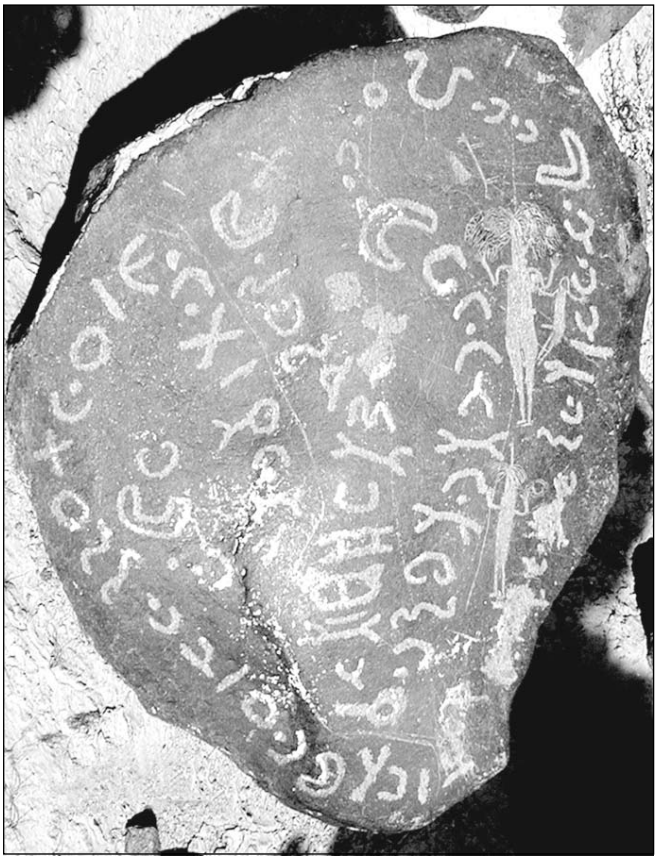
- RCM-32 (FIG. 15) has figures of two women and a small figure. Near the figures are three names, two of which have been completed obliterated; the third can be restored and identified from the family tree as ’rf, the son of hls.
- RCM 32a: ...?*[bn] ’rf bn hls bn snm bn bnẓ‘n bn nmr bn bs’ bn ’rf bn ys’l w ḍb’ fdshr ghnmt.*

… son of ’Uraf son of Halas son of Sanam son of Binẓa‘n son of Nimr son of Basa’ son of ’Uraf son of Yas’al stay hiding, and may Dushara grant easy prey.

- RCM-32b: *l rhm bn jls bn shf‘t bn jlḥn bn khlṣ bn ’s bn nmr.*

For Ruhm son of Julas son Shafi‘at son of Jalḥan son Khaliṣ son of ’Awas son of Nimr.

- RCM-33 (FIG. 16) has two clear figures, a horseman and a camel, as well as two texts.
- RCM-33a: *lbll bn nṣr w lh nqt.*



15. Rājil: Cairn of the Mermaids No. 32 (Photo by Pierre M. Bikai).

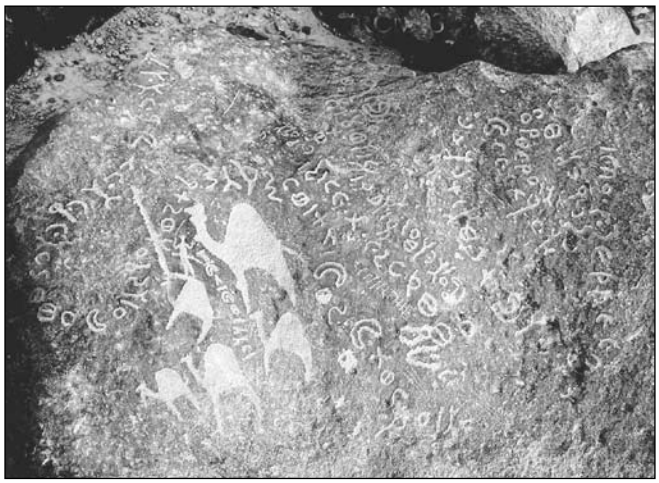
16. Rājil: Cairn of the Mermaids No. 33 (Photo by Pierre M. Bikai).

- For Balal son of Naṣr, and for him (I present) a she camel.
- RCM-33b: Lh is missplaced as if it were added later.
- *l ‘tk bn ’bjr w (lh) frs.*

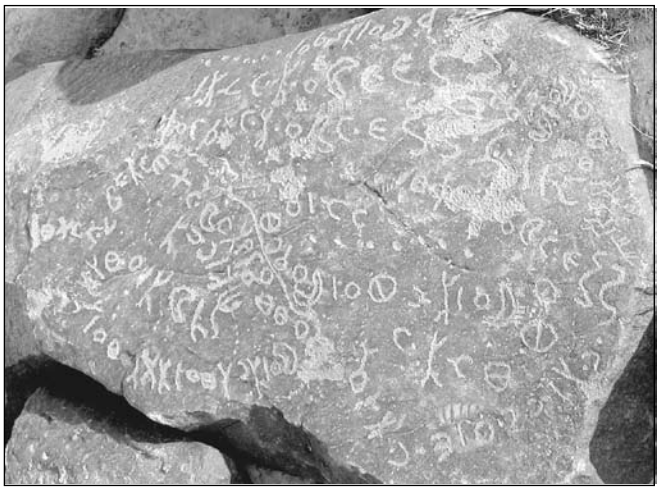
For ‘Atek son of ’Abjar and (for him) a horse.

- RCM-37 (FIG. 17). The drawing depicts five camels with a man standing in the middle carrying a sword. The camels appear as if they are carrying large loads and may represent a caravan.
- RCM-37a: *l hn’ bn shms bn ’by bn ’rf w wjm ‘l ’shy ‘h w shty fh dshr w lt slm w gnmt w bny ‘l ’s.*

For Hani’ son of Shams son of ’Ubay son of ’Uraf I grieve for his partisans and I passed the winter



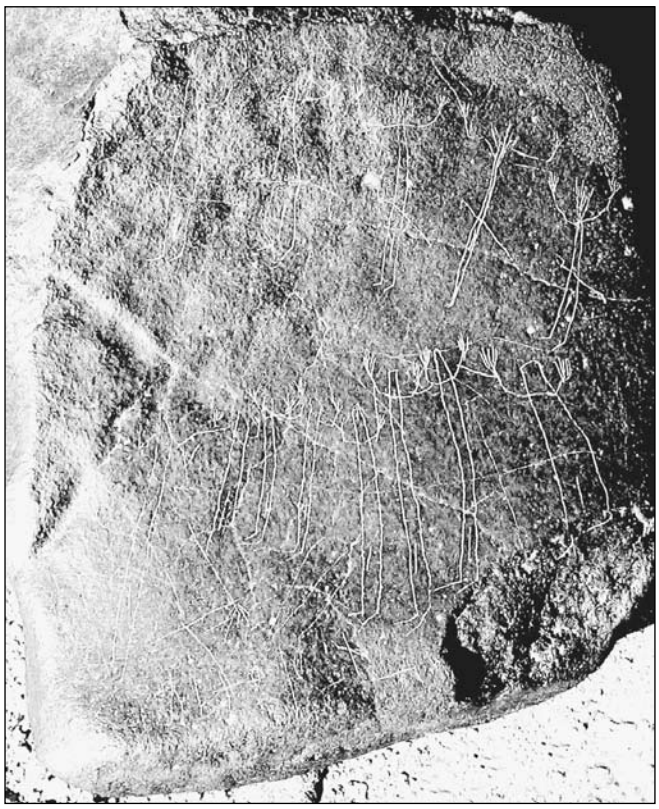
17. Rājil: Cairn of the Mermaids No. 37 (Photo by Pierre M. Bikai).



18. Rājil: Cairn of the Mermaids No. 39 (Photo by Pierre M. Bikai).

(in this place). O Dushara and ’Allat grant peace and easy prey and I build on the ’awas.

- RCM-37b: *l mslm w lh ’bl.*
  For Muslem and for him camels.
- RCM-37 c: *l ghlb bn ntn bn shrd w wjm ‘l ’bh w ‘l khlh w ‘l khlh w ‘l mlk w ‘l khlṣt w bny ‘l ’s.*
  For Ghaleb son of Natan son of Sharyd I grieve for his father and his uncle and his uncle (both from the mother’s side) and for Malek and for Khaliṣat and I built on the ’awas [as a wish for compensation].
- RCM-37d: *l bnẓ‘n bn shḥdd bn bnẓ‘n bn ’mnt bn w’lt bn ’s bn nmr bn bs’ bn ’rf bn ys’l w r‘y w bny ‘l ’s.*
  For Binẓa‘in son of Shuḥdud son of Binẓa‘in son of ’Aminat son of Wa’ilat son of ’Awas son of Nimr son of Basa’ son of ’Uraf son of Yas’al I graze and I build on the ’awas
- RCM-39 (FIG. 18): This includes four texts or messages; three of these are addressed to three brothers of ‘Ad. The texts are arranged nicely one after the other and separated from the fourth by a dividing line. One graphic was created by hammering the damaged part of the first two texts, but because the persons mentioned belonged to a large family it was easy to reconstruct the texts.
- RCM-39a: *l ’s bn ’n‘m bn ḥffn (w n)dm ‘l ’shy‘h.*
  For ’Awas son of ’In‘um son of Ḥaffan and I regret (I feel sorrow for) his followers.
- RCM-39b: *l ‘bdt bn ’n‘m bn ḥffn bn hls w wjm ‘l mn‘t.*
  For ‘Abaydat son of ‘In’um son of Ḥaffan son of Halas and I grieve for Mani’at.
- RCM-39c: *l ‘b(dt) (bn) (’n)‘m bn ḥffn bn hls bn jlḥn bn khlṣ bn ’s w wjm ‘l ’s w ‘l m‘yr w ‘l sr.*
  For ‘Ubaydat son of ’In ‘um son of Ḥaffan son of Halas son of Jalḥan son of Khalis son of ’Awas and I grieve for ’Was and for Mi‘yar and for Sur.
- RCM-39d: Dedicated to the same person as RCM: 8.
- *l wtr bn sr bn ’r˜t bn mr’yghth w wjm ‘l ’bh w ‘l ’khh w ‘l ’khh w ‘l ’mh dh’l bs’.*
  For Watar son of Sur son of ’Ariḥat son of Mar’yaghuth and I grieve for his father and his brother and his brother and his mother from the tribe Basa’.
- RCM-55 (FIG. 19) is a rare and interesting petroglyph, depicting a group of thirteen dancers in a semicircular formation. There are two bands separated by a space; the upper part consists of five men with swords at their waists, raising their arms in a U-shape and with their hair standing on end. The lower part has eight (possibly female) figures that do not carry swords, and have rounded heads, but their hands are raised up in the same manner as the men. The scene on this stone shows technical ability and a careful rendering of the subject matter. This scene viewed in the context of other representations in this place may indicate that this rujm was used for purposes other than a burial ground. Dancing in a circle is a very ancient tradition in the Middle East and elsewhere. The best reading of the fine text at the lower left end is in rhymed prose, perhaps used as a proverb.

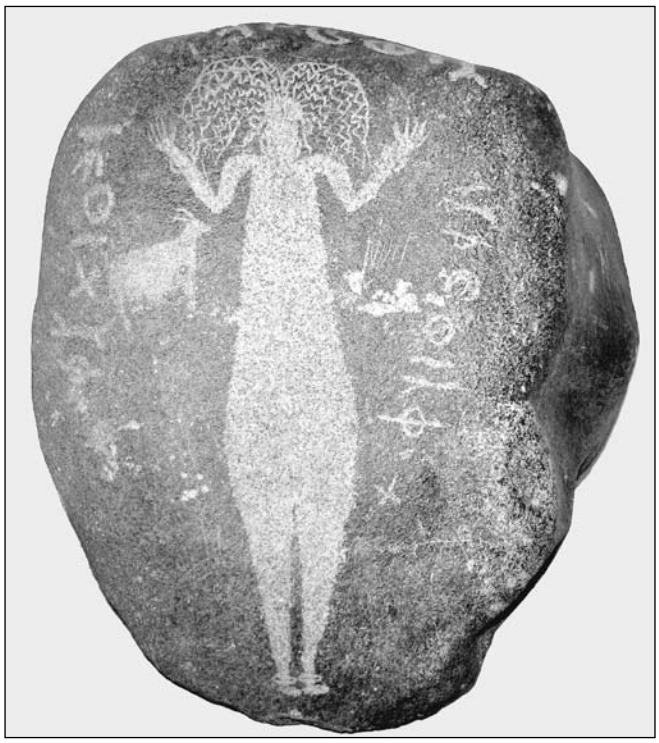


19. Rājil: Cairn of the Mermaids No. 55 (Photo by Pierre M. Bikai).

- *hlt w lmt*
- *Hallat wa lamat.*
  The new moon appeared and (they) gathered, or (there was) jubilation and (they) gathered; or it rained (poured down) and (they) gathered. See the lexicon below: Hlt it can be used as hallat al-ḥarbu, the war is to begin. Before a tribal war, the Arabs use to stand opposite each other and raise their hands upward while enumerating their accomplishments and the glory of their fathers (Ibn Mandhūr, s.v. hll; mʿl).
- RCM-70 (FIG. 20): This text is accompanied by a figure of a woman raising her hands in a U-shape and wearing a dress that is open at the front, thus fitting the description of the "dirʿ al-mufarraj al-maqadim wa al-ma'akhīr", open in front and back. This is the garment that the Quraysh before Islam used to force pilgrims (Ḥujjāj) to rent during the ṭawāf; if they did not rent the garment, they had to circumambulate nude. This dress is called drʾ or bdn, the same name of the person the text is meant for (Ibn Mandhūr, s.v. dr'; bdn; Ibn Hishām, V.1: 64, hadyth al-ḥums). Three forms of the seven stars (the seven planets) are placed in a dotted V shape under the figure; in seven straight lines above, and dotted below the text.

20. Rājil: Cairn of the Mermaids No. 70 (Photo by Pierre M. Bikai).

- *Lbdn bn 'hm bn 'shyb*
  For Badan son of 'Ayham son of 'Ashyab.
- RCM-77 (FIG. 21): The centerpiece is the nude woman standing with a wild cow or a goat on her left; around her are three small texts. The rendering of the ca. 30cm high figure is skillful work on a small stone. The standing figure is raising her arms in a V-shape while her fluffy long hair is parted in the center and falls down inside the Vs of her arms. She wears a necklace and two long earrings. Her wrists and ankles are adorned with bracelets. There are texts on either side of the drawings.



21. Rājil: Cairn of the Mermaids No. 77 (Photo by Pierre M. Bikai).

- RCM-77a: *l'dm w lh qnt*.
  For 'Adam and for him a wild cow.
- See lexicon. This text is repeated at the top of the stone.
- RCM-77b: *lḥjlt hqnt*.
  For Ḥajlat (for him) this wild cow.

Personal Names

- 'BJR 'Abjar: Abjaru and Bujayrun are personal names from Arabic bajaru, the swollen belly button, or al-'Abjaru is a person with a large abdomen; obese. Bajarun is pre-Islamic idol for the Azad and Ṭay' tribes. (Ibn Mandhūr,. s.v. bjr; Harding 1971:17; Winnett and Harding 1978: 548; Clark 1980: 443; al-Khraysheh 2002: 25).
- 'BN 'Aban: 'Abanun is a personal name, 'Abanan are the two mountains, one white, the second black; 'abana, to denounce, and 'abbana, to commemorate a deceased person (Ibn Mandhūr, s.v. 'bn; aṭ-Ṭabarī 1991: vol. 2: 546; Ibn Ḥazm, 107; Harding 1971: 16; Winnett and Harding 1978: 548; Clark 1980: 443).
- 'BY 'Ubayy, or 'Abiyy: the disdainful or proud, from 'aba', to refuse, decline or reject. "Rajulun 'abiyyun" (Ibn Mandhūr, s.v. 'by, 'Ubay bin Khalaf al-Jamaḥi, 'Ubay bin Qays al-Nakha'y, and 'Ubay bin Ka'b al-Katib; aṭ-Ṭabarī 1991: vol. 1: 468; vol. 3: 93; vol.1: 221).
- 'DM 'Adam: derived from 'adym; 'adamati al-'arḍi is the skin, surface, tanned skin, the surface of the earth. 'Adam also means the brown person, the white camel and gazelle. 'Adam is the father of all mankind, and made by God from dirt, 'adym. (Ibn Mandhūr, s.v. 'dm; Harding 1971: 32; Winnett and Harding 1978: 550; Clark 1980: 444; al-Khraysheh 2002: 81).
- 'DHNT 'Udhaynat: from 'Adhina to inform, to know, or to be aware. 'Udhaynatu is a personal name and the name of one of the Yamanite kings. Banu 'Udhunin is a tribe from Hawazin; 'adhan aṣ-ṣalat is the call to prayer (Ibn Mandhūr, s.v. 'dhn; aṭ-Ṭabarī 1991: vol. 4: 106 as bn Kulayb; al-Aṣfahānī, vol. 12: 221; Harding 1971: 34; Winnett and Harding 1978: 550; Clark 1980: 444; al-Khraysheh 2002: 27).
- 'RḤT 'Ariḥat: this is possibly a previously unattested name from rawaḥa, raḥa, and 'aryaḥy, is the man who find pleasure in serving and helping. 'Araḥa al-rajulu 'istaraḥa wa rajiʿat 'ilayhi nafsahu baʿda al-'Iʿ ya', is the one who recovers after being sick, and 'araḥa al-rajulu means the man died. 'Aryaḥu is a tribe from Yemen and the name of a town 'Ariyḥa' (Jericho). (Ibn Mandhūr, s.v. rwh).
- 'RSH or 'RF 'Irash or 'Arsh: means indemnity, fine, penalty, blood money; 'uraf: Al-urfatu is the border, edge, boundary, or a mark; 'Urafy is the pure good milk. (Ibn Mandhūr, s.v. 'rsh; 'rf; Harding 1971: 37, and Winnett and Harding 1978: 550, as 'rsh; Ibn Ḥazm: 387 as 'Irash).
- 'S 'Awas: means to substitute, compensate, to give in exchange, etc. A terminology the Arabs that is still used today in condolences, includes "mu'asat" or "al-'awaḍ bi-salamatikum'. Ibn Mandhūr (s.v. 'ws) says:

  > . . . al-'awasu: al-'aṭiyyatu. 'ustu al-qawma 'a'usuhum 'awasan 'idha 'a 'ṭaytuhum, wa kadhalika 'idha 'awwaḍtahum min shay'… al-'awas al-dhi'b wa bihi summiya al-rajul. The wolf is called 'awas and from it derives the personal name. 'Awas is a tribe from Yemen and its derivation from 'asa ya'usu 'awasan; the noun is 'al-'iyas, compensation; 'Awas son of Qaylat is the brother of al-Khazraj, and from them are the 'Anṣar (followers of the prophet). …'Awas-'Allat is one of them also … later he changed his name to 'Awas-'Allah when he converted to Islam.

- The name is similar in meaning to the modern name 'Aṭiyat, 'Aṭa', 'Aṭa 'allah, 'Awaḍ, and 'Awaḍallah. The meaning of the name can be the wolf or the wolf cub, but when it is connected to 'l or 'allh it means gift or substitute. (Harding 1971: 40; Winnett and Harding 1978: 551, as 's; Clark 1980: 444; al-Khraysheh 2002: 32).
- 'SHYB 'Ashyab from shaba to become white-haired; to grow old. Shayban are two tribes from Bakr, Shayban bn Tha'labat and Shayban bn Dhuhl; Shaybatu bnu 'Uthman bn Ṭalḥat bn 'Abd Ad-dar's sons hold the key of the Ka'bat. (Ibn Mandhūr, s.v. shyb; Ibn Ḥazm, 198, 'Ashyab bn 'Abd Munat bn 'Adad; Harding 1971: 50; Winnett and Harding 1978: 552; Clark 1980: 445; al-Khraysheh 2002: 58).
- 'FKL 'Afkal: is a personal name, al-'Afwah al-'Awdy because he has a tremor. Al-Afkal is the father of a tribe called al-'Afakil. 'Afkal is a name of a place. 'Afkal means to tremble, shiver, shake. (Ibn Mandhūr, s.v. fkl; Harding 1971: 59; Winnett and Harding 1978: 553; CL; 445; Ibn Ḥazm as al-'afkal ='umar bn al-Ja'yd, and al-'Afkal= Mu'awiyat bn 'awf).

- ‘KTR ‘Aktar: al- katru means the dome, the hump of the camel. ‘Aktar could mean the humped man. (Ibn Mandhūr, s.v. ktr; Harding, 1971: 61; Winnett and Harding 1978: 554 as ‘ktb).
- ’MlJ or ’ML‘: Al-mal‘u means to go on the ground, to walk fast, or the extended land. Mayla‘un is a name of a female dog (Ibn Mandhūr, s. v. ml‘). ‘Amlaj: ‘al-malju is to suckle, ‘rajulun maljan’ is the man who drinks milk from the she camel and the ewe. ‘Amlaju is the brown-skinned man, also ‘amlaj yellow skin, not black and not white (Ibn Mandhūr, s.v. mlj).
- ‘MNT ‘Aminat: From ‘amuna to be faithful or trustworthy. Rajulu ‘amanatun is the man who believes everything. (Ibn Mandhūr, v.s. ‘mn). ‘Aminat bint Wahab was the name of the Prophet’s mother (Harding 1971: 77, as ‘mnt).
- ’N‘M ’An‘um: a name from the verb na‘ima, to live in comfort and luxury (Ibn Mandhūr, s.v. n‘m). ’In‘am is a name still used today for a man or a woman. ’In‘am can be an act of kindness, a favor, or a gift. This name is common in the Arab world and it appears in different forms such as Na‘im, Mun‘im, Nu‘man, N‘‘um etc. ’In‘am is a name given for the herd of camel, sheep and cattle. Ibn Mandhūr (s.v. n‘m) enumerates a number of personal names, valleys and mountains and tribes: “Na‘imun wa Nu‘aymun wa Mun‘‘am wa ’An‘umu wa Nu‘miyyun wa Nu‘manu wa Nu‘aymanu, all names … .” (see also Harding 1971: 80; Winnett and Harding 1978: 555; Clark 1980: 445).
- ‘HM ‘Ayham is the bold man, the courageous man whom no one can push away and who dose not speak or scold; the dumb person. Jabalatu bnu al-‘Ayham is the last king of the Ghassanids. (Ibn Mandhūr, s.v. yhm; Harding 1971: 82; Winnett and Harding 1978: 556; Clark 1980: 446; al-Khraysheh 2002: 83).
- ’WS ’Uways: which is different from ’S in RCM-2a. ’Uways is a diminutive of ’awas the wolf; “al-’awasu can also mean al-‘aṭiyyatu ’ustu al-qawma ’a’usuhum ’awasan ’idha ’a ‘ṭaytuhum, wa kadhalika ’idha ‘awwaḍtahum min shay’ ‘. ‘Awas means substitute, to give in exchange, replace, etc. See ‘s, (Ibn Mandhūr, s.v. ‘ws; Harding 1971: 84; Winnett and Harding 1978: 556, as ‘ws; ‘ws’l, ‘wst; Clark 1980: 446, as ‘ws’l; ‘wst; al-Khraysheh 2002: 64).
- BDN: Badan means the mountain goat or body; badana is a dress for women; also to be fat; al-badnatu is a she camel or cow, which used to be sacrificed at Mekka after they were fattened. (Ibn Mandhūr, s.v. bdn; Harding 1971: 98; Winnett and Harding 1978: 558; Clark 1980: 447; Ibn Ḥazm, 307, Badan bn Bakr bn Wa’il, and 132, Badinat bint Ghaylan ath-Thaqafy; al-Khraysheh 2002: 95).
- BS’ Basa’; from basi’a to be intimate, friendly or kind. Basa’a means to become accustomed. (Ibn Mandhūr, s.v. bs’; Harding 1971: 105; Winnett and Harding 1978: 558; Clark 1980: 447).
- BGHY Baghyy: From baghiya, to wrong, treat unjustly, or from bagha’ meaning to seek or desire, or the bud of a flower. (Ibn Mandhūr, s.v. bgh’); Bagha’ facilitated the killing of al-Mutawakkil (al-Aṣfahānī vol. 9, 363); Bagha ’al-Saghyr and Bagha’ al-kabyr (aṭ-Ṭabarī 1991: vol. 5, Bagha’, passim; see also Harding 1971: as bght; Winnett and Harding 1978: as bght and bghyt; Clark 1980: as bghyd).
- BLL Bilal: from balal, moist or damp; bilal can also be water; Bilal is a name of a man; Bilal is the announcer of the hour of prayer of the Prophet. (Ibn Mandhūr, s.v. bll; Harding 1971: 117; Winnett and Harding 1978: 560; Clark 1980: 447; al-Khraysheh 2002: 54).
- BNẒ’N[2] Binẓa’in: means son of Ẓa’in, the one who walks; ẓa’inun is the name for anyone traveling from one place to an other. Ẓa’inatu bin Murrin is the brother of Tamim of the Tamim tribe. Othman bin Maẓ‘unin is the friend of the Prophet. (Ibn Mandhūr s.v. z’n; Harding 1971: 392; Winnett and Harding 1978: 590; and Clark 1980: 457, as ẓ‘n and ẓ‘n’l).
- TḤSN is a taf‘yl from taḥsyn, meaning beautification or embellishment; it derives from from ḥasan, to be handsome, good, etc. Ḥassan is a name of a person. ’Iḥsan ‘Abd-al-Quddus is a well known Egyptian writer. ’Iḥsan and Taḥasun are from charity or performance of good deeds. (Ibn Mandhūr, s.v. ḥsn). Taḥsīn is a name still in use today.
- TM Taym: ’At-taymu means to be enslaved by love, and from it comes the name Taym-Allah, known in several tribes: Baker,’An-namir, and Taymun in Quraysh, and bin Murrat and bin Ghaleb, etc. Names include: Taym ’Allat in Dabbat,

[2] An asterisk denotes a name or word that may be previously unattested.

'Al-Khazraj, and Taym son of 'Abd-Manat. Tayma' is a name of a town. (Ibn Mandhūr s.v. tym; Harding 1971: 136; Winnett and Harding 1978: 562; Clark 1980: 448; al-Khraysheh 2002).

- JLḤN Jalḥan: the bald one; in Arabic it can mean a stage of baldness. Baldness in Arabic starts with a person being anza', then 'ajlaḥ when it gets halfway, becomes 'ajla' and then after that a man is called 'ajlaḥ, the plural being julḥan, or it can be an adjectival form, Jalḥan, from jaliḥa. The word can also means to declare publicly, to be loud, etc. Jallaḥun, Julaḥu and Julayḥat are names. Julaḥu is the name of Abu 'Uḥayḥat bin Julaḥ al-Khazrajy. Julyḥ is a personal name, and Banu Julayḥat is an Arab tribe. Jalḥa' is a town near al-Basrat. (Ibn Mandhūr, s. v. jlḥ; Harding 1971: 164; Clark 1980: 449).
- JLS Julas: Jalasa means to sit; al-jalsu is the mountain or can describe the body of a large person or a camel. Julasan wa Jallasan are names that mean the rose and marjoram (Ibn Mandhūr, s.v. jls; aṭ-Ṭabarī vol. 2, 59, as al-Julas bn Ṭalḥat; Ibn Ḥazm 127 and 337, as al-Julas bn Suwayd; Harding 1971: 165; Winnett and Harding 1978: 566; Clark 1980: 449).
- ḤJLT Ḥajlat: from ḥajal, partridge; also a young camel is called ḥajal; al-ḥajlu and al-ḥijlu is an anklet; also it can mean white. Ḥajalat means a dome, which they used to build for a bride. Taḥjul is a name for a horse, and Ḥujayla' is a place. (Ibn Mandhūr, s.v. ḥjl; al-Aṣfahānī vol. 5, 37, as Ḥajl al-Bahily; aṭ-Ṭabarī vol. 2, 460 Ḥajal al-'ajaly; Harding 1971: 178 and Winnett and Harding 1978: 567 as ḥjl).
- ḤF Ḥafin: barefooted; ḥaffa means to surround or border on and ḥafy means welcoming or greeting. See ḤFfn.
- ḤFFN Ḥaffan: a similar form as 'affan from 'affana, to perfume with incense; the name of the father of the Khalifat was 'Othman Bin 'Affan. Ḥaffan means to receive with honors, kindly, and hospitably. The ḥaffan is also an ostrich chick and can also be the name for a young camel. (Ibn Mandhūr, s.v. ḥff; Harding 1971: 194-95 as ḥf, ḥff and ḥfn; Winnett and Harding 1978: 569 as ḥf).
- ḤNN: Hunna, a proper name that is well known. The Ḥunna tribe is mentioned by al-Nabigha al-Dhubyani, ca. AD 550 (Encyclopedia of Islam, s.v. al- Nabighat). Banu Ḥunna bin Rabi'a bin Ḥaram bin Ḍinna are from a tribe called 'Udhrat bin Sa'd Huzaym and are descended from the Quḍa'a tribe (al-Bakri al-Andalusi: 43-44). The word ḥnn could also be derived from the verb ḥanna (to long or yearn). ḥunayn is a well-known classical Arabic name, e.g., ḥunayn bin Ishaq, a physician of the Caliph al-Mutawakkil who was born in al-Ḥyrit (AD 809-73). (Harding 1971: 207; Winnett and Harding 1978: 570; Clark 1980: 241).
- KHLṢ Khaliṣ or Khaliṣa, to escape or to be safe. Khalaṣa is to get to or end. Al-Khaliṣu is white. Dhu al-Khalaṣat was a house for Khath'am tribe called the ka'bat of al-Yamama; it had inside of it the idol of al-Khalaṣat. Khaliṣatu can also be the name of a woman. (Ibn Mandhūr, s.v. khlṣ; Harding 1971: 226; Winnett and Harding 1978: 572; Clark 1980: 452).
- RB' Rabi' or Raby': a very common personal name meaning the spring. The Arabs used Raby'an, Rubay'an, and Mirba'an, and many tribes' fathers were named Raby'at (Ibn Mandhūr, s.v. rb'; Harding 1971: 266; Winnett and Harding 1978: 576; Clark 1980: 453).
- RḌKH or RḌ': Raḍakha means to break or smash, to give a present or a gift; ruḍukh means submission. Raḍakh as a name is not attested. RḌ': Riḍa' and Ruḍa' is a possible reading; see rḍwt (al-Aṣfahānī vol. 10, 63-64, see 'Aly bin Musa ar-Riḍa' ca, AD 861; Ibn Ḥazm, 401, Ruḍa' bn 'Umar bn al Ghawth).
- RḌWT Raḍwat: a very common name with many derivations, Raḍwan, Riḍa', Murtaḍa'. Raḍwat is from the verb raḍiya, to be satisfied or to consent or agree, to approve, etc. Raḍwa' is a mountain in Madinat and from it derives the name Raḍwa' (Ibn Mandhūr, s.v. rḍy; Harding 1971: 280; Winnett and Harding 1978: 577).
- RHM Ruhm: from rihma or riham it means to drizzle. Banu Ruhm is a tribe. Ruhmun is a woman's name. (Ibn Mandhūr, s.v. rhm; Ibn Ḥazm, 567 lists several Ruhms, i.e., p. 417 as Ruhm bn Murrat bn 'Adad; Harding 1971: 124, as bhm bahim; Winnett and Harding 1978: 341 read as buhaim; Clark 1980: 448 as bhm).
- ZBD Zubayd: from zabada to churn or foam; it can also mean essence or extract. Zubaydat is the nickname of the mother of al-'Amin Muhammad bin Harun. Zubaydu is one of the Yemenite tribes. Zubayd is a branch of the tribe of Mazhij. (Ibn Mandhūr, s.v. zbd; al-Aṣfahānī vol. 4, 320, Abū Zubayd aṭ-Ṭā'iy is the poet of Harmalat bin al-

Mundhir; Harding 1971: 294; Winnett and Harding 1978: 579; al-Khraysheh 2002: 96).

- SR Sary or Sur: As-sura' is a small arrow; sary means rich or noble. The only name in al-Lisan is Abu Sayyarat al-'Adawany meaning syyarat or caravan. Sawwarun, musawirun, and miswarun are from surun, the top of the head or the top of a city wall (Ibn Mandhūr, s.v. sr', srr, swr, and syr; Ibn Ḥazm, 145, as-Sarat bnt Hisham bn al-Maghyrat; aṭ-Ṭabarī vol.3, 226, as-Sary bn Waqaṣ al-Ḥarithy; Harding 1971: 314; Winnett and Harding 1978: 581; Clark 1980: 454; al-Khraysheh 2002: 34).
- S'DLH Sa'd-allah: a composite theophoric proper name, composed of s'd and lh (sa'd-'allah). The verb sa'ida means to be happy or lucky; hence Sa'd'allah means blissful is Allah. S'd'l is attested in all related dialects (Harding 1971: 319; Winnett and Harding 1978: 582; Clark 1980: 454; al-Khraysheh 2002: 46).
- SNM Sanym: from sanymun which is said about an honored man; sanam is the hump (of the camel); sanamat is summit, height, or peak; Sanam is a mountain in Baṣra' (Ibn Mandhūr, s.v. snm; Harding 1971: 332; Winnett and Harding 1978: 583; Clark 1980: 455).
- SHḤDD Shuḥdud: shuhdudun is a name for the lion with a bad temper. An Arabian woman attempting to ride a mule said about the mule's bad temper: "la 'alahu ḥayuṣun 'aw qamuṣun 'aw shuḥdudun" (Ibn Mandhūr, s.v. shḥd; Harding 1971: 341; Winnett and Harding 1978: 585).
- SHR Shawr: ash-shawru and ash-shayyru mean very pretty, handsome, or well dressed. The derivation is from shawwara, to signal or point out. Al-Qa'Qā', bin Shawr is a man from Bani 'Umar bin Shayban bin Dhuhal bin Tha'labat. Saturday used to be called Shiyar by the Arabs before Islam (Ibn Mandhūr, s.v. shwr; shyr; Harding 1971: 344; Winnett and Harding 1978: 585; Clark 1980: 455).
- SHRD Sharyd: from sharada, to run away or flee; sharid is fugitive, displaced, expelled, etc. Banu ash-Shsharyd is a branch of a tribe; from them came Sakher, the brother of al-Khansa', a famous poetess; and Banu ash-Shsharyd is a tribe from Sulaym; Shraydat is a Jordanian tribe. (Ibn Mandhūr, s.v. shrd; Harding 1971: 346; Clark 1980: 455; al-Khraysheh 2002: 69 as shrdt).
- SHRK Shurayk: Sharyk is a name of a man, from sharika, to share or to be a partner, or shirak, a net or trap. Shirkun and Sharkun are places names, and Banu Shurayk is tribe branch. (Ibn Mandhūr, s.v. shrk; al-Aṣfahānī vol 17: 152, as Sharyk bn Shaddad al-Ḥaḍramy; Ibn Ḥazm 406, Sharyk bn 'Amru bn 'Abd Yaghuth; Harding 1971: 347; Winnett and Harding 1978: 585; Clark 1980: 455).
- SHF'T: Shafi'un and Shafy'un are two names; the Banu Shafi'in are a tribe from Bani Ṭaleb bin Abd Munaf and from the Imam al-Shafi'y. Shafi'at means mediator or advocate. (Ibn Mandhūr, s.v. Shf'; aṭ-Ṭabarī vol.5, 625, as Shafy' (al-Khadem); al-Aṣfahānī vol. 7, 190).
- SHMS Shams: the sun, shamasa, but also to be headstrong or restive (of a horse), and it is one of the names for wine; al-shamsu is a type of ornament. Shamsun, Shumsun, Shumaysun, Shamysun, and Shammasun are names. Ash-Shamus is the horse of Shabib bin Jarad; Shams is a town in Yemen. Banu ash-Shamusi a tribe, and Shamsun is an old Idol; 'Abdu Shamsin is a Quraysh tribe and it has been said that the tribe was named after the sun. (Ibn Mandhūr, s.v. shms; al-Aṣfahānī vol.18, 193, Shams al Wazzanyn; Harding 1971: 358; Winnett and Harding 1978: 587).
- 'BDT 'Abadat, 'Abidat, 'Abed, 'Ubadat, and 'Ubaydat: proper names. 'Abadatu or 'abidatu means to remain or linger, but it can also be a title for a strong camel. 'Ubadatu, 'Ubaydatu, 'Abidun, 'Ubaydun, etc. are all names derived from 'abada, to serve, worship, or to enslave. 'Abadat bin 'Alqamat and 'Abdat bin aṭ-Ṭayyeb, the poet, are historic names (Ibn Mandhūr, s.v. 'bd; Harding 1971: 298; Winnett and Harding 1978: 592; al-Khraysheh 2002: 66).
- 'BDLH 'Abdullah: a composite proper theophoric name composed of 'bd and lh ('abdu-'allah) the verb 'abada means to worship, to serve, and the name 'abd is slave, servant; 'Abdu-'Allah is the servant of God. For the various derivations of 'bd, Ibn Mandhūr lists a large number of names and tribes (Ibn Mandhūr, s.v, 'bd's: 400; Winnett and Harding 1978: Clark 1980: 457).
- 'TK 'Atek: from 'ataka, to attack; 'atik means clear or pure (for wine); and 'atikat describes women wearing fragrance. 'Atikun is the father of a Yemenite tribe and 'Atik is an Arab group (Ibn Mandhūr, v.s. 'tk; aṭ-Ṭabarī, vol. 2, 24 lists several 'atikat, among them are 'Atikat bnt 'Abd al-Muṭṭalib; Harding 1971: 405; Ibn Ḥazm, 367, as al-'Atyk bn al-'Azad; Harding 1971: 403; Win-

nett and Harding 1978: 593; Clark 1980: 457).

- ‘TM ‘Utum: from ‘atama means to cease, give up, or to be slow; ‘atimun is to be late, and ‘al-’atamatu is the first third of the night. ‘Al-’utum is the she camel who doesn’t gives milk until evening. ‘Utumin could be the name of a man or a horse (Ibn Mandhūr, s.v. ‘tm; Harding 1971: 405).
- ‘MN ‘Uman: from the verb ‘amana to reside, to go to (Ibn Mandhūr, s.v. ‘mn).
- GHLB Ghaleb: from the verb ghalaba, to subdue or conquer; Ghalibun, Ghallabun, and Ghulaybun are proper names. Taghlibu is the father of a tribe (Ibn Mandhūr, s.v. ghlb; Ibn Ḥazm, 222, Ghaleb bn Ḥindhalat; Harding 1971: 457; Winnett and Harding 1978: 599; Clark 1980: 460).
- GHNY: Al-ghaniyyu is one of the names of God; it means also rich. Ghaniyyun is a branch of the tribe of Ghaṭafan. (Ibn Mandhūr, s.v. ghn’; Harding 1971: 459; Winnett and Harding 1978: 600).
- QS Qays: a very common name meaning the strong one; from it is derived the name of ’Umru’ al-Qays. Qays ‘Aylan is the father of Maḍar branch (Ibn Mandhūr, s.v. qys; Harding 1971: 481, as qs, the good herdsman; Winnett and Harding 1978: 603, 460).
- LKM Lukam: from the verb lakama, to strike with the fist, “khuffun milkam wa mulakkam wa lakkam salbun shadyd yaksiru al-hijarat” a strong shoe that can break a stone. Luqman is a name; Lukam is a mountain in Syria. (Ibn Mandhūr, s.v. lkm).
- MḤL: Muḥil: the verb maḥala, maḥila or maḥula is to be barren and also to plot intrigue, etc. “Rajulun maḥl” is a man with nothing good about him. Al-maḥalu is a stone jewel (Ibn Mandhūr, s.v. mḥl). Al-muḥyl is the one who is barren, but it also means a sad person. Muḥawwal, from ḥawal, ḥyla is to undergo a change. Ḥawal is a place name. Banu Ḥawalat is a branch of bnu Muḥawwalat; they are the sons of ‘Abdu’allah bin Ghaṭafan, whose name originally was ‘Abd-’al-‘uzzat, but the Prophet changed his name so they were called Banu Muḥawwalat (Ibn Mandhūr, s.v. ḥwl; aṭ-Ṭabarī vol. 3, 36, al-Muḥil bin Khalifat aṭ-Ṭa’ī; aṭ-Ṭabarī vol. 3, 66, al-Muḥil aṭ-Ṭafawy).
- MR’YGHTH Mar’-Yaghuth: al-ghawth is to help or to go to the aid of. Ghawthun, Ghiyathun, and Mughiyth are proper names; al-Ghawthu is a branch of Ṭay’ trib, and also a branch of al-Azad tribe. Yaghuth is an idol who belongs to Mizhaj (Ibn Mandhūr, s.v. ghwth). Mr’ or al-Mar’u is the name for man, as in ‘Mr’i al-Qays. The meaning of ‘Mr’i al-Qays is a strong man. Mar’-Yaghuth is a very rare name and it could be translated as the man of God Yaghuth. ‘Abd-Yaghuth is a composite proper theophoric name composed of ‘Abd and Yaghuth and is similar to ‘Abdu-’Allah. ‘Abd-Yaghuth bn Ṣala’at was a poet, and a knight who died 40 years before the Hijra, ca. 584AD (al-Aṣfahānī vol. 16, 354; Ibn Ḥazm, 417, as ‘Abd-Yaghuth bn al-Ḥareth; Ibn Ḥazm, 128, as bn Wahab).
- MṬRN Maṭran: from maṭar, it means rain, or as a verb, maṭara, to pour out or to run swiftly. Maṭarun (maṭar) is a personal name. Maṭar is a name still in use today. Maṭṭarun is a name of a place, and Maṭari a place between “ad-Dahna’i wa as-Samani’ (Ibn Mandhūr, s.v. mtr; Ibn Ḥazm, 319, as Maṭyr bn al-Qa‘qā‘; Harding 1971: 526, as mṭrn; Clark 1980: mṭr).
- M‘D Ma‘add: al-ma‘du means bulky or huge; Ma‘add bin ‘Adnan is one of the Arab tribes. Ma‘dyyun and Ma‘danun are two names; Ma‘d-yakriba is a composite name (Ibn Mandhūr, s.v. m‘d; Ibn Ḥazm, 427, Ma‘d Yakrib; Harding 1971: 552; Winnett and Harding 1978: 611).
- M‘YR Mi‘yar: name of a man who had a fertile valley. ‘Ayrun is a name of a mountain in Mekka. ‘Ibnatu Mi‘yar is a shrewd person (Ibn Mandhūr, s.v. ‘yr; Ibn Ḥazm,162, Mi‘yar bn Luzan bn Sa‘D; Harding 1971: 558).
- MLK Malek and Malak: personal names still used today. Ibn Mandhūr lists several other names such as Mulayk, Mulaykat, Malek, Muwaylik, Mumallak, and Milkan. Mlk is a derivation of malaka, to take possession or take over. Malik is a king, and malak is an angel. (Ibn Mandhūr, s.v. mlk; Harding 1971: 564; Winnett and Harding 1978: 613; Clark 1980: 463; al-Khraysheh 2002: 54).
- MN‘T Mani‘at: derived from mana‘a, to stop or prevent. The noun mana‘at means power, force, or invincibility. The name Manna‘ is still in use today. Mana‘un, wa Mani‘un, wa Munay‘un, wa ‘Amna‘u, are names; Mana‘i is a hill on Tay’ mountain, and al-Mana‘atu is a town (Ibn Mandhūr, s.v. mn‘; Harding 1971: 569; Winnett and Harding 1978: 614; Clark 1980: 464).
- NTN Natan: possibly from natin, maladorous or rotten. Alternately, it is possibly from Aramaic or Hebrew meaning gift, nata’ in Arabic from the

Yemenite means to give (Ibn Mandhūr, s.v. ntn, nt'; Harding 1971: 581, as ntn and ntnb'l; Winnett and Harding 1978: 464, 614; al-Khraysheh 2002: 46).
- NṢR Naṣr: means to help or defend. Naṣṣar is an idol, and Naṣara', Naṣra' and Naṣirat are names of villages in Syria. Naṣr, Nuṣayr, Naṣer, and Manṣur are names. Banu Naṣr are from two mothers and Naṣr bin Qu'ayni is the father of Banu Asad tribe (Ibn Mandhūr, s.v. nsr; Harding 1971: 590; Winnett and Harding 1978: 615; Clark 1980: 464).
- NFL Nawfal or Nafyl: spoils, booty, or a present; personal names such as Nawfal and Nufayl (Ibn Mandhūr, s.v. nfl; Ibn Ḥazm, 268, Nafyl bn rabi'at; Ibn Ḥazm, 150, Nafyl bn 'abd al-'Uzy; Ibn Ḥazm, 76, Nawfal bn 'abd Shams; Harding 1971: 579; Winnett and Harding 1978: 616; Clark 1980: 464).
- NMR Nimrun, Numayr or Numayru: a name from 'al-numratu which means spotted; it is derived from the name for the tiger and leopard (nimrun). Namira is said about a furious man. Namara means to climb or ascend. Numayr bin 'Amer is the father of a tribe from Qays; Namirun and Numayrun are two tribes, and Nimrun is a name of a man (Ibn Mandhūr, s.v. nmr; Harding 1971: 599; Winnett and Harding 1978: 617; Clark 1980: 464).
- HLS Halas: is a derivation from al-hals and al-hulasu, a very thin person. Al-Mahlus is a person who eats a lot but the food does not leave any effect on his body. Halasat is a family name known in Jordan (Ibn Mandhūr, s.v.hls; Harding 1971: 621; Winnett and Harding 1978: 620).
- HN': see Hn't.
- HN'T Huna'at: from the verb hana'a, to be beneficial or to do good, etc. Huna'at is a name, the brother of Mu'awiyat bin 'Amru bin Malek. Muhanna'u and Hani'u are men's names (Ibn Mandhūr, s.v. hn'; Ibn Ḥazm, 422, Hani' bn Habyb, 324, Hani' bn Mas'ud; Harding 1971: 625, as hn' and hn't; Winnett and Harding 1978: 620; Clark 1980: 465; al-Khraysheh 2002: 23; 30).
- W'LT Wa'il, Wayel: the original form of Wa'il; the hamzat in it is called 'the imported hamzat after the consonant alef '' (Ibn Mandhūr, s.v. al-hamzat). Wa'il is derived from the verb wa'ala, to seek refuge or safety. Wa'il is a personal name, as in Wa'il bn Qasit bn Hind (Ibn Mandhūr, s.v. w'l; Ibn Ḥazm, 271, Wa'ilat bn Ṣa'ṣa'at; Ibn Ḥazm 178, Wa'ilat bn 'Amrw bn Shayban; Harding 1971: 632, as w'l and w'lt; Winnett and Harding 1978: 621; Clark 1980: 466, as w'l).
- WTR watru and witru: uneven, odd, singly and Adam was called witr meaning he was alone. Al-Watr is one of God's names; al-witru or al-watru means to revenge the blood of, or the avenger himself. Watar means the string of a bow; watyru is the flower, the name for the horse's forelock, and it also is a place name (Ibn Mandhūr, s.v. wtr; Harding 1971: 633; Winnett and Harding 1978: 621; Clark 1980: 466).
- YMLK yamluk: See MLK (Harding 1971: 684; Winnett and Harding 1978: 626; as ymlk).

Other than names of persons, some gods are named including DSHR and LT.

Lexicon
- 'BL 'ibl: is a plural for camel for which there is no singular. Passim.
- 'BH 'ab: his father, the h is huwa, the pronoun (al-Khraysheh 2002: 32).
- 'KHH 'akhyh: his brother, from 'akh brother with the possessive "his" (al-Khraysheh 2002: 101).
- 'S: See 'S and 'WS in the name list above.
- 'STR: from the verb satara, to cover, veil, or hide. However, "al-'ida'u: ma 'adaytu 'ala al-mayti hyna tadfinuhu min labinin 'aw hijaratin 'aw khashabin 'aw ma ashbah, ... al-'ida' wa al-'ida'u hajarun raqyqun yustaru bihi as-sha" (Ibn Mandhūr, s.v. 'd'). In this case the verb satara here could mean the use of a stone over a tomb (Ibn Mandhūr, s.v. str; Harding 1971: 310; Winnett and Harding 1978: 108-9).
- 'SHY 'H: this is usually part of a name such as Shay'u-Allah; from shay'at, a tree that gives a good scent. However, in this text it means partisans, particularly as it is attached to a personal pronoun, i.e., his partisans (Ibn Mandhūr, s.v. shy'; Harding 1971: 364; Winnett and Harding 1978: 181; Clark 1980: 374).
- 'NFS 'anfus: this is possibly the plural of nfs, the soul or spirit or individual; nafas is breath and in these texts, it could mean "to sigh deeply, groan, moan" but it is not likely. Winnett (1978: 82, no. 244) states that nfst in Safaitic occurs with "the plural form *'nfs*" and "this is contracted to *'fs*." He goes on to say that Littman's translation of *nfst:*

… by tomb, stating that *nfs* has this meaning in SAr

and Lih. This is incorrect. In these dialects it has the same meaning as in Nab. and Palm., namely "funerary monument" [CIS, Para V] correctly renders Ṣaf *nfst* by "cipus" (a pillar at a grave) … .

- 'WS (see also 'S as name) 'awas: "al-'awasu: al-'aṭiyyatu. 'ustu al-qawma 'a'usuhum 'awasan 'idha 'a'ṭaytuhum, wa kadhalika 'idha 'awwaḍtahum min shay' … al-'awas al-dhi'b wa bihi summiya al-raju … ." 'Awas means to substitute or to give in exchange (Ibn Mandhūr, s.v. 'ws). This terminology is still used today in condolences, mu'asat; condolences are given by saying 'awaḍ bi-salamatikum. 'Awas is also a tribe from Yemen, and its derivation is from 'asa y'usu 'awasan; the noun is 'al-'iyas, compensation (Ibn Mandhūr s.v. 'ws; 'ys; Harding 1971: 84).
- BDN badan: mountain goat or body. (Ibn Mandhūr, s.v. bdn; Harding 1971: 98; Clark 1980: 447)
- BKRT bakrat or bikrat: the young camel; and bikr is the first born or virgin (Passim).
- BNH bnihi or 'Ibnihi: his son. Possibly it was pronounced bneh, his son. It can also be banyhi, his sons; the h is the third person masculine singular.
- BNY: the verb bana' with the 'alif al-maqsourat, shortened 'alif, means to build or construct. Wbny should be read wa'abny and I built, first person singular. It precedes 'l 's in most of these texts (Ibn Mandhūr, s.v. bn`; Harding 1971: 122; Winnett and Harding 1978: 200; Clark 1980: 202; al-Khraysheh 2002: 72).
- BWTH batha: yabwithu is to remove, squander or scatter (Ibn Mandhūr, s.v. bwth).
- JML jamal: camel.
- ḤḌR ḥaḍara: is to be present or to participate; in the first person singular, it can mean to bring or to supply (Harding 1971: 191; Winnet and Harding: 50; Clark 1980: 295; al-Khraysheh 2002: 27).
- KHLH khaluhu; means his uncle, khal being the uncle from the mother's side.
- KHLH khillah: from al-khalil, bosom friend, lover, sweetheart. Khullat, friend, is used for masculine and feminine in the singular and plural. Khillah is his friends (Ibn Mandhūr, s.v. khll; Harding 1971: 228; Winnett and Harding 1978: 572).
- DH'L: means from the tribe of. The derivation is from dh, belong to; dhawu or dhawuhu means his relatives; the 'al is from wa'ala, to take refuge, 'ilatu fulan, those who belong to his tribe. (Ibn Mandhūr, s.v. w'l and dhw).
- RJL rajul: man, a great man, a leader (Ibn Mandhūr, s.v. rjl; Harding 1971: 271; al-Khraysheh 2002: 94).
- R'Y ra'y, ra'a': this is usually translated as to graze or to tend a flock of animals, but in some cases this does not make sense. There are other meanings from ra'ya as in "fulan yura'y 'amra fulanin 'ay yanẓuru 'ila ma yasiru 'ilayhi 'amruhu" (Ibn Mandhūr, s.v. r'y), similar to English 'looking forward; or remain yours' (Ibn Mandhūr, s.v. r'y; Harding 1971: 282; Winnett and Harding 1978: 39; Clark 1980: 463; al-Khraysheh 2002: 17).
- SLM salam or silam: (Ibn Mandhūr, s.v. slm) states that salam is guiltless, innocence; salamat is well-being; it was used for the dead by saying 'alaykum 'as-salam. It is a derivation from as-salim wa as-silam which is the stone. See remarks infra. We find the word slm in many of the texts (Winnett and Harding 1978: 635; Clark 1980: 472; al-Khraysheh 2002: 37).
- SHTY: should be read as 'ashty (I stayed the winter). In Safaitic it is the same as in Thamudic, i.e., the Hamzat is ignored because of the dialect; the ya' indicates the first person singular; see Bikai and Khraysheh 2002: 215-24. The verb is from shita' winter; tashatta 'al-makan is to stay the winter in a place. The Arabs saying 'tashatayna 'aṣ-ṣumman' meaning to graze a flock in winter. It could be a derivation from shatta to disperse or scatter. (Ibn Mandhūr, s.v. sht' and shtt; Harding 1971: 340; Winnett and Harding 1978: 231; Clark 1980: 246; al-Khraysheh as shtw 2002: 89).
- ḌB' daba'a: in the context of hunting, it means to be hidden, be concealed, 'to stick to the ground'. It can also mean to seek refuge (Ibn Mandhūr, s.v. ḍb'). For the phrase wḍb' lḥjrt, Winnett (1978: 54) translated "ḍaba'a ila" as "to fly to for refuge"; he understand lḥjrt to be an unknown town and, but he could not find a proper meaning for maḥjir" he follows Littmann's translation from South Arabic and Hebrew as "to wage war". Ibn Mandhūr states that mḥjr is an area nearby but beyond the tribal settlement "as if someone is in the midst of his people when they are at peace, but when a crime happens (killing) he leaves to hide" (Ibn Mandhūr, s.v. ḥjr) This may explain the erased names in our RCM-32.
- 'L 'ala': a preposition; in our case it carries the meaning or on, above, or over.
- GHNMT ghanimat: easy prey, spoils, or profit; in

most cases here it means (may God) grant easy prey. This terminology still in use today in the saying "'Allah yirzuq" (Winnett and Harding 1978: 53; Clark 1980: 179).
- GHNM Ghanam: the plural of shat, a herd of sheep, goats, or small cattle. Ghanima as a verb means to gain, see ghanimat.
- F fa: is a conjunction meaning then, but then, and so, etc.
- FRS Faras: is a horse or mare (Passim).
- QNT: Qanat is a wild cow, used metonymically as surname of a female. Also it can be translated as a goat (al- qina'), and this is clear from the drawing of the goat standing on the left side of the female figure (RCM-77; fig. 21). Someone who was awarded a hundred goats was given al-qina'; …of sheep …is al-ghina'; …of camels …is al-muna' (Ibn Mandhūr s.v. qn'; Harding 1971:489).
- L li ('ila): for; all of our texts start with the "l" which is commonly translated as "from" (min), but in our texts it should be translated as "to" or "for". See comments below.
- LMT Lamma: to gather, collect or assemble; lummat is friendliness or cordiality in gathering. The final t is the third person singular feminine suffix (Harding 1971: 320).
- LH lahu: means for him; the l means to or for, a preposition while h is huwa, he, the personal pronoun.
- MN man: is a relative pronoun meaning whoever, he who, those who; or as a preposition, min from (Winnett and Harding 1978: 647; Clark 1980: 475; King 1990: 685).
- NDM nadima: a verb meaning to repent or regret. (Ibn Mandhūr, s.v. ndm; Harding 1971: 584; Winnett and Harding 1978: 181; Clark 1980: 404).
- NṢR' Naṣr: to help, aid, or defend, but it can also mean victory. Naṣṣar is an idol (Ibn Mandhūr, s.v. nsr; Harding1971: 590).
- H ha: is an emphatic form, used for intensifying apposition, used here for hadha, his as a prefix (dem. pro.). It is also used as huwa, he or it (third pers. m. sing.).
- HLT halla: to appear or show (of the new moon). In the Middle East, when the new moon begins, people gaze at it and recite 'hillak wmisthillak yj'alak 'alayna shahr mbarak'. They regard the new moon as a good omen, so they say may it be a blessed month. Halla also means to shout with joy or rejoice, but it can also mean to fall heavily or pour down (of rain) (Ibn Mandhūr, s.v. hll). Hallat can also be found in 'ḥallat al-ḥarb", war is out to begin. Before a tribal war, Arabs used to stand opposite each other with their hands raise upward and bragging, enumerating the accomplishment and the glory of their fathers. (Ibn Mandhūr, s.v. m'l). The t is for she third per. f. sing.
- W wa: a connector, and.
- WJM wajama: a verb meaning to be silent with anger, to grieve, or to be sad. It should be red 'ujimu (I grieve) because the hamza was not used in this colloquial dialect. There are other possible translations; see remarks infra.
- YBWTH: See BWTH.

Remarks

The diversity of subjects and the variety of drawings scattered around the circular building indicate that the stones are messages left by members of the tribes for related persons. They express joy, sadness, memos, wishes, and gifts; they reflect their daily life, their religious beliefs, and their ceremonies.

The majority of the texts and drawings are clear and neatly executed. From examination of these texts, one can observe there was a respect for all texts and drawings, no one infringed on the work of others. They shared the available space on the stone. They never crossed out another's work. However, some texts indicate attempts by beginners. As Ibn Mandhūr (s.v. wḥy) says: "Al-Ḥirth al-'A'war reports that 'Alqama told him, I learned how to read in two years; al-Ḥarith answered, it is easy to read, but writing (al- waḥyu sing. al-waḥyyu pl.) is more difficult".

From this collection, some tentative observations can be made:

The "l" is commonly translated as from, but for the following reasons and particularly in our texts, it should be translated as for ('ila) or to. In Arabic, (min) is used for from. See texts RCM-1, 4, 5, and 8 (lh-l'bh- l'khh, etc). It is clear that the texts are addressed to someone else. Those who translate l (lam) as from should reconsider. The Arabs call these texts, which we are dealing with here, waḥy. In explaining the meaning of waḥy, Ibn Mandhūr states "al-waḥy is the signal or inspiration …, and everything you cast to the others." He recites a verse from Labyd, a pre-Islamic poet, about al-waḥy (writing) on the stones (silam) as the only thing one could see after a flood at Mina'and at Rijam.

‘Afat ar-riyaḥu maḥallaha famuqamuha bi-Minan ta’abada ghawlaha farijamuha.

famadafi‘u ar-rayani ‘uriya rasmuha khalaqan kama damina al-wuhiyya silamuha (Ibn Mandhūr, s.v. wḥy; rjm).

What is the purpose of this type of complex? We will ask whether such installations used for circumambulation. All the engraved stones were found scattered inside and around two attached structures, one a complete circle, and the second being a semicircl with an opening toward the west. Near the circular building, there is a small cairn, ca. 1.30m in height, with no marks or texts on its stones. The circular structure, where most of the petroglyphs are scattered, must have had a function. Perhaps the texts, the drawings, and the structure of the site, as well as the historical background tell us something about the use of the site. Historically one can finds Arabs used to do the ‘awāf (circumambulation) around a cairn in pre-Islamic periods. It is known that a ‘awāf was sometimes performed around a ‘Dawwar’. Ibn Mandhūr states (s.v. dwr):

Dawwar is an idol the Arabs used to erect and they built a place around it for their circumambulation; the name of that place is also Dawwar; and it is mentioned by ’Imri’ al-Qays in his poem:

A herd of young calves presented themselves as if

They were virgins of the Dawwar in their long-tailed dresses.

Ibn Mandhūr goes on to explain: “ by calves [‘Imri’ al-Qays] means female cows and he describes their walk with their long tails as looking like virgins circumambulating around the idol in long-tailed dresses’.

Yāqūt says: Before the arrival of Islam, a pilgrimage to Makka (Ḥajj) was a common practice for Arabs.

‘The Arabs glorified Makka, where they used to do the pilgrimage (Ḥajj) or the ‘Amra to the House [at Makka]; they circumambulate and when one desires to leave, he would take a stone from the Ḥaram, carve it like an idol of the house, behave with affection [toward the idol] during his travels, and will direct their prayers to it; and he will circumambulate around it, annoint it, and pray to it in the same way as they do to the idol of the House. Later, they used to take a stone from the Ḥaram, worship it, and this was the origin of stone-worship by the Arabs in their homes; they are filled with ardent passion for the idols of the Ḥaram’ (Yāqūt, s.v. Makkat).

One finds a similar example in the Bible: “Rising early in the morning, Jacob took the stone he had used for his pillow, and set it up as a monument, pouring oil over the top of it. He named the place Bethel [house of God]” (Genesis 28: 18-19; see also 35:14-15).

One of our stones, RCM-55 (FIG. 19), may show a circumambulation, indicating a practice of that sort at our site. It is possible that this ritual celebrated the new moon, since the text can be read as halet wa lamet “the new moon appears and they gather”. A second stone (RCM-70, FIG. 20) portrays a woman in a long dress, as if she is wearing the dr‘, a dress open at both the front and back. It has been said about tribe of Quraysh at Makka, that:

‘They impose on all the Arabs when they enter the Ḥaram that they should take off their travel clothes, and replace them with ˙aram wear, which they can get as a gift or buy or otherwise they circumambulate around the House nude. They impose on Arab women the same rules. However, women used to circumambulate with a dress open at the front and back, a dr‘” (Yāqūt, s.v. Makka: 309-10; also mentioned by Ibn Hisham, vol. 1: 186-88; aṭ-Ṭabarī, vol. 2, 215; aj-Jāḥidh, vol. 2: 149-51, Rasa’il, kitab al-qiyan).

According to Ibn Mandhūr (s.v. ṭwf) “In the Óadith, a woman used to circumambulate the Ka‘bah nude, asking, who will lend me a dr‘ to cover myself?” With the arrival of Islam this practice was forbidden. At our site, women are portrayed nude, but it may be that these images have no relation to the practice of circumambulation. Apparently, the nudity portrayed at our site was socially acceptable, as one has to imagine that if it were not, the drawings would be obliterated (RCM-2, 4, 14, 17, 32, and 77).

A drawing of a girl or a woman with a camel may contain a play on words (RCM-4, FIG. 7). The Arabs used to give pet names to women such as cow, cat, deer, gazelle etc; (See ath-Tha‘aliby, “faṣlun fī kinayat al-mar’at” a chapter about surnaming women).

Ibn Mandhūr (s.v. rjm) states that cairns are stones put together as markers or erected on ancient burials “The Arabs before Islam used to circumambulate around a cairn, in imitation of the House, al-Ka‘ba. In a poem, Ibn al-‘Ambari describes a pious man pouring blood over a cairn”. This is similar

to the midhbaḥ, the altar, around which people circumambulate in many religions, including Judaism and Christianity. Indeed, there is a similarity between Jewish tradition and the Arab tribes before Islam in relation to stones. In Genesis 31:45-48 it says:

"Then Jacob took a stone and set it up as a monument. Jacob said to his kinsmen, 'Collect some stones', and gathering some stones they made a cairn. They had a meal there, on the cairn, and Laban called it Jegar-sahadutha while Jacob called it Galeed. Laban said 'May this cairn be a witness between us today'. That is why he named it Galeed, and also Mizpah, because he said 'Let Yahweh act as watchman between us when we are no longer in sight of each other".

There are other relevant passages including one with direction on building stone altars, the other from Leviticus, proscribing such stones: "If you make me an altar of stone, do not build it of dressed stones; for if you use a tool on it, you profane it" (Ex. 20: 25) "You must make no idols; you must set up neither carved image nor standing stone, set up no sculptured stone in your land, to prostate yourselves in front of it" (Lev. 26:1-2). Even now, some Jews put a stone when visiting a tomb, so one can see a pile of stones like a mini-cairn over a burial. A few Muslims carry a stone from a sacred area and place it in the direction of their prayer; and we call the headstone of the tomb ash-Shahed (witness), one of God's titles.

The Arab tribes have the ritual of aj-jimar, which originally was:

" merely to have been ' a simple gesture of coming together, done by means of a ballot ' the internal uniting of all the factions of the tribe. ' the secondary sense, expressed in djamra, pl. djimar, a 'pile of pebbles', allows the gesture of union, which renews the tribe periodically or occasionally, to be represented as being like the throwing of a pebble on a precise spot, near to a sacred site or in the midst of an encampment, done by all the members of the tribe or by the heads of the clans composing it, and thus symbolizing the indissoluble unity of the tribe " (E.I, s.v. RADJM, and see Ibn Mandhūr, s.v. jmr)".

Some of the most common words used in the assemblage are slm, wbny 'l 's, and wajm. Ibn Mandhūr (s.v. slm) states that:

… salam is guiltless or innocence; salamat is well-being; and salam was not used before Islam as a salute because it was used for the dead by saying 'alaykum 'as-salam. You don't expect an answer from the dead. As the Qura'n says "wa'idha khaṭabahum al-jahiluna qalu salaman", which means to be free from guilt and suspicion as there is no good or evil between us. The Arabs used to salute by 'an'em ṣabaḥan, and 'abayta al-la'nat, and the meaning of salam in this case is: there is no war between us. As-salim wa as-silam is the stone. Istalama al-ḥajari is to kiss or touch the stone by hand. Ibn as-Sakit said, istalama al-hajar is from silam the stone like iktaḥala from kuḥl. Al-Qutaybi said you must understand what I have said about istilam al-ḥajar being a verbal form of as-salam, the salute and istilamahu is to be touched by hand for examination to accept the salute, as a blessing. The Yemenites call the black rukn al-ka'ba al-muḥayya.

From the Ḥadyth 10993: "The Prophet said the black stone is the right hand of God that he [uses to] shake [hands] with his servants" (Ibn 'Asākir, vol 32: 281). A Moslem ends his prayer with "Allahumma 'anta as-Salam wa minka as-Salam wa ilayka ya'udu as-Salam fa 'adkhilny Janata Daraka Dar as-Salam".

Another common word is WJM or wajama, a verb, meaning to be silent with anger, to grieve, or to be sad. In our case, the word should be read 'ujimu (I grieve) because the hamza was not used in this colloquial dialect. However, Ibn Mandhūr(s.v. wjm) stated:

'Bn Shumayl said al-wajamu is a pile of stones on top of each other built on hills, … they are the product of the era of the 'Ad; the pile is round at the base and pointed at the top … al Jawhari said … they are marks, buildings, and guides in the desert …

It is clear that al-wajamu fits the descrition of a cairn. 'Ujimu or wjm can be translated as "I put a stone on the tomb" ('Abbady 1997: 79; ar-Rousan 1992 : 72). The verb wajama is a verbal form of al-wajmu like zara'a and zar'. 'Ujimu should mean "I put a stone on the wajm (the cairn)".

As we mentioned above, a cairn built of these hard stones, al-silam, and when we have in our texts the repetition of the terminology "slm and w bny 'l 's", - BNY is the verb bana' meaning to build, and 'S means to substitute (al-'awaḍ), this is terminology Arabs still use today in expressions of condolences such as "mu'asat, al-'awaḍ bi salametkum". Arabs still forgive the dead before the burial from all their obligations so that the person will rest

in peace. In conclusion, our tribes may have put stones on the cairn as a mark; they were asking to be free from guilt and suspicion by putting a stone on the 's. Similar to aj-jimar which designates, among other things, the rite of coming together of the tribe in solidarity against any enemies; and it can also be a form of condolence.

In conclusion, it seems that the Cairn of the Mermaids is one of the camps (Maḍāreb) of Banu Basa', a rallying point on Mount Mukalla for that tribe and its related branches. The site may have been used for religious practices, festivities, and as a "bulletin board" for messages.

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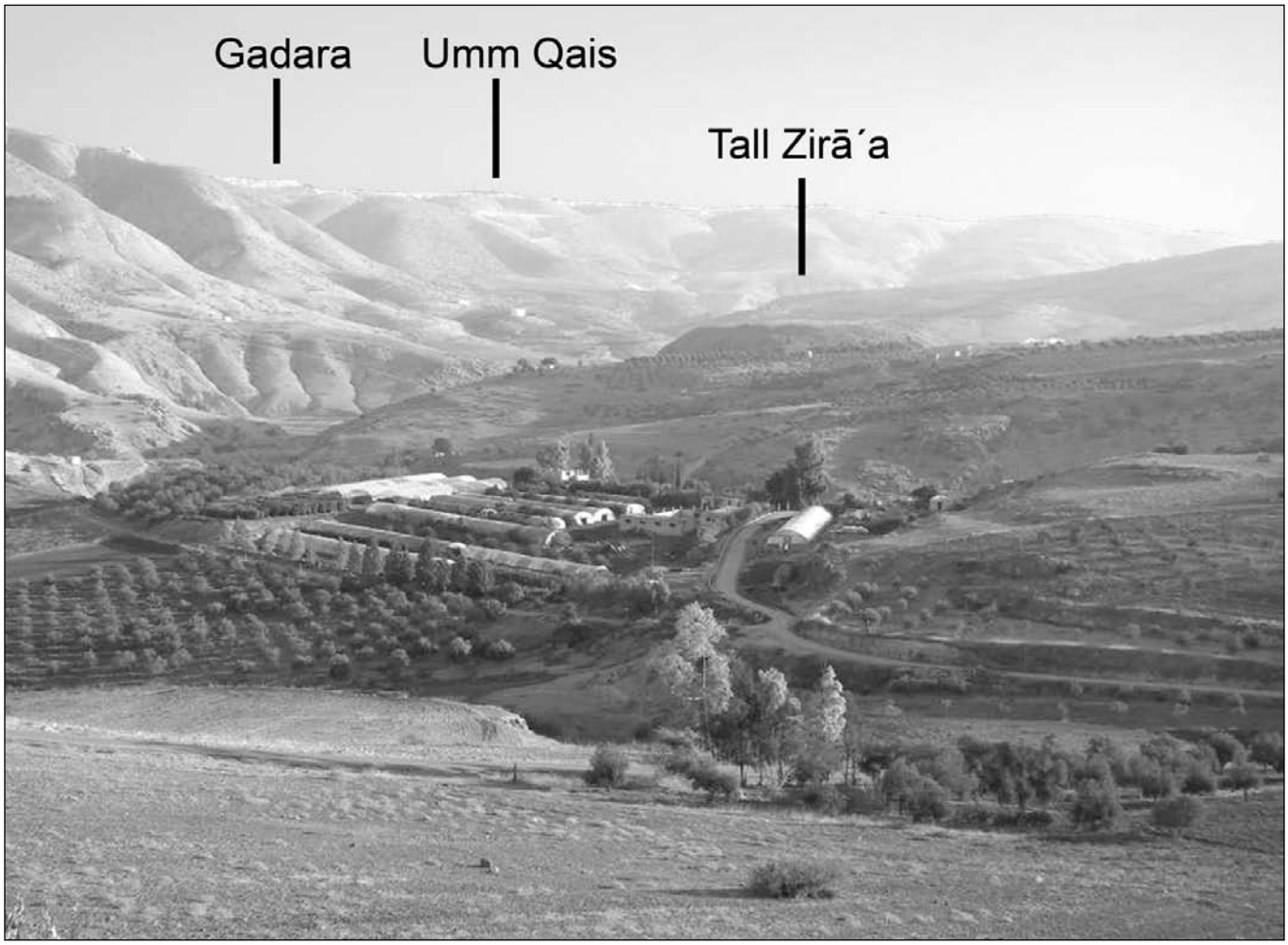
Archaeometry in Archaeological Research 5000 Years of History on Tall Zar'a Pottery – Everyday Life, Trade and Technology in Northern Jordan

Introduction (FIG. 1)
The ruins of the Decapolis city of Gadara have fascinated generations of visitors due to their history and their extraordinary scenic location. Gadara is situated on the north-eastern spur of the transjordanian mountains high above the Sea of Galilee. Many people know this famous city, but only few know its earlier and later counterpart, Tall Zar'a. This settlement was the central place of this region for millennia until the foundation of Gadara and acquired this role again after Gadara's demise (Dijkstra 2005). The impressive tall dominates the Wādī al-'Arab, an unusually fertile valley in the south of Gadara. But up until recently, hardly any attention had been



1. The Wādī al-'Arab with Gadara, Umm Qays and Tall Zar'a.

paid to Tall Zar'a, its relation to Gadara and its pre- and post-classical development (FIG. 2).

The tall rises about 25 metres above the surrounding area. Its highest point is situated at 15 metres below sea level. Its foundation is a natural limestone hill with a diameter of about 240 metres at its base. Over a period of 5000 of years, various settlements were built on top of each other, shaping today's tall. The plateau measures 160 metres in diameter and the cultural layers are approximately 12 metres thick.

The special importance of Tall Zar'a is based on the following four exceptional features:

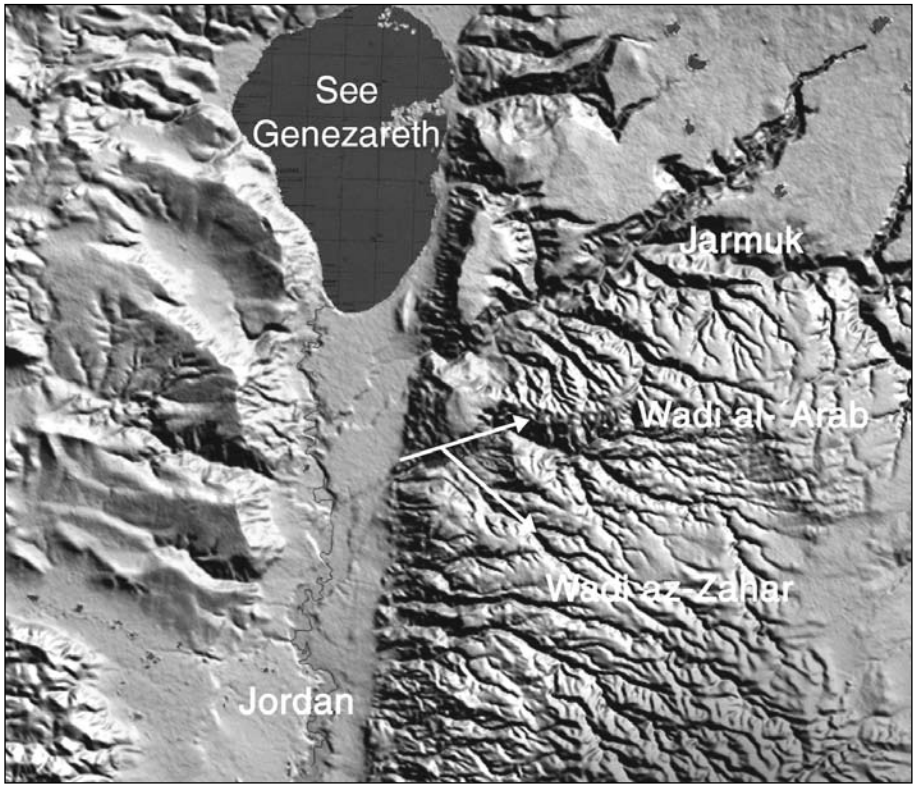
First, it is located in an area characterized by fertile soil and two freshwater-bearing wadis: Wādī al-'Arab and Wādī az-Zaḥar (FIG. 3). Both rendered possible an intensive level of agriculture, which guaranteed not only food supply but was also the basis for a certain economic wealth.

Second, there is an artesian spring on top of the tall. This was certainly an important strategic factor in the past and perhaps also was perceived as an attractive, beneficial and wondrous phenomenon.

The third fact is the tall's strategic position along an ancient and highly important trade route. The tremendous ascent from 290 metres below sea level in the Jordan Valley to the Irbid-Ramtha-Area and the hills west of Bayt Rās at 560 and 612 metres above sea level can be surmounted via the Wādī al-'Arab without steep or narrow passages. This makes it an ideal route, connecting the trade routes along the Mediterranean via the Jordan Valley with Transjordan and, further to the north-east, Damascus and Mesopotamia. Just as important is the shortcut via Hauran to the east and the centre of Mesopotamia, used since the fifth millennium BC (Eichmann *et al*. 2000: 9-44).

Finally, the tall is quite important from an archaeological point of view as it gives evidence of over 5000 years of continuous settlement — and

2. Tall Zar'a in Northern Jordan, viewing from South-West to North-East.



3. Map of Northern Palestine.

that probably with only one minor gap (persian period). Thus, it is possible to observe not only all the different cultural periods in one place, but also the transitions between them (Häser and Vieweger 2005a: 16-21, 2005b: 135-146, 2007: 526-530; Steuernagel 1926: 80-83; Vieweger 2002: 157-177, 2007: 497-502).

An Ideal Opportunity for Pottery Research

As a result of its particular characteristics, the tall provides perfect conditions for a large-scale pottery study applying the most common archaeological as well as archaeometric investigation methods. By interpreting the pottery of millennia of settlement — together with the non-ceramic finds — it is possible to produce an image of the tall's cultural and political development.[1]

Regarding the pottery research, it is worth mentioning that the tall also has particular geological features. The clays used for mud bricks, tiles and *ṭābūn*(s) (non-pottery clay products) and for some of the pottery found on the tall came from the surrounding area. They are the product of millions of years of weathering of minerals and rocks, washed down from higher up into the wadis. As such, the tall is surrounded by fine, sandy, silty and clayey sedimentary deposits that are more or less rich in calcite, quartz and feldspars (Lucke 2007).

Objectives

Basically, the pottery project has two main objectives:

First: After having split up the pottery into resemblance groups (wares), the archaeological analysis addresses several questions regarding dating on the one hand, and prevailing socioeconomic conditions on the other.

Second: The archaeometric investigations will address questions such as: How much of the pottery was produced locally? Were there dependencies or relations with other communities? Was pottery traded on a regional basis or was it imported from areas like Mycenae, Cyprus, Syria or Egypt.[2]

And, if there was local/regional production, was there a visible development in vessels' shape over time? Is it possible to ascertain advancements with regard to utility and/or aesthetics and, with them, in pottery technology?

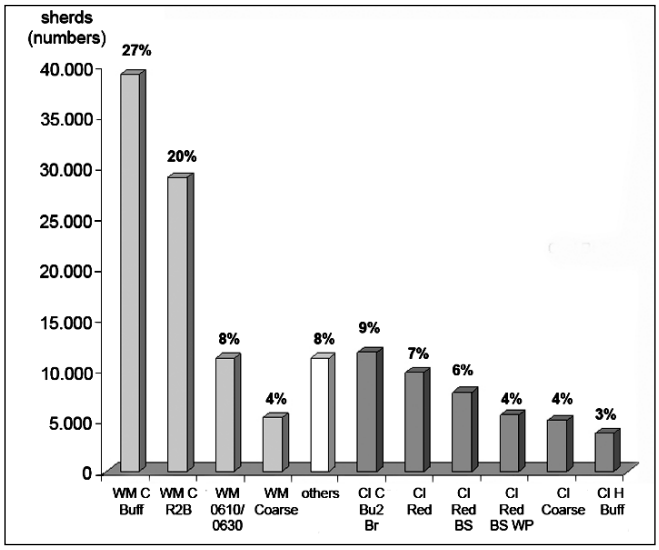
[1] About 140l,000 sherds were found in five excavation periods until spring 2007.

[2] Similar investigations have been carried out, e.g., with pottery from, e.g., Northern Jordan (Tall al-Fukhār from EB to LB, see McGovern 1997: 421-425) or Northern Mesopotamia (Tall ash-Shaykh Ḥamad/Dūr-Katlimmu, see Kreppner 2006).

Archaeological Analysis (FIG. 4)
The archaeological analysis of pottery starts with the classification of the sherds and is mainly based on dating (production method/shape), function and surface design. However, the way it was processed as well as the colour of the surface play a crucial role. Based on this, the tall's pottery can be classified into 77 ware groups.

All of the information is combined with other archaeological data in a relational database and therefore can be evaluated statistically.

As a result, it is easy to identify that the majority of pottery (59%) belongs to five ware groups: wheel made common buff (WM C Buff), wheel made common red to brown (WM C R2B), wheel made cooking vessels 0610 (WM 0610), wheel made cooking vessels 0630 (WM 0630) and wheel made coarse (WM Coarse) — all five dating from the Middle Bronze to the Iron Age. They are followed by 'classic' pottery (33%), dating to the Hellenistic, Roman and Byzantine periods: classic common buff to brown (Cl C Bu2Br), classic red (Cl Red), classic red black slipped (Cl Red BS), classic red black slipped white painted (Cl Red BS WP), classic coarse (Cl Coarse) and classic hellenistic buff (Cl H Buff).[3]



4. Distribution of pottery wares from Tall Zar'a.
Cl C Bu2Br = classic common buff to brown
Cl Red = classic red
Cl Red BS = classic red black slipped
Cl Red BS WP = classic red black slipped white painted
Cl Coarse = classic coarse
Cl H Buff = classic hellenistic buff
WM C Buff = wheel made common buff
WM C R2B = wheel made common red to brown
WM 0610 = wheel made (cooking vessels) 0610
WM 0630 = wheel made (cooking vessels) 0630
WM Coarse = wheel made coarse.

As the overwhelming majority of recorded pottery consists of vessels for everyday use (C = common ware), it seems that the settlement had a more rural structure, i,e, a village or at times a small rural town, over several millennia. Therefore it is not surprising that big storage containers (e.g. large pithoi) and a lot of cooking pots were found — representing the periods between Late Bronze Age IIA and Iron Age II. In contrary to that, however, an apparently unique painted jar is only one example of the fine ware from Late Bronze Age (FIG. 5).

Archaeometric Investigations[4]
Before moving on to the results of archaeometric investigations, the potentials and limitations of applying scientific methods to the investigation of pottery must briefly be discussed. In principle, the application of scientific methods to pottery is a way of scrutinizing or even of complementing the results of macroscopic (and as such often subjective) methods of traditional pottery diagnostics with more additional and detailed (more objective) information. Although logical and simple, in reality it is much more difficult.

Already a microscopic view of a section from a cooking pot (ware WM 0610) revealing the heterogeneity of the texture (FIG. 6) shows the complexity of the problem the investigating scientist is facing.

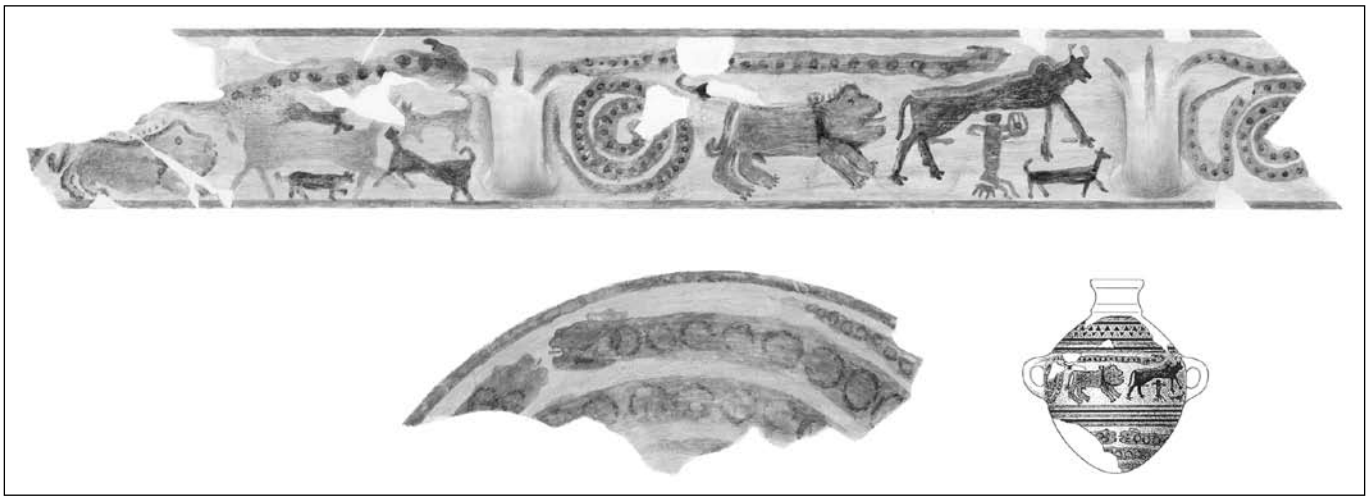
Alongside large, relatively intact crystals are finer ones, some of them are vitrified and as such have already ceased to be in a mineralogical sense. The following table (FIG. 7) shows exemplarily that during the firing process partial or even total decomposition of mineral phases may occur — but in the same way new mineral phases can be formed[5] (Klenk 1987; Magetti 1982: 121-133; Noll 1991: 99).

Thus, decomposition of minerals like quartz, il-

[3] Up to now, 77 ware groups have been defined. While 92% of the sherds can be assigned to 24 ware groups, the rest ('others' = 8%) has been split up into 53 minor ware groups.

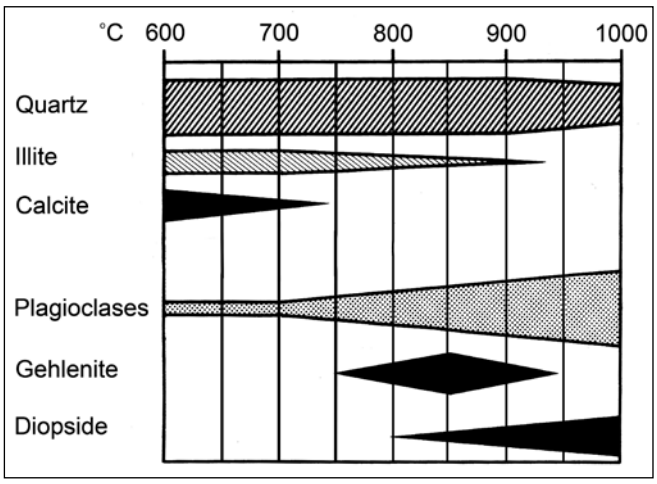
[4] All the scientific investigations were carried out at the Research Laboratory for Archaeology and Material Science, German Mining Museum, Bochum.

[5] This graph shows only examples of possible thermal reactions of mineral phases. The way mineral phases actually decompose or are formed largely depends on the actual conditions during the firing process, e.g., chemical and mineralogical composition of pottery, distribution of particle sizes, composition of the gas atmosphere (oxidizing or reducing conditions) etc.



5. Painted jar from the Late Bronze Age (Tall Zar'a).

6, Microscopic view onto a section from a wall of a cooking pot (WM 0610).



7. Thermal decomposition and formation of several mineral phases.

lite and calcite can start at 600°C, 700°C and 900°C. In this case, information is lost during the firing process and therefore it is very difficult to ascertain the mineralogical composition of the original material, which would help to find out where it came from ('provenance postulate' — see McGovern 1997: 421-425).[6] On the other hand, new mineral phases, e.g., plagioclases, gehlenite and diopside can emerge up to 700°C.[7] Basically, the existence of such mineral phases roughly gives evidence of the temperature the pottery was fired at. In this latter case information is gained.

Then there is the chemical composition: apart from some minor exceptions, none of the chemical components is lost during the firing process of pottery (based on long-term considerations).[8] Hence, the chemical analysis is the only method to show the composition of the original material. However, the drawback is that pottery with very similar chemical compositions can be different regarding their mineralogical compositions. Thus, the originally applied material is not necessarily the same and the origin of the pottery can be quite different.

That makes clear that 'absolute' information as to the origin of pottery cannot solely be gained from mineralogical or chemical analysis of the ap-

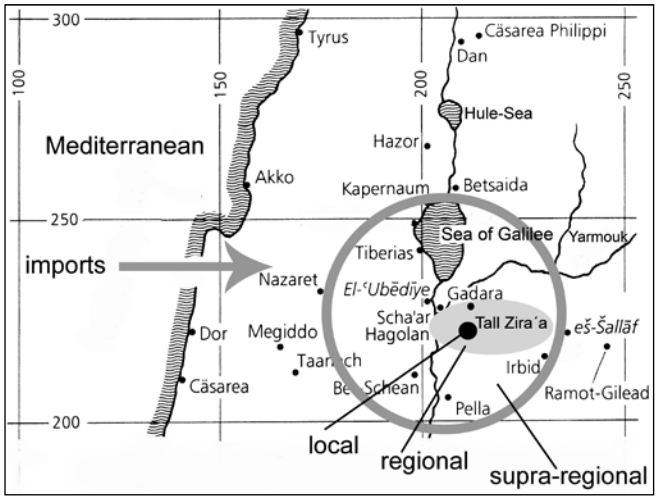
[6] 'Provenance postulate': If there is a correspondence between the mineralogical and/or chemical composition of a particular ancient pottery sample and a given clay source, the location of this source is the presumed place of manufacturing.

[7] Calcite: $CaCO_3$, Illite $(K, H_3O)\ Al_2\ (Si_3\ Al)\ O_{10}\ (H_2O, OH)_2$, Plagioclases: $(Na, Ca)\ (Si, Al)_4\ O_8$, Gehlenite: $Ca_2Al\ (Si, Al)\ O_7$, Diopside: $CaMgSi_2O_6$

[8] Carbonates (e.g. calcite) can decompose during the firing process to $CaO + CO_2$. While being used or buried pottery quantitatively regains the CO_2 out of the atmosphere.

propriate pottery, but only from comparison with a selection of different source materials in question: For instance clay and non-pottery clay (mass) products like bricks, tiles and *ṭābūn*(s) from the site under investigation (local), pottery from other ancient settlements (in regional or supra-regional distance from the tall) and/or even imported wares (FIG. 8). Moreover, joint chemical or mineralogical properties, so called 'geochemical fingerprints', which have their origins in the specific geology of the location have to be found out. The following two examples shall demonstrate how such 'geochemical fingerprints' can be used for evaluating the origin of pottery by cross-comparison.

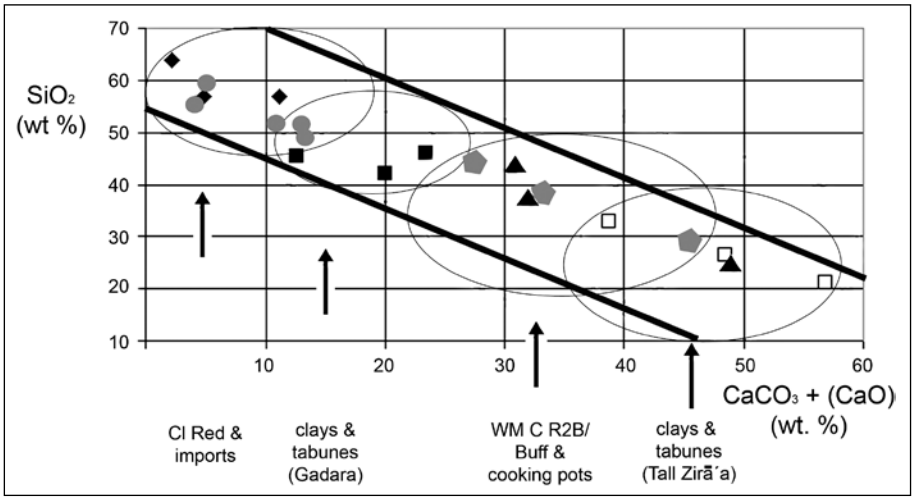
If one looks at the concentration of the two important pottery components SiO_2 and $CaCO_3$ (+CaO)[9] it is clear that (FIG. 9):



8. Origins of examined clays, pottery and non-pottery (clay) products.

- First, clay and non-pottery clay objects (mud bricks, *ṭābūn*(s), tiles) from Tall Zar'a have a very high $CaCO_3$ (+CaO) content compared with those of Gadara (both rectangles).
- Second, the composition of the utilitarian pottery wares like wheel made common red to brown/ wheel made common buff (WM C R2B/WM C Buff) and cooking pots (pentagons and triangles) lie somewhere between the specific non-pottery clay objects from Tall Zar'a and Gadara. So this pottery could have been produced from clay from either site.
- And third, classical red (Cl Red, rhombi) and imported wares (circles) have besides lower $CaCO_3$ (+CaO) — much higher SiO_2 — contents than the specific clay objects from the tall. Therefore local production (Tall Zar'a) can be excluded.

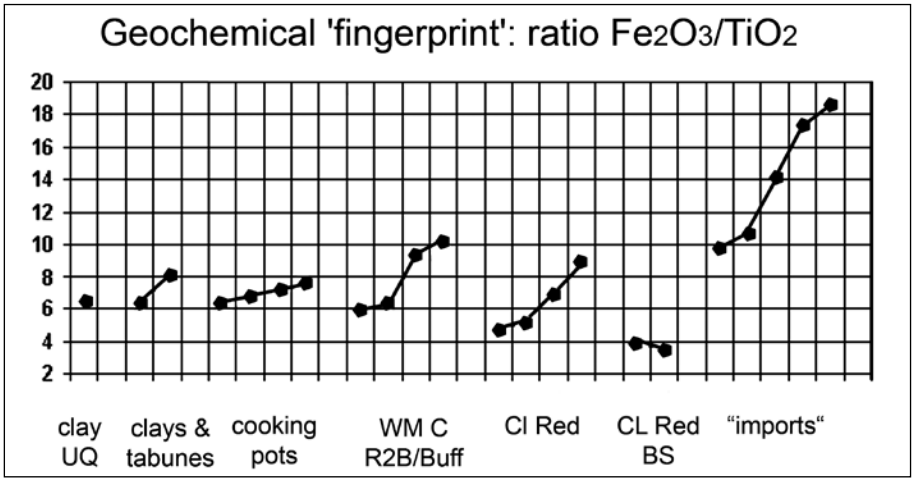
Turning to the ratio of Fe_2O_3 and TiO_2, a similar picture emerges (FIG. 10): It is conspicious that in clay and non-pottery objects from Tall Zar'a and Gadara, Fe_2O_3 and TiO_2 always occur together in a ratio of 5.5 to 8.0 — independent of the absolute concentration of both. The reason for this is presumably a geological feature of the material: The clays around Gadara and Tall Zar'a are mainly formed by the decomposition of basaltic rocks, which cover the Gadara plateau (Bender 1968; El-Akhal 2004; Wiesemann 1985: 79-80).[10] This basalt shows more or less the same Fe_2O_3/TiO_2-ratio as the clays from Gadara and the Tall Zar'a — and so do all non-pottery clay products as well as the majority of the utilitarian pottery from the tall. The imported wares ('imports') as well as two of each of the following wares – wheel made common red



9. 'Geochemical fingerprint': SiO_2 vs. $CaCO_3$+CaO.
wt.% = weight per cent

[9] The Ca^{2+}-ion can be bound as $CaCO_3$ in, e.g., calcite and/or as CaO in, for example, clay minerals like anorthite, augite etc.

[10] Weathering basalt delivers mineral phases like augite, anorthite, montmorillonite etc.



10. 'Geochemical fingerprint': Ratio Fe_2O_3/TiO_2.
UQ = Umm Qays
TZ = Tall Zar'a
wt.% = weight per cent

to brown/wheel made common buff (WM C R2B/ WM C Buff), classic red (Cl Red) and classic red black slipped (Cl Red BS) — do not obey this rule. This indicates that (some) pottery of the latter wares probably not derives from 'local' clays.

These two examples reveal that one 'fingerprint' is not enough to be able to adequately characterize pottery, clay or non-pottery clay products. Consequently, various chemical and mineralogical parameters have to be used to characterize clay materials.

Up to now 320 samples of pottery, clays and non-pottery clay products have been examined.[11]

The principles and methods of analysing pottery and clay samples have already been described in detail in various publications (e.g. Rice 1987; Wagner 2007; Hauptmann and Pingel 2008).

Having applied the methods of Inductively Coupled Plasma Atomic Emission (ICP-AES) — and Ion Chromatography (IC),[12] 26 chemical elements (oxides) were recorded per sample (FIG. 11). Elementoxides like MgO, Al_2O_3, Fe_2O_3, K_2O and Na_2O, which are used to characterize clay materials, show similar but in some cases different concentrations for Tall Zar'a and Umm Qays.

By means of the X-Ray Diffraction (XRD) method more than 33 different mineral phases could be identified.[13] In many cases, the mineralogical composition of clay materials from Tall Zar'a and Umm Qays differ significantly.

chemical analysis			mineralogical analysis		
ICP- AES / IC:	26 elements (oxides)		XRD:	> 33 mineral phases	
elements (oxides)	Tall Zirā´a (wt %)	Umm Qais (wt %)	mineral phases	Tall Zirā´a	Umm Qais
MgO	0.5 – 3	1 – 5	Albite	+	(+)
Al_2O_3	4 – 13	8 – 18	Anorthite	+	
Fe_2O_3	2 – 7	3 – 13	Hematite	+	+
K_2O	< 2	< 2	Illite	+	+
Na_2O	< 1	< 3			
			Mikrokline	+	(+)
			Montmorillonite	+	(+)
				+ frequently (+) rarely	

11. Chemical and mineralogical 'fingerprints' for Tall Zar'a and Umm Qays.

[11] 160 sherds from Tall Zar'a were examined. A point was made when selecting pottery samples, of choosing representative specimens. Almost every pottery ware group is represented and the number of samples taken was determined by the statistical distribution of those pottery wares.

[12] The IC = Ion Chromatography method was applied for the determination of alkali- and earth alkali-elements like Na, K, Ca and Ba.

[13] All investigations were supported by a number of thin section studies. In addition, the thermal behaviour (determination of potteries' original firing temperature) was studied by a great number of firing and refiring experiments.

Interpretation of the Results

Pottery classification

When interpreting the results of the scientific investigations, it should first of all be returned to the question of how archaeological pottery classification is supported by chemical and mineralogical analyses.

In the case of the cooking pot wares, for example, the situation is quite clear (FIG. 12). The wares can also be distinguished by their chemical and mineralogical composition. Moreover, it emerged that the (archaeological) cooking pot ware WM 0610 consists of at least two main subgroups (WM 0610-1 and WM 0610-2) that can be clearly defined (from an archaeometrical perspective) and dated: WM 0610-1 belongs to Iron Age I/II and WM 0610-2 to Iron Age II.

The cooking pot ware WM 0610TZ-f as far as it is known at this stage, unique to Tall Zar'a, is chemically and mineralogically relatively uniform but shows a certain similarity to the subgroup WM 0610-2 (both Iron Age II).

From an archaeological point of view, each one of the other main wares wheel made common red to brown/wheel made common buff (WM C R2B/ WM C Buff)[14] and classic red (Cl Red) must be divided in several subgroups which are relevant for determining the location of production but not for dating (FIG. 13).

In summary it can be concluded that the current (macroscopic/archaeological) pottery classification is logical, generally useful, fairly crude and adequate for archaeological purposes like dating. However, a more detailed classification is possible by using chemical and mineralogical analysis, which helps to answer questions regarding the ori-

cooking pot wares	dating
WM 0650	Middle Bronze II
WM 0630	Middle Bronze II / Late Bronze
WM 0610 (archaeometric split →)	
WM 0610 – 2	Iron Age I / II
WM 0610 – 1	Iron Age II
WM 0610TZ-f	Iron Age II

12. Archaeological/archaeometric definition and dating of cooking pot wares.

archaeology	archaeometry	origin			
ware groups	number of subgroups	local	regional	supra-regional	import
WM 0650	(1)	(+)	+		
WM 0630	(1)	+	(+)		
WM 0610	4	+	+	(+)	
WM 0610TZ-f	(1)	+	(+)		
WM Eggshell	(1)	(+)	+		
WM Choc Wh	2		+	+	(+)
WM WP	(1)			+	(+)
Wh Sl (Cyprus)	(1)				+
WM Myc	(1)				+
R/B-group	5	+	(+)		
(WM C R2B- and	F1		+	(+)	
WM CBuff)	F2			+	(+)
Cl Red	3		+	+	(+)
Cl Red BS	2			+	(+)
Cl Amph	(1)			(+)	+
Cl ETS	2			+	+
(1) = main group/no subgroups F1/ F2 = subgroups (non-local)		origin: + = most probable (+) = less probable origin			

13. Origins and numbers of subgroups of different ware groups.
WM 0650 = wheel made (cooking vessels) 0650
WM 0610TZ-f = wheel made (cooking vessels) 0610 from Tall Zar'a — fine
WM Eggshell = wheel made eggshell
WM Choc Wh = wheel made chocolate on white
WM WP = wheel made white painted
Wh Sl (Cyprus) = white slipped (Cyprus)
WM Myc = wheel made mycenae
Cl Amph = classic amphora
Cl ETS = classic eastern terra sigillata

[14] From an archaeometric point of view, no difference between the two ware groups WM C R2B and WM C Buff can be noticed.

gins of the materials used and the technical history of pottery in the area.

Origins of the pottery (FIG. 13)
After having compared the chemical and mineralogical composition of the tall's pottery with that of clay and non-pottery clay products from Gadara and Tall Zar‘a, as well as with that of pottery from Gadara and other archaeological sites, the origins of the pottery could be divided into four categories: Local, regional, supra-regional and imported (see FIG. 8).

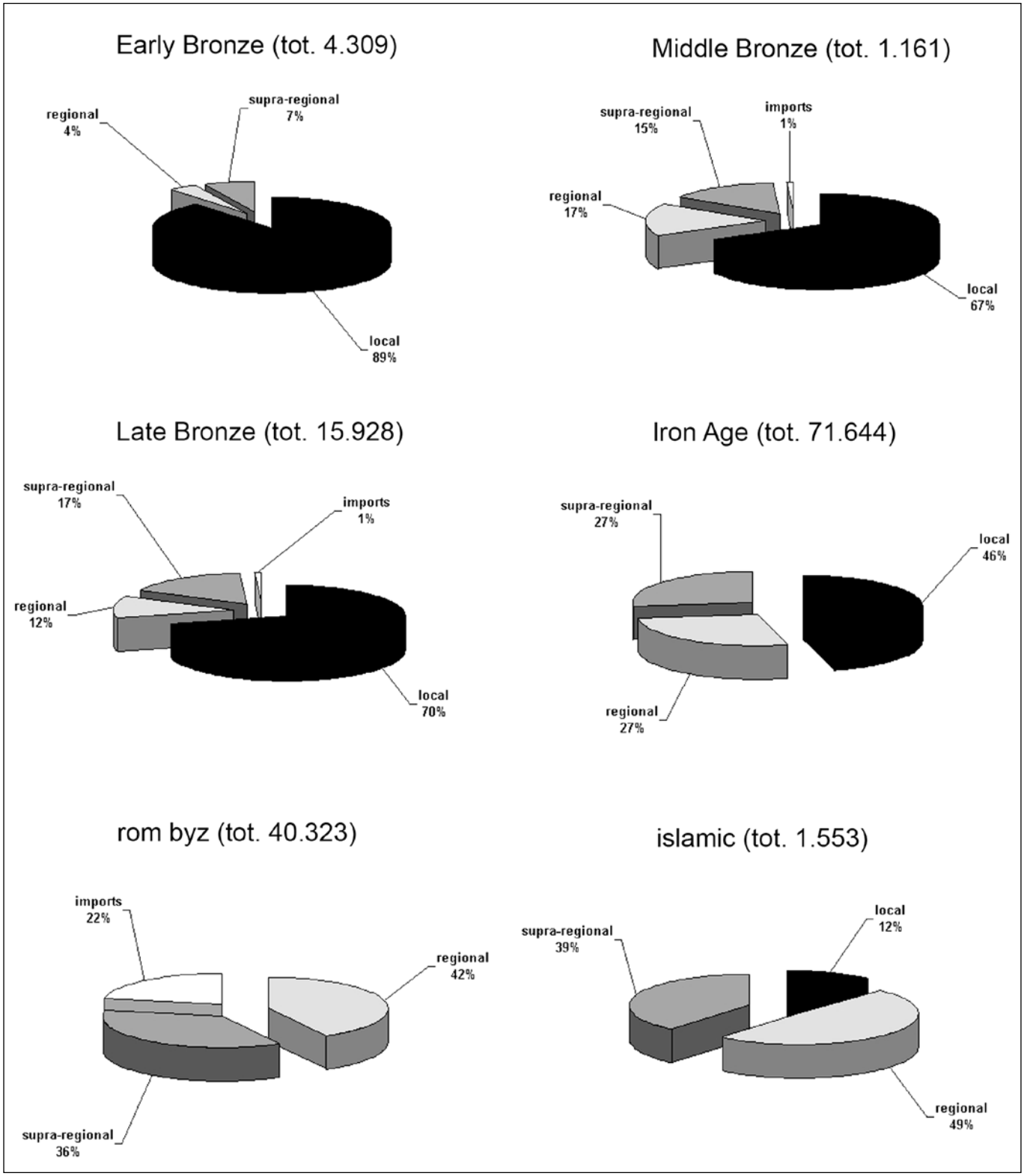
For instance, most of the cooking pot wares (WM 0630 and the two subgroups WM 0610-1 and WM 0610-2) were of local origin, whereas the cooking pots WM 0650 and two single pots of WM 0610 were of regional or supra-regional origin. ‘Local’ applies especially to WM 0610TZ-f, which is specific to the tall.

It became clear that five subgroups of wheel made common red to brown and wheel made common buff (WM C R2B/WM C Buff = R/B-groups) were of local origin (R/B-1 to R/B-5). These groups make up a large portion of the pottery from the tall and are basically utilitarian wares. On the other hand, from two further subgroups one is of regional origin (R/B-F1), while the other (R/B-F2) consists more of fine wares and probably comes from outside the immediate region (supra-regional).

There is no doubt that the more sophisticated pottery like wheel made slipped (Cyprus) (WM Sl [Cyprus]) and wheel made Mycenae (WM Myc) was imported, whereas most of the (likewise sophisticated) pottery of wheel made white painted (WM WP), wheel made chocolate and white (WM Choc Wh) was probably of supra-regional (or even imported) and wheel made eggshell (WM Eggshell) of supra-regional (or even regional) origin.

None of the investigated pottery from the Roman and Byzantine periods was locally (Tall Zar‘a) produced. Some of it was certainly imported. There was obviously no (or only few) pottery manufacture on the tall during the classical period.

- In the following, the results of the investigation concerning the origins and the dating of the pottery are briefly summarised (FIG. 14):
- In the Early Bronze Age there was mainly locally produced pottery — besides some regionally and even supra-regionally produced. Thus, it can be concluded that in this period the tall accommodated a settlement of some importance, which was involved in regional or even in supra-regional trade.
- In the Middle Bronze Age the regional and supra-regional portion of pottery clearly increased. With regard to the origins of the pottery, there is no great difference between the Middle Bronze and the Late Bronze Age. But especially in the Late Bronze Age the variety of pottery (number of ware groups) increased significantly and most of the regional/supra-regional (especially the fine wares) and nearly all of the imported wares derive from this era because the settlement on the tall experienced a period of prosperity. The imported pottery stems from (among other places) Mycenae and Cyprus. This confirms that in the Late Bronze Age (probably also already in the late Middle Bronze Age) the tall was involved in long-distance trade and as such it must apparently have been an important town.
- In Iron Age I prosperity decreased drastically and apparently the tall lost its status as an important town. The variety of pottery (number of ware groups) diminished and mainly common ware was found. But the settlement was not as modest as originally presumed (village of small-scale farming). Besides local pottery, an equal part of regional and supra-regional pottery was found (nearly the same distribution was found in Iron Age II). The transition to Iron Age II, in which the settlement again took on a more urban character and became more prosperous, can be seen in the appearance of fine wares and increasing number of additional ware groups. In this period, cooking pots were also subject of a very interesting development: The number of different types increased impressively and changes in pottery technology could be noticed.
- As already mentioned above, during the Roman and Byzantine periods the tall stood not only in the geographical, but also in the political, economic and cultural shadow of the nearby Decapolis city of Gadara. Local pottery nearly disappeared. Regional, supra-regional and imported wares made their way to the tall, either directly or via Gadara. The large amount of high quality and even imported pottery let Tall Zar‘a appear as an important subsidiary of Gadara.
- During the entire Islamic period, the tall remained sparsely settled and the amount of pottery found is small. It seems that the tall possessed a small local production again in some periods — but



14. Origins of tall's pottery in different eras.

only for utilitarian wares. The main part of the pottery found appears to be produced regionally and supra-regionally.

Development of Pottery Technology (FIG. 15) Generally, pottery consists of plastic (pc) and non-plastic (npc) components. The interaction of these

two types of components can be illustrated using the example of a wall:[15] The plastic components are like mortar — it can be moulded when wet, but during the drying and firing process its form can alter and has no outstanding strength by itself. The pc consists of minerals, which basically contain aluminium and silicon (e.g. feldspars). The npc are like the bricks, which gives its hold and strength to a wall; the most frequent non-plastic components are calcite and/or quartz.

One of the potters' skills was finding or mixing clays that had the right ratio of plastic to non-plastic components, so that it was both workable and durable. They also had to make sure the clay contained the different types of non-plastic components, e.g., quartz and calcite in the right concentration.[16]

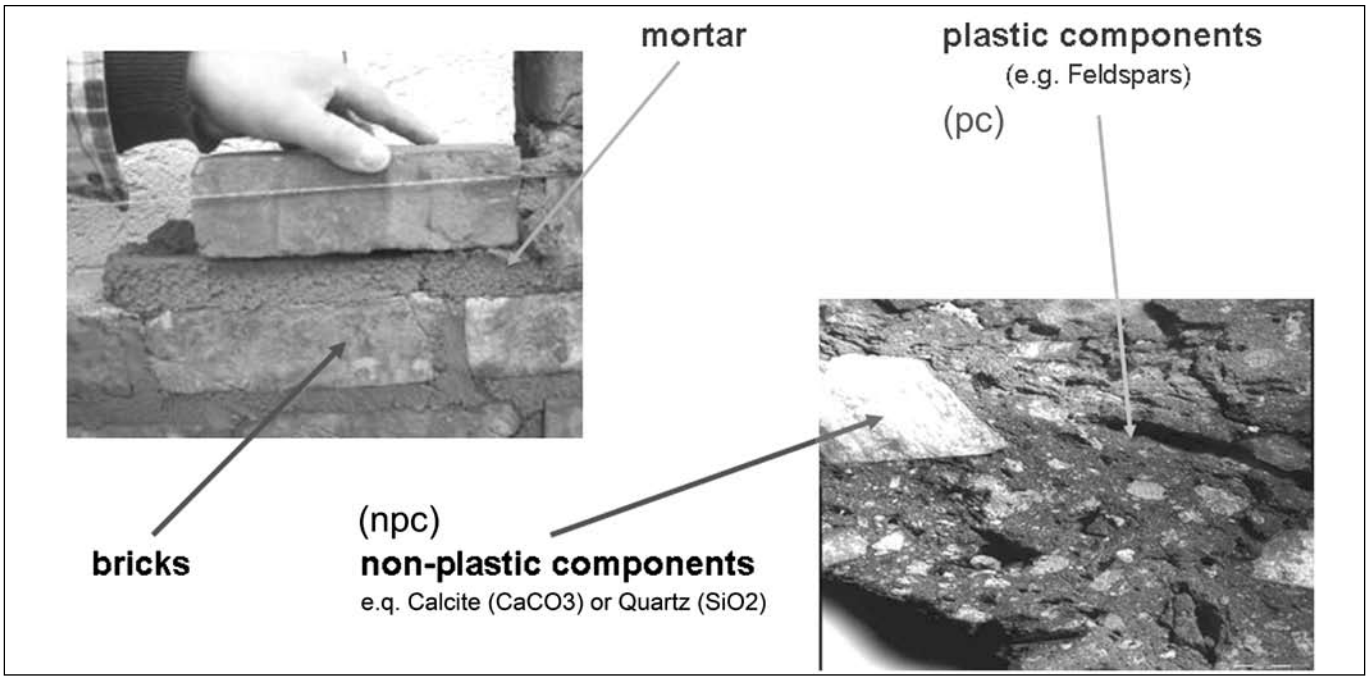
These skills were especially important for processing the cooking vessels, as they had to be very resistant (Vilders 1991/2: 69-81). They were used on a daily basis and were in so far subject to a great deal of strain. The walls of such vessels were put under great thermal (temperatures on the fireside of more than 1000°C and internal <100°C) and sometimes also under mechanical stress (when toppled or dropped).

The knowledge of the chemical and mineralogical composition makes it possible to estimate the proportion of the non-plastic (and plastic) components as well as the content of quartz and/or calcite.

The following diagram (FIG. 16) shows that the cooking pot ware developed during the Middle/Late Bronze (MB/LB) and Iron Age (IA) by reducing the part of non-plastic components (npc/triangles) from >60% to 40-45% and remaining at this level until the Roman Byzantine (rom-byz) period. Until the Iron Age I/II, the calcite content (rhombi) remained at a high level (approx. 48%) and the quartz content (rectangles) remained at a low level of 3-14%.

It seems that in all cooking pot wares of these periods of time, high calcite contents were a guarantee of good thermal behaviour and were — so to say — the trademark of the cooking vessels.[17]

The cooking pot wares WM 0610-1/WM 0610-2 as well as the cooking pot type WM 0610TZ-f, which was first discovered on the tall, appear to indicate a certain paradigm shift: The share of npc

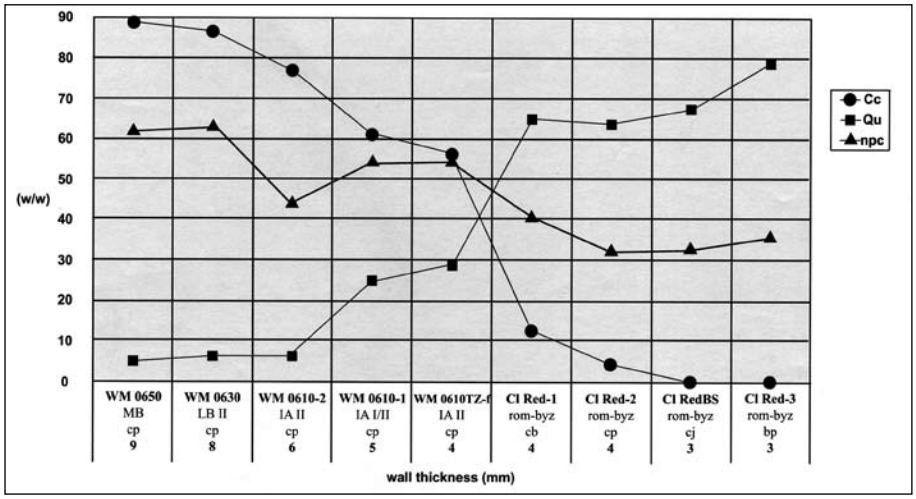


15. Plastic and non-plastic components in pottery.

[15] It is obvious that in a wall the ratio of pc and npc as well as the chemical and mineralogical composition is quite different to pottery.

[16] Beside that, potters intentionally add materials (temper) to the clay, for example to decrease the plasticity, to reduce shrinkage in drying, to increase the strength of the fired pottery, etc. The temper can be quartz, crushed rocks (e.g. calcite), organic materials (e.g. straw), etc.

[17] According to common theory, calcite, included in form of smaller or larger crystals (temper), has an optimal thermal expansion coefficient — like many other inclusions (Rice 1987: 228-230). A similar effect is apparently caused by mica which is present in most of the examined cooking pots from the tall in the form of the mineral illite.



16. Correlation between content of non-plastic components, calcite, quartz and wall thicknesses of cooking vessels in various eras.
npc = non-plastic components
Cc = Calcite
Qu = Quartz
cp = cooking pot
cb = cooking bowl
cj = cooking jar
bp = baking plate

shrinks to values of about <45% and the quartz content increases up to 16% at the expense of the calcite content of approx. 30%.

The real paradigm shift, however, was to occur in the Roman period. Some Roman classic red (Cl Red 1) cooking vessels still have a relatively high npc share (40%) but their quartz content is already high (25%) and accordingly the calcite content low (<5%). However, it can generally be said that in most of the Roman cooking vessels of classic red (Cl Red 2 + 3) and classic red black slipped (Cl Red BS) the non-plastic shares lie at approx. 30%, whereas quartz increases up to approx. 25% at the expense of calcite which is as low as 0%.

With both decreasing calcite (and the non-plastic part) and increasing quartz content, the walls of the vessels became thinner so that WM 0610TZ-f already reached a thickness of vessels' wall comparable to those of the Roman-Byzantine wares.[18] With thinner walls (and optimized composition) the cooking vessels became lighter and thermal properties improved.

The analyses of many firing and refiring experiments show that pottery with high calcite contents (WM 0610TZ-f/WM 0610/WM 0630/WM 0650; MB, LB, IA) was fired at temperatures between 550-700°C (Rice 1987: 98)[19] and that with high quartz contents like classic red and classic red black slipped (Cl Red and Cl Red BS/Roman-Byzantine) at temperatures up to 900°C, sometimes even more than 1000°C.

Altogether, it seems that over time better and better workable clays as well as improved processing techniques supported potters' creativity enormously (FIG. 17). This cannot only be shown by the decrease of the thickness of vessels' wall but also by an increasing number of types/shapes: From two during EB (HM Buff) to 23 during IA I/ II (WM 0610-1/WM 0610-2, inclusive WM 0610TZ-f).

Amazingly, the number of Roman-Byzantine cooking vessel types is lower than that of Iron Age I/II, although the Romans seemed to have the knowledge of optimal clay composition and of adequate (especially firing) technology at their disposal. The reason for this apparently lies in the fact that Romans' processing of common ware was already mechanised and standardized — and in the late Roman era already "industrialized". Therefore individual creativity (in form of small local workshops) in terms of various types was no longer needed (Homès-Fredericq and Franken 1986: 227f).

The development of the Roman cooking vessels cannot be seen in the context of the regional 'evolution' of Palestinian cooking pot wares as their origins lay in Europe (Italy) and more or less 'standardized' processing methods were exported to all parts of the Roman Empire. That is why imports from all parts of the Near East can be found (Schneider 2000: 525-536).

[18] According to the statistical analyses of the thickness of the vessels' wall of the cooking pot wares from the tall, the values in Figure 16 are the most frequent ones (Gauss distribution). Therefore it is obvious that there also exist thinner and thicker walls. The second most frequent thickness of WM 0610TZ-f is 3mm, whereas the Roman cooking vessels sometimes are thinner.

[19] Calcite ($CaCO_3$) decomposes at temperatures of >700°C forming CO_2 and CaO (lime). As lime is hygroscopic, it absorbs H_2O and forms 'quicklime' [$Ca(OH)_2$]. This process is accompanied by volume expansion, so that the surrounding clay body can be cracked if the lime particles are comparatively large ('lime popping').

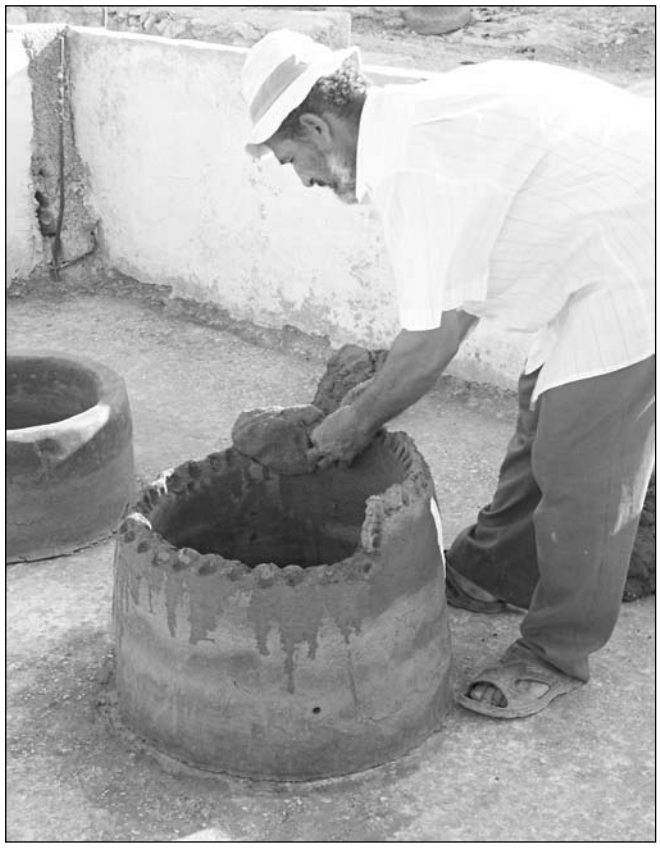
forms	dating	types (examples)	number
	HM Buff (EB)		2
	WM 0650 (MB)		2
	WM 0630 (MB/LB)		11
	WM 0610 (IA I/II)		5
	WM 0610 (IA II)		17
	WM 0610 TZ-f (IA II)		1
	Cl Red BS (rom byz)		8
	Cl Red (rom byz)		8

17. Development of types of cooking pot wares during various eras.

Such a ‘Roman’ development of cooking vessels could not take place on Tall Zar‘a (or on a regional basis) in the Iron Age or later because:
- Local clays have high calcite and relatively low quartz contents and
- High firing temperatures (>900°C) were necessary, but could not be achieved by using the kilns, which were common during Iron Age.

In summer 2006 it was demonstrated that the only pottery that could be formed and fired using the clays from Gadara and Tall Zar‘a was similar to the ancient local utilitarian wares (FIG. 18). Firing temperatures of up to 650-750°C were achieved with a Late Bronze Age-style kiln (Eiland 1998/1999: 69-83) that was built (solely) out of clay. The kiln worked perfectly and the yield of undamaged vessels was over 90%. The kiln failed to produce higher temperatures (>900°C) because with a 6 cm thick clay wall insulation was not sufficient; too much of the heat was emitted.

In order to achieve higher (‘Roman’) temperature (>900°C), the design of the kiln would have to be different, for example, by making the walls out of stones (and clay) to achieve an improved insulation and/or by adding one or two firing chambers



18. Building a prehistoric kiln (for pottery) and scrutinizing the burning process.

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The Conservation and Heritage Management of the Sanctuary of Lot at Dayr ʻAyn ʻAbāṭa

Introduction

From the outset of the Dayr ʻAyn ʻAbāṭa project in 1988, every effort has been made to involve the local community, emphasizing that they are key to the cultural heritage of the site. Hence it has been important to relate the archaeological discoveries to the realities of their own lives. This was particularly challenging because the Ghawr aṣ-Ṣāfī is a relatively under-developed region of Jordan and consequently its inhabitants are financially disadvantaged, with almost no education beyond secondary level. The most immediate and obvious benefit for them was the employment provided by the project. During the project's seasons from 1988 to 2003, a core of local labourers would return to work at Dayr ʻAyn ʻAbāṭa, which was of great financial advancement to them and their extended families. Eventually, with the establishment of a Department of Antiquities office on-site and the increasing demand for ancient sites to be guarded, some of these workmen were able to secure permanent jobs. The archaeological and conservation skills which some of the workers had acquired from on-site training further enhanced their employment opportunities.

With the completion of the archaeological excavation at the Sanctuary of Lot, its development as a site with tourism potential created further opportunities for the local community. The Ministry of Tourism and Antiquities of Jordan made substantial funds available to consolidate all the ancient structures re-build a long protective wall above the site and improve visitor accessibility by building a road and a stone stairway leading up to the site. The conservation of the mosaic pavements greatly contributed to the site's visual appeal. The feasibility of a protective shelter erected above the mosaics, which has been studied by Dr Zaki Aslan (ICCROM) and designed by architect Leen Fakhouri, has yet to be started.

In 2004, the Department of Antiquities of Jordan proposed that Dayr ʻAyn ʻAbāṭa should be entered on UNESCO's World Heritage List. Although the bid was unsuccessful, it demonstrated how valued the site had become nationally.

Finally in 2005, the building of a museum at Dayr ʻAyn ʻAbāṭa guaranteed the permanent protection of the site and ensured long-term employment benefits for the local community. Furthermore, the exhibiting of archaeological finds from the excavations will demonstrate, for the first time, the presence of a long and continuous history thereby creating a sense of heritage for the local population.

In addition to articles in *ADAJ*, *Liber Annus* and *Delteon*, a full and final publication of all the studies on Dayr ʻAyn ʻAbāṭa has been produced by the British Museum Press (Politis 2008).

History of the Project

Local inhabitants in the Ghawr aṣ-Ṣāfī region were well aware of the ancient ruins above ʻAyn ʻAbāṭa long before archaeologists investigated the area. In fact, they claimed that during the 1970 hostilities in Jordan, P.L.O. fighters used the ruins as a refuge from Israeli aerial bombardment, the physical evidence of which was clearly apparent on the site.

It was not until 1984 that Italian Impresit Construction Company employees mentioned the site to Walter Rast, Director of the Expedition to the Dead Sea Plain, and to Father Michele Piccirillo of the Franciscan Biblical Pontifical Institute, who took the first known photograph of the visible structures (Piccirillo 1990: 74-75). The Impresit Company was responsible for discovering many antiquities in the Ghawr aṣ-Ṣāfī area during excavations to install underground water irrigation pipes. It was also responsible for seriously damaging many of these

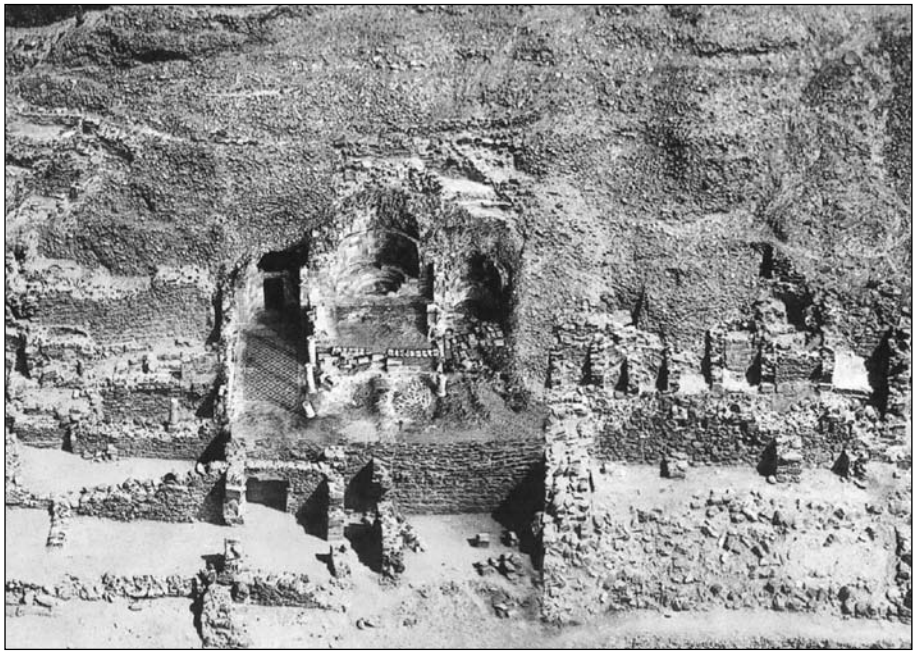
ancient sites and, worse, inadvertently creating a local market for the trade of antiquities (Politis 1994: 12-15, 1998: 627-634). This was clearly evident at ʻAyn ʻAbāṭa where bulldozer tracks are still visible halfway up the slope leading to the ancient site (FIG. 1). According to the locals, this was part of an effort to collect architectural stones, which had tumbled down the slope. There is also evidence that parts of the mosaic pavements were illicitly removed.

In 1985 Rast mentioned the existence of a site above ʻAyn ʻAbāṭa to Burton MacDonald, Director of the Southern Ghawrs and Northeast ʻArabah Archaeological Survey, who visited it on 26 October 1986 and was the first to officially report it, as SGNAS site number 46 (MacDonald 1988: 37, 1992: 253-254). After a second visit on 19 December 1986 with Rami Khouri, then Editor-in-Chief of the Jordan Times newspaper, they decided to name the site Dayr (Arabic for monastery) ʻAyn ʻAbāṭa since it seemed to them to be a monastic complex (Khouri 1988: 108). The following year, on 24 March, MacDonald introduced Dayr ʻAyn ʻAbāṭa to Konstantinos D. Politis and during this visit more surface finds were collected. Along with this evidence, the visible architectural remains strongly suggested the presence an early Byzantine monastery (MacDonald and Politis 1988: 292-291). The possibility that this was the long-sought "Sanctuary of Aghios Lot", depicted on the Mādabā mosaic map, inspired the author to plan an excavation project at the site.

In August 1987, permission was granted by the Department of Antiquities of Jordan for the author to conduct an initial topographical survey, with the assistance of the German Protestant Institute of Archaeological in ʻAmmān. This resulted in the first modern architectural plan of the site by Norbert Hagen (MacDonald and Politis 1988: 287, pl. 18). Although this was only a preliminary plan, it served as a basis for all future work at Dayr ʻAyn ʻAbāṭa.

On 12 July 1988, the author first met David Buckton, then Curator of Byzantine Antiquities in the Department of Medieval and Later Antiquities of the British Museum, who agreed to submit a rescue excavation proposal for Dayr ʻAyn ʻAbāṭa to the Trustees of the Museum. The proposed budget was approved and by November 1988 the author had assembled a small experienced team of archaeologists who began the first season of excavation with the approval of the Department of Antiquities of Jordan. This was followed by six more excavation seasons sponsored by the British Museum under continued licence from the Department, in 1990, 1991, 1992, 1994, 1995 and 1996 (FIG. 2). From 1993 to 2005 the British Museum sponsored the post-excavation studies of the excavations, with

1. 2004 satellite image of Dayr ʻAyn ʻAbāṭa showing ancient site, road and museum foundations (courtesy Google Earth).



2. Composite aerial view of the Sanctuary of Lot after excavation (photo A. Milton).

the objective of publishing the results in a British Museum Press monograph.

After a visit to Dayr ʻAyn ʻAbāṭa in 1993, the late Mr Nasri ʻAtalla, then Secretary-General of the Ministry of Tourism, initiated support from the Ministry for the consolidation and protection of the ancient structures, as well as the development of the site for tourism, which continued each year until 2001.

From 2001 to 2005 the European Centre for Byzantine and Post-Byzantine Monuments (Thessaloniki, Greece) funded the conservation of the mosaic pavements at the site, in collaboration with the Department of Antiquities of Jordan (Chlouveraki and Politis 2001). The work concentrated on the restoration and replacement of the Nave Mosaic and the lifting and the re-assembly of the fragments of the Diakonikon Mosaic (Chlouveraki 2008). Finally, on 4 April 2002, when this work was nearing completion, a blessing was conducted in the church by His Eminence Metropolitan Venedictos of Philadelphia under the patronage of Dr Fawwaz Al-Khraysheh, Director-General of Antiquities and the Ambassadors of Greece and the United Kingdom (FIG. 3).

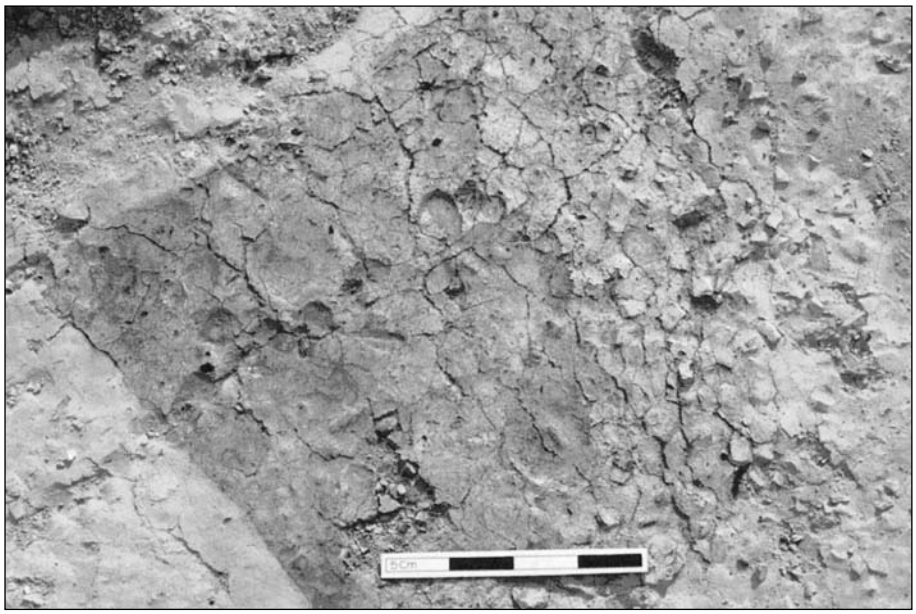
3. Ceremony blessing the Basilica of Lot, 4 April 2002 (photo D. Sully).

Conservation of Mosaics and Related Structures

Six mosaic pavements associated with the basilica church were uncovered at Dayr ʻAyn ʻAbāṭa (FIG. 4). The variable condition of the mosaics necessitated the use of diverse conservation treatments according to specific needs. A policy was developed by the conservators, in conjunction with the director of the project, to conserve the mosaics *in situ* where possible. In order to minimise further deterioration, various *in situ* interventions were required.

Between 1988 and 1991, on-site 'first aid' rescue treatments were conducted during excavation seasons when required. From 1993 to 1995, systematic *in situ* conservation of mosaics in the north aisle of the church and cave were carried out. The Nave Mosaic was lifted in 1994 in twenty-two sections employing the 'puzzle technique' and the underlying architectural structures were consolidated. During this process, several unprecedented and

4. Aerial view of Lot basilica with mosaics (photo: J. Taylor).



5. Mosaicists' foot prints in mortar beneath mosaic (photo S.Chouveraki).

well-preserved mosaicists' footprints were found in the mortar beneath the mosaic pavement. Smaller parts of the Chancel Mosaic, which were found to be unstable, also had to be removed (FIG. 5).

Between 1999 and 2003, the foundation and mosaic pavement in the Nave were reinstalled. Simultaneously, the excavation, cleaning, stabilisation, documentation, digital photographic restoration and storage of the very fragmented mosaic in the Diakonikon was also completed (FIG. 6).

The Nave Mosaic was successfully reinstalled in 2002, eight years after it had been removed (FIG. 7). The process was greatly aided by the enthusiasm and newly acquired skills of the locally-trained technicians, who are now able to work without supervision (they were most recently present at the discovery of a new mosaic pavement at Khirbat ash-Shaykh 'Īsā in Ghawr aṣ-Ṣāfī).

Conservation Objectives and Approaches 1994-2004

During this period, there was an examination and evaluation of the long-term effectiveness of the treatments. Various mortar samples and consolida-

6. Digital restoration of central section of Diakonikon Mosaic (photo S. Chlouveraki).

7. Reinstalling the Nave Mosaic, 3 March 2002 (photo K. D. Politis).

tion materials have been exposed to the site's environment and subsequently evaluated.

The training of local workmen on the technical aspects of conservation and maintenance has been one of the most important objectives of the project. After ten seasons of experience, four local workers are now capable of examining and evaluating the condition of mosaics and of carrying out small-scale stabilisation interventions.

Interaction with the local population and various cultural and educational organisations has resulted in a better understanding of the cultural significance of the site and its conservation and preservation requirements. Consequently the potential of damage due to vandalism, from which the site has suffered in the past, has been greatly reduced.

The project has offered both undergraduate and graduate students the opportunity of participating in the project in order to broaden their experience in the conservation of mosaics. This has been expanded upon by encouraging students to visit and work on other mosaic sites in Jordan.A conservation-based protective shelter has been designed, that takes into account the environmental parameters as well as the architectural and cultural significance of the site (Aslan 2001: 77-79). A special computer programme has been used to simulate heat transfer and air movements within the structure in order to verify the effectiveness of the proposed architectural solutions against the prevailing climatic conditions.

The introduction of digital multimedia into archaeological research has been an effective tool in the documentation, presentation, interpretation, on-line communication and publication of data. With this in mind, a CD ROM presenting the site and its conservation project has been made, which can be of use to Jordanian and foreign cultural and educational organisations as well as to the general public.In the process of lifting the Nave Mosaic, the *ambo* base had to be dismantled. Beneath this base, and sharing the same seven-sided profile, a section of an earlier mosaic pavement was found. It proved to be contemporary with the north aisle pavement. It was decided to remove and conserve this mosaic for museum exhibition, as it would inevitably be obscured by later restorations of the *ambo* and would consequently not be visible if left *in situ* (FIG. 8).

Heritage Management and Protection

When the excavation of Dayr ʻAyn ʻAbāṭa began, it was envisaged as a simple archaeological investigation. Due to the unexpected historic and religious significance of the site that was revealed during ten years of excavation, it became clear that it would become an important tourist attraction. The lifting, leveling and reinstallation of the Nave Mosaic, together with the *in situ* conservation of the remain-

8. Earlier mosaic under *ambo* after conservation (photo K. D. Politis).

ing pavements was carried out with this in mind. Planning and construction with visitors in mind also included the construction of a mosaic shelter, protective wall above the entire site, drainage system, road with car park, paved walkway from the car park to the monastery and site museum.

The foundation walls beneath the nave, which were exposed after the mosaic pavement was lifted in 1994, were consolidated with lime mortar and rebuilt on the western down-slope side of the basilica. A 1.5m. high metal fence was erected, completely enclosing all the mosaic pavements in the church and making them inaccessible without permission (FIG. 9). The conglomerate slope above the site was cleared of loose stones to protect the ancient ruins, as well as people below. A long protective wall with an adjacent water channel was also built above the entire site (FIG. 10). These works were funded with British and US aid agency assistance.

9. Mosaics at Basilica of Lot after conservation, enclosed by an iron fence (photo K. D. Politis).

10. Long protective wall and water channal above Lot's sanctuary (photo K.D. Politis).

The Ministry of Tourism and Antiquities funded the construction of the road leading up to the site and made a stairway of local stone, wooden steps and railings on the ancient site itself, as well as erecting temporary signs (FIGS. 11, 12, 13, 14). All these works were supervised by the author. Finally, a shelter needs to be erected as soon as possible over the basilica church, to protect the building and mosaic pavements from the harsh local environment. This will also help to ensure that the site will survive for future generations.

The Museum Idea and its Realisation

The idea of a museum at the lowest place on earth, in Ghawr aṣ-Ṣāfī, was originated by the author in 1996 while he was directing archaeological excavations in the area. This field work focused on the Sanctuary of Lot at Dayr ʻAyn ʻAbāṭa, which was proclaimed a holy *maqām* (site of Islam) by H.M. the late King Hussein in 1995, and was consequently placed under the protection of both the Ministry of Awqaf (religion) and Ministry of Tourism and Antiquities. This location encompasses an area of *ca*.

11. Site sign temporary (photo K. D. Politis).

12. Stone stairway laeding to Lot's sanctuary (photo K.D. Politis).

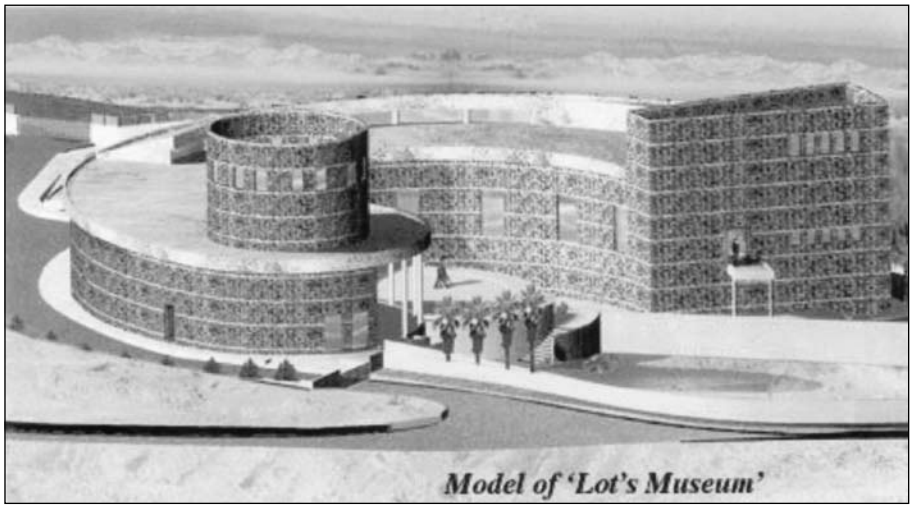
13. View of lowest place on earth and Dead Sea from Dayr ʻAyn ʻAbāṭa, February 2004 (photo G. A. Sakellariou).

14. Consolidating church and reservoir at Dayr ʻAyn ʻAbāṭa (photo K.D. Politis).

2,000 by 500 metres, located at the south-eastern end of the Dead Sea basin (FIG. 13), which at its lowest level is approximately 405 metres below sea level — the lowest place on the earth's surface. The site is also mid-way between ʻAmmān and Petra or ʻAqaba (about 1 1/2 hours in either direction) on the new highway — known as the 'Dream Road' — along the eastern shore of the Dead Sea.

In 1999, the Arab Potash Company donated JD 50,000 to the Ministry of Tourism and Antiquities for the construction of a museum. These funds were used to commission the design of the museum by George Hakim and Associates, which was completed by July 2004 (FIG. 15). The design was then carefully studied by the Department of Antiquities of Jordan and the author, after which some minor alterations were suggested. In 2004, JD 600,000 of initial funding was acquired from the Jordanian government by the Ministry of Tourism and Antiquities. After a public tender, the construction contract was awarded to the Amjad Madanat Contracting Firm; by the end of that year excavation of the foundations had begun (see FIG. 1).

Additional funds were allocated by the Minis-



15. Design of site museum (G. Hakim).

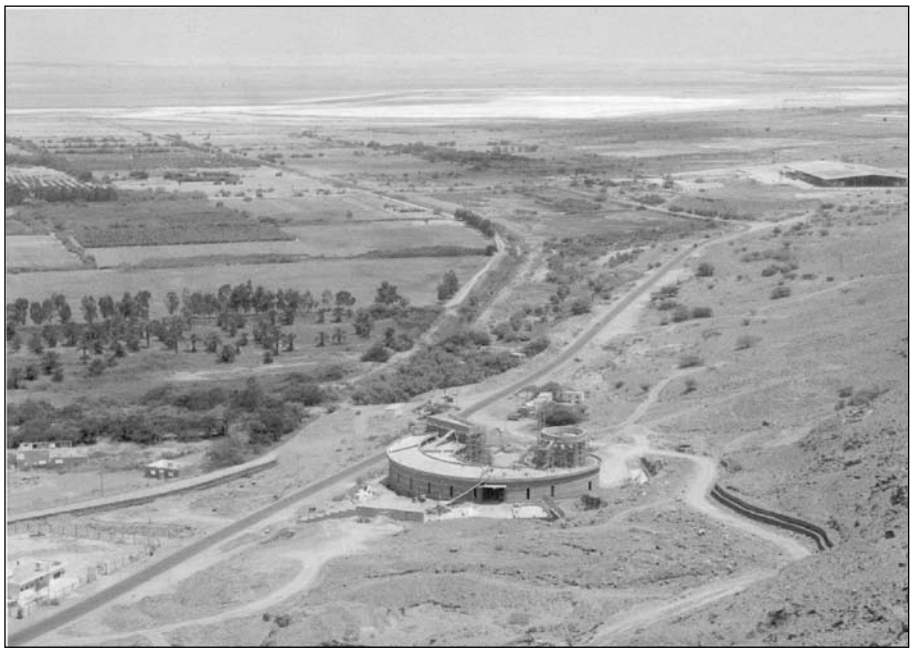
try of Tourism and Antiquities in 2006 in order to complete the project, which included terrace and road stabilisation to prevent water erosion, as well as an additional JD 250,000 for furnishings and equipment, bringing the cost of the building to JD 1,000,000 (FIG. 16).

In April 2007 a contract was signed between the Ministry of Tourism and Antiquities and the Hellenic Society for Near Eastern Studies to complete the interpretation and design of the exhibition of the museum by August 2008.

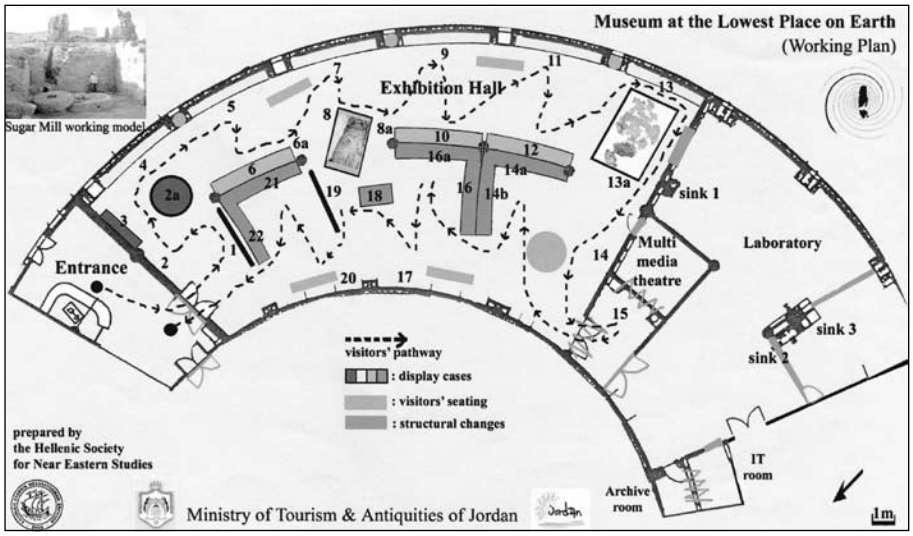
Museum Theme

The objective of the museum's exhibitions is to look beyond Dayr ʻAyn ʻAbāṭa itself, describing the various peoples who have lived and travelled along the south-eastern shores of the Dead Sea, an area referred to today as the Southern Ghors. The overall concept is therefore entitled *The Peopling of the Lowest Place on Earth*.

The environment and landscape of the region will be explained, in order to demonstrate how these factors directly affected human activities. Although a chronological framework will not be strictly adhered to, the exhibition will begin with the earliest human settlements and their development into urban centres, along with their associated economies. The material evidence of the ancient cultures of the region, including of their burial types, traditions and ethnicity, will be displayed and explained (FIG. 17).



16. View of the *Museum at the Lowest Place on Earth* from Dayr ʻAyn ʻAbāṭa, June 2006 (photo K. D. Politis).



17. Exhibition plan of the *Museum at the Lowest Place on Earth* (courtesy Hellenic Society for Near Eastern Studies).

Special exhibits will focus on the scientific analysis of archaeological finds, and the results will be related to anthropological studies of human habitation.

Finally, the museum will not only introduce the site of Dayr ʻAyn ʻAbāṭa, but will also place it in the context of other archaeological sites in the Southern Ghawrs region of Jordan, making it truly *The Museum at the Lowest Place on Earth*.

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Senior Curator, Virtual Museum in Jordan

Aida Naghawy

Jordan's Contribution to the on-Line 'Discover Islamic Art Project' *

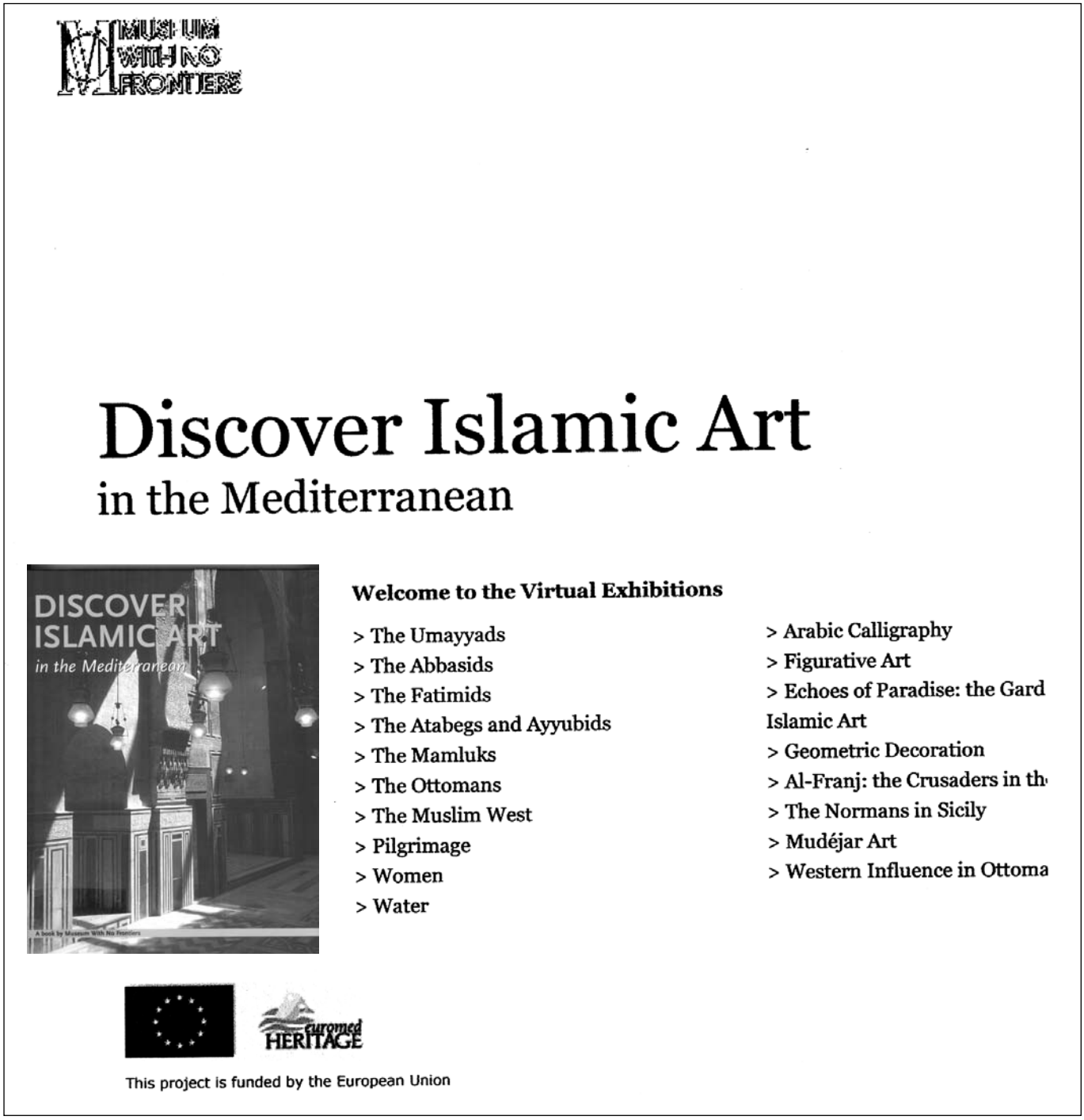
Jordan was chosen to represent Islamic Art in the Umayyad period in the Mediterranean countries, in collaboration with the Islamic Art Museum at the Pergamon Museum, Germany. A committee of curators from Department of Antiques of Jordan and experts from the Friends of Archaeology was appointed to select items from Jordanian museums, as well as monuments, for inclusion in the project.

Permanent Collection
35 sites and monuments and 50 artefacts from museums, all dating to Umayyad, Abbasid, Fatimid, Ayyubid, Mamluk and Ottoman periods were selected, mainly from the holdings of the Jordan Archaeological Museum at 'Ammān Citadel, but also from the Mādabā, 'Ajlūn, al-'Aqaba, Umm Qays and Sarāya Archaeological Museums, the Museum of Jordanian Heritage at Yarmouk University and the Jordan National Bank Numismatic Museum.

Virtual Exhibitions (FIG. 1)
Jordan contributed to three virtual exhibitions:

1- *The Umayyads* (FIG. 2)
Concentrating on the Umayyad dynasty, 36 museum items and 20 monuments were selected from Jordan to reflect Umayyad art and architecture. A smaller quanity of material was also contributed by institutions in Germany, Syria, Palestine, Egypt, Italy, Morocco, Turkey and the United Kingdom. Following bilateral meetings between experts from Jordan and Germany and discussion of all Umayyad items and monuments, five main themes were identified as representing and reflecting Umayyad art, which is a combination of decorative styles and motifs drawn from different artistic traditions. These themes are:
Administrative reform (FIG. 3): During the Caliphate of 'Abd al-Malik bin Marwan, a policy of administrative and political centralisation was initiated, including the urbanisation of the administration and the establishment of a standard Arabic system of coinage. One monument and ten objects from Jordan, Syria, Italy, Morocco, the United Kingdom and Turkey were selected to represent the administrative reforms of the Umayyad period. These objects are mainly coins, but also the lower part of statue, fresco paintings, a milestone and bronze weights.
Umayyad official patronage (FIG. 4)*:* This theme is introduced by architecture, including religious buildings (mosques) palaces and palatial administrative complexes. Eleven monuments from Palestine, Syria and Jordan represent this theme, including the Dome of the Rock, al-Aqsa mosque, Umayyad mosque in Damascus, al-Qasṭal minerat, audience hall at 'Ammān Citadel, Umm al-Walīd complex, desert palaces in Jordan (Qaṣr al-Ḥallābāt, Qaṣr al-Kharānah and Qaṣr al-Mushatta), Qaṣr al-Ḥayr al-Gharbī and Khirbat al-Mafjar in Palestine. Three museum objects were selected from Jordan and Germany, specifically a piece of carved limestone from al-Qasṭal, a lintel from Umm al-Walīd and the al-Mushatta façade.
Formation of Islamic Art (FIG. 5): Umayyad art is usually considered to be a continuation of the late Antique art of the fourth century AD, with a combination of Sassanian, Byzantine and Coptic elements. The fifteen objects which represent this theme are drawn from a wide range of material, including a marble frieze, the interior decoration of the Dome of the Rock, wooden panels, decorative

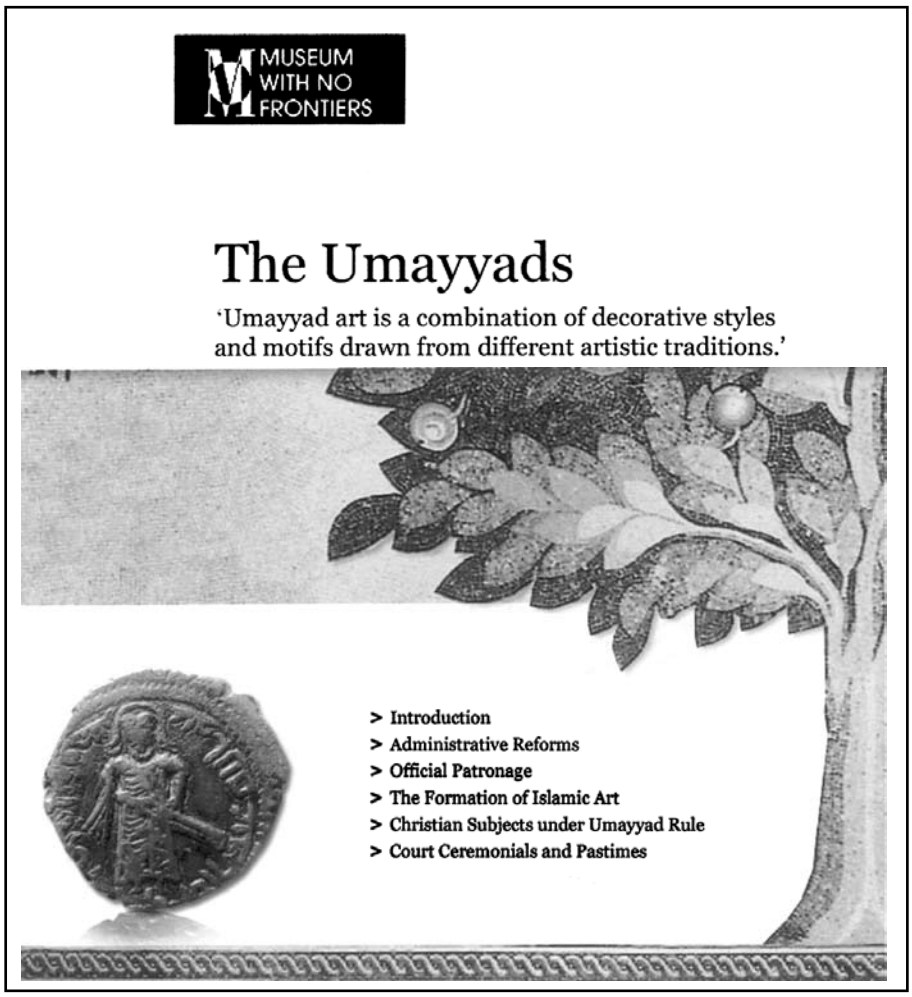
* http://www.discoverislamicart.org



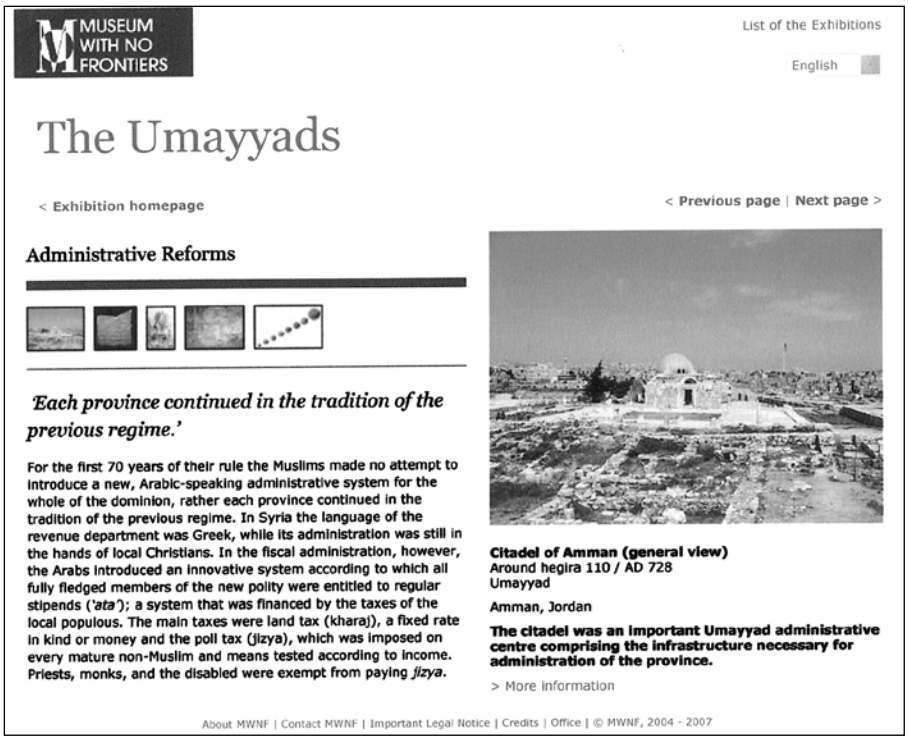
1. Virtual exhibitions.

stones, mosaic floors, fresco paintings, ivory, pottery and metal vessels. The selected objects were drawn from participating museums in Palestine, Syria, Germany, Jordan and Egypt.

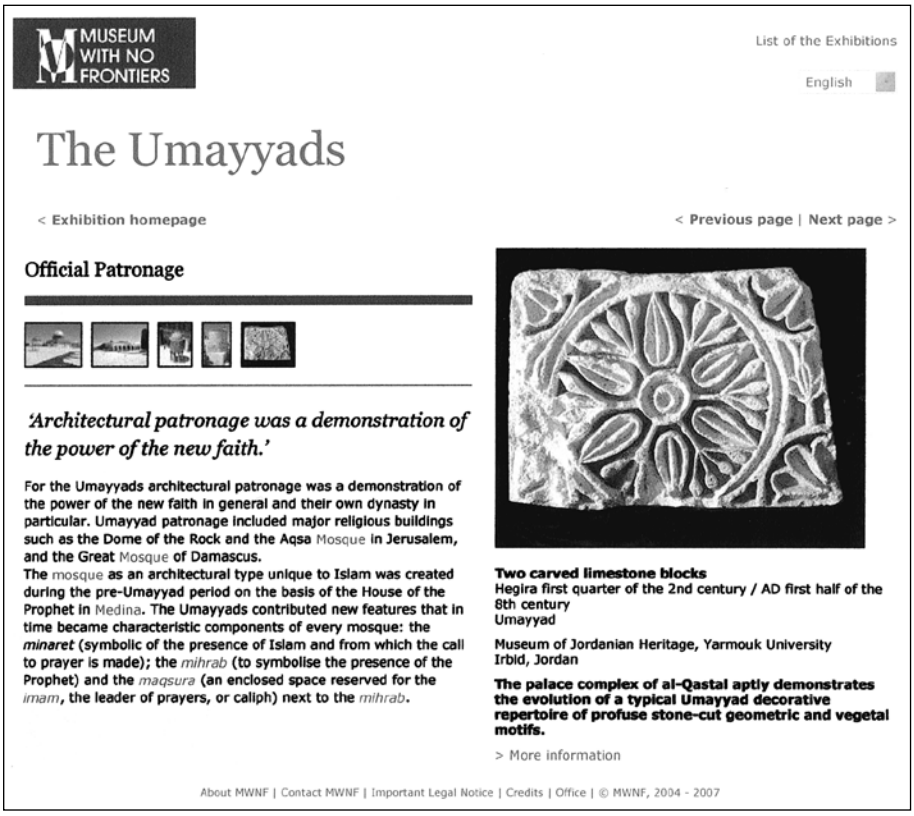
Christian subjects under Umayyad rule (FIG. 6): Christian buildings remained intact under the Islamic rule of the Umayyads: 46 existing churches continued in use and eight new ones were built and paved with mosaics. Influenced by the new socio-religious conditions, the artistic traditions of Christian communities underwent some change: representations of humans and animals were gradually replaced with crosses and geometric and floral motifs, which were created by the churches or at least under their supervision. On the other hand, Christian artisans continued to produce artifacts



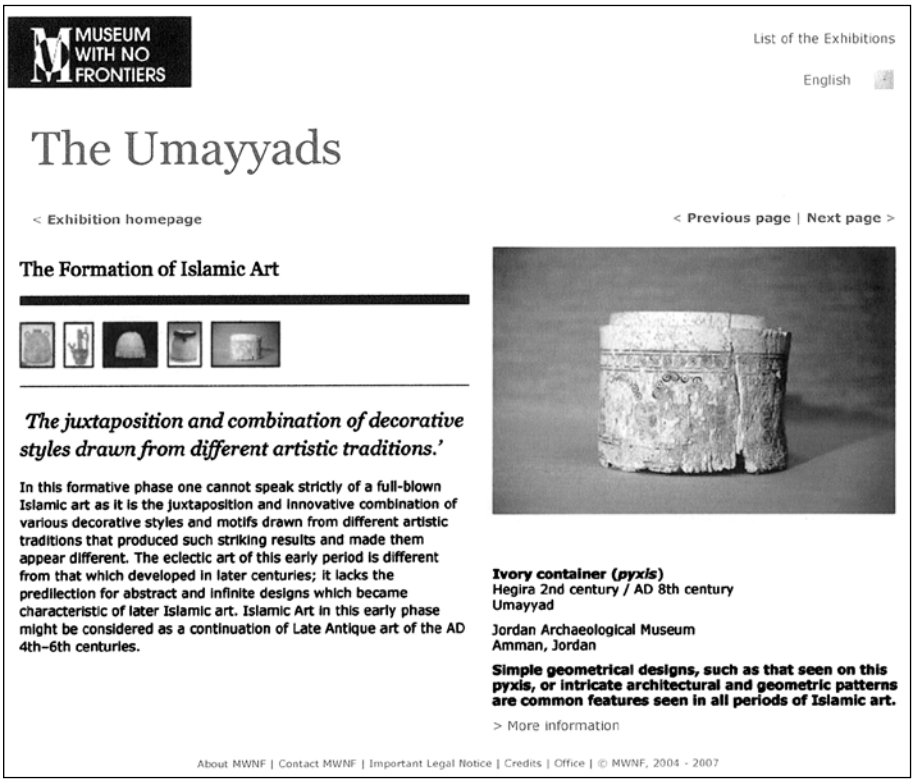
2. The Umayyads.



3. Administrative reform.

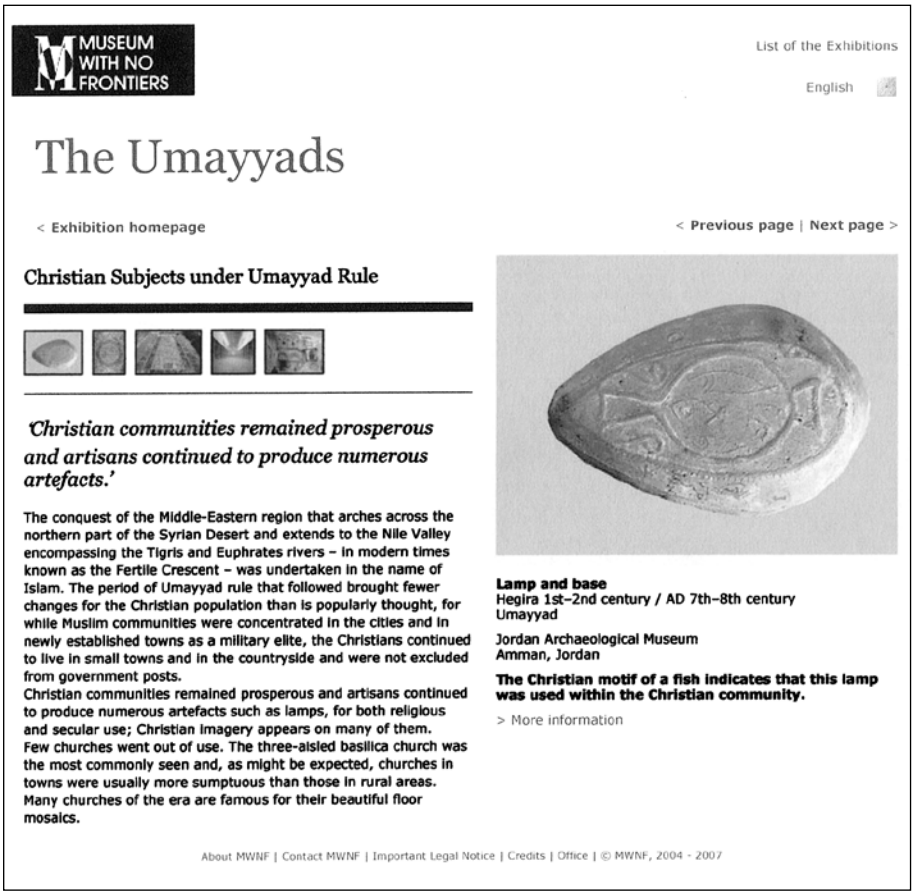


4. Umayyad official patronage.

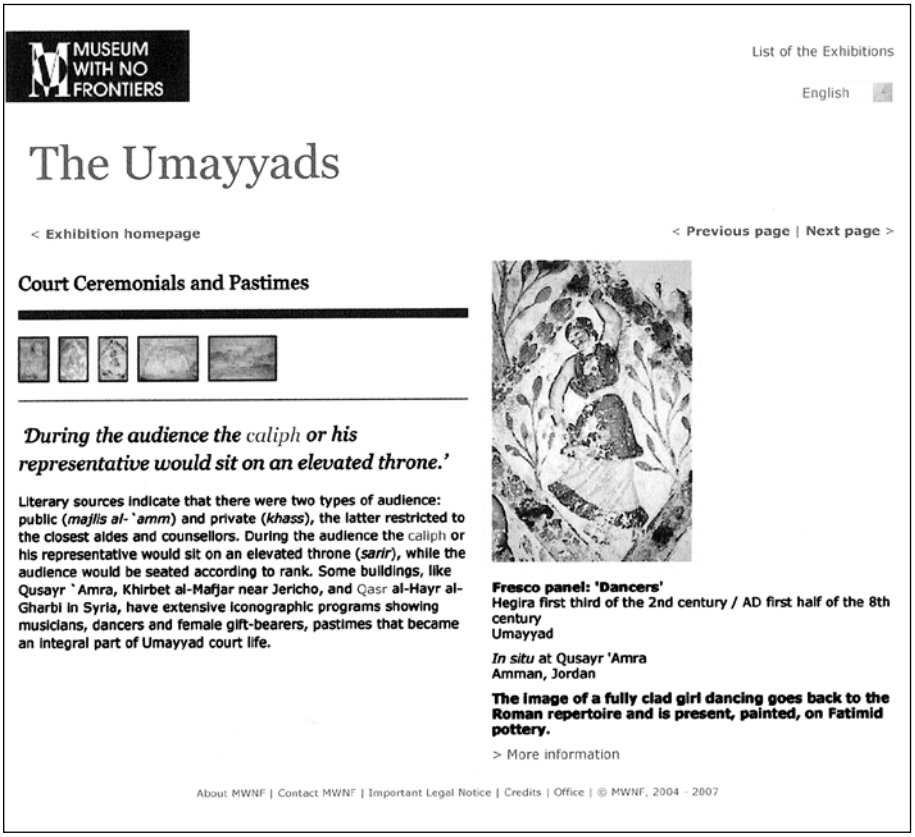


5. Formation of Islamic Art.

with Christian symbols, such as lamps and crosses, for religious and secular use. Six objects selected to represent this theme from Jordan include mosaic floors from Mādabā, Umm ar-Raṣāṣ, Masūḥ and Mā'īn, in addition to pottery lamps and bronze cross. Two churches from Palestine (the Church of Nativity and the Church of the Holy Sepulchre), along with a fresco fragment from Damascus, were



6. Christian subjects under Umayyad rule.



7. Umayyad court ceremony and pastimes.

also selected.

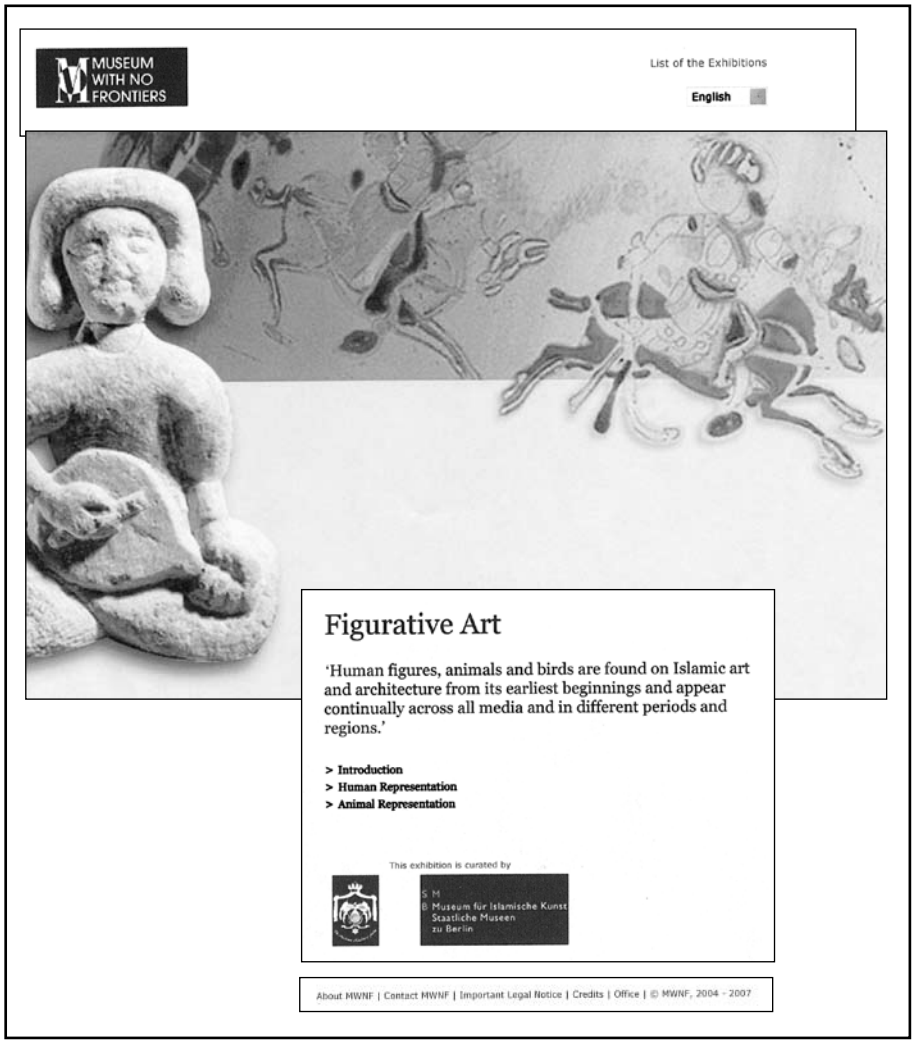
Umayyad court ceremony and pastimes (FIG. 7): The surviving Umayyad palaces, with their extensive decoration, along with literary sources, give us a good idea of court ceremony and pastimes. Fresco paintings in Umayyad palaces provide clear depictions of this subject, e.g. musicians, female dancers and hunting scenes. Twelve objects were selected to represent this theme: two floor paintings from Syria, six fresco paintings from Quṣayr ʻAmra and one from the Pergamon Museum in Germany, two female statues from Qaṣr al-Mushatta (one from ʻAmmān and the other from Germany) and a bronze brazier from al-Fudayn.

2- *Figurative Art* (FIG. 8)

Jordan and Germany were chosen to curate the multi-dynasty theme entitled 'Figurative Art'. The Committee went through all of the items, which had been selected from participating museums in order to determine sub-themes, which were categorised on the basis of style, namely human, animal and mythical representation. Representations of human figures, animals and birds are found in Islamic art and architecture from its very beginnings, and continued to be used across all media and in different periods and regions.

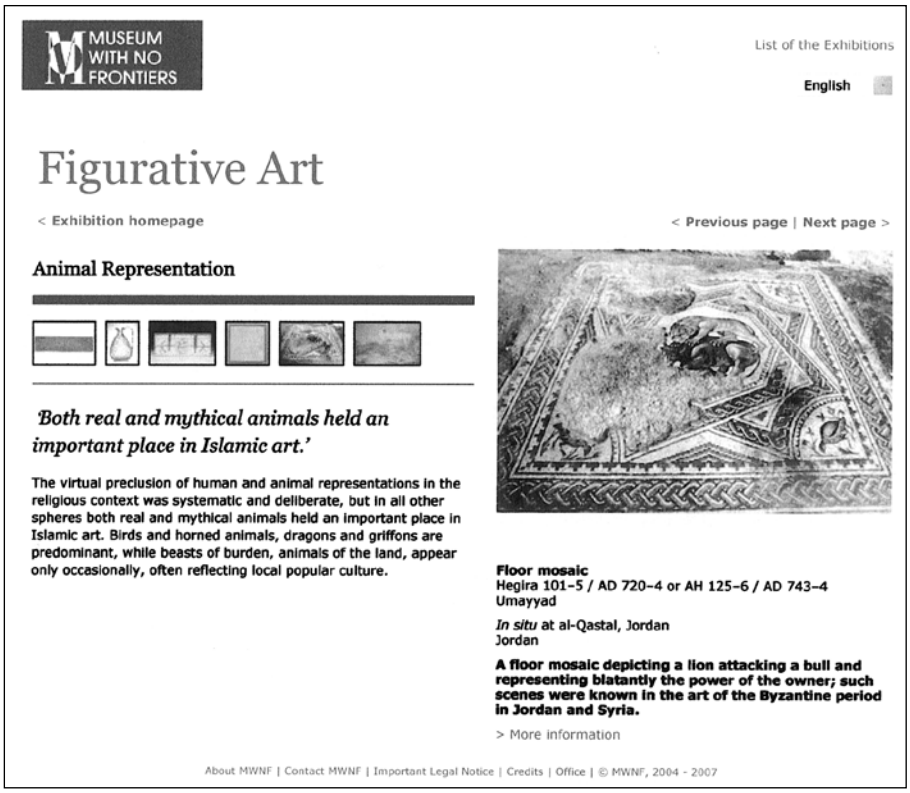
Human figures (FIG. 9): Human figures appears in a wide variety of forms, including paintings on wood and paper, fresco paintings, ceramics, relief works and sculptures, ivory caskets and metal works.

Animals (FIG. 10): Representations of animals, whether real or mythical, appear in a wide variety of forms and occupy an important place in Islamic art. Mythical animals, such as harpies, griffons, dragons and unicorns, were derived from traditional Greco-Roman themes. Eighteen items — wooden panels, rock-crystal vessels, ivory boxes, mosaic floors, fresco paintings, ceramics, metal works and



8. Figurative Art.

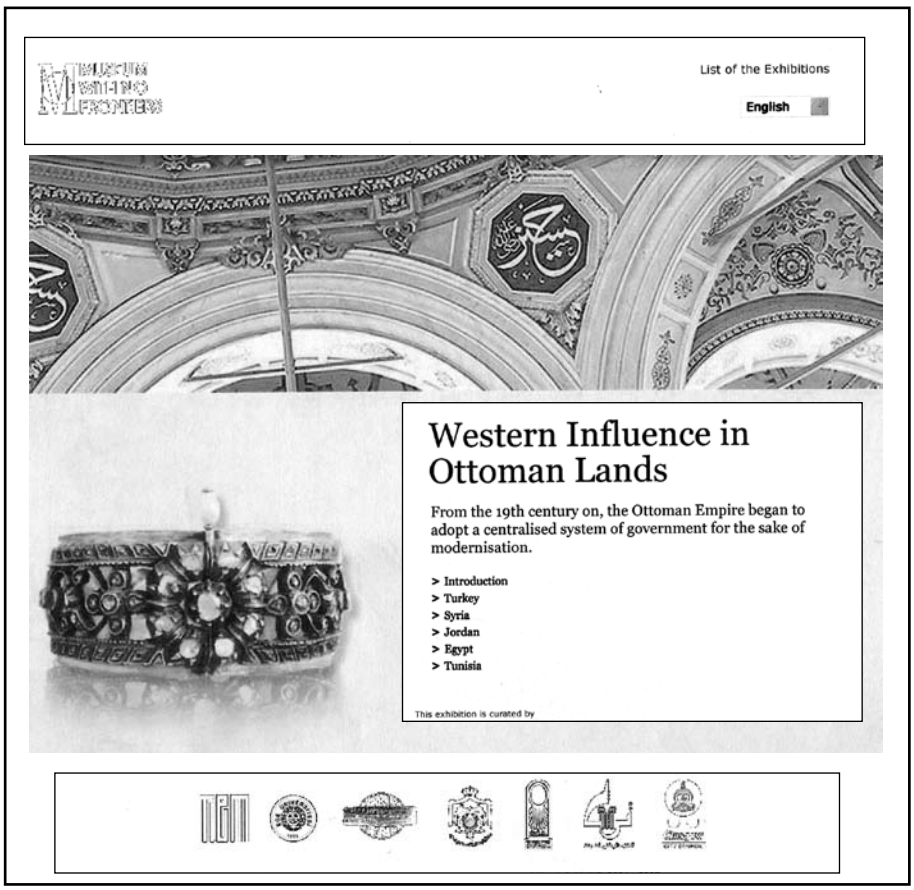
9. Human Representations.



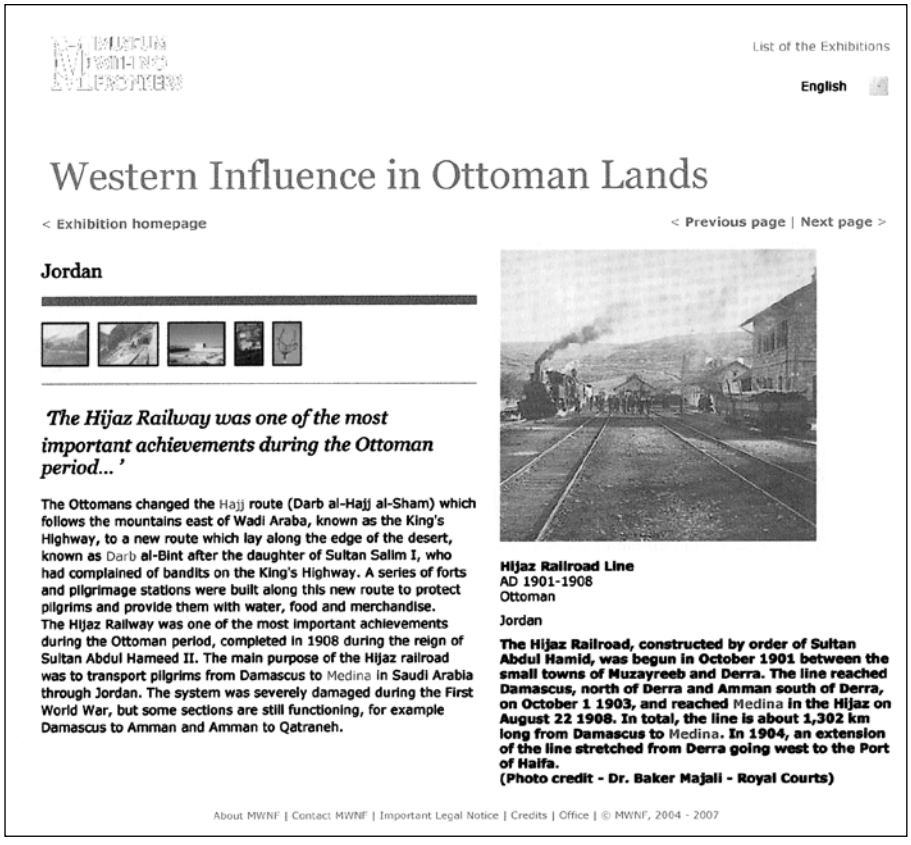
10. Animals Representations.

sculpture — represent this theme.

3- *Western Influence in Ottoman Lands* (FIG. 11)
Jordan also participated in this virtual exhibition; the 'History of Jordan during the Ottoman Period' focused on three main themes: administration, *hajj* forts and stations, and the Hejaz railway (FIG. 12). The administrative system of Jordan, especially during the second phase of Ottoman rule (1864-1918), was based around two main geographical districts:



11. Western Influence in Ottoman Lands.



12. Hejaz railway.

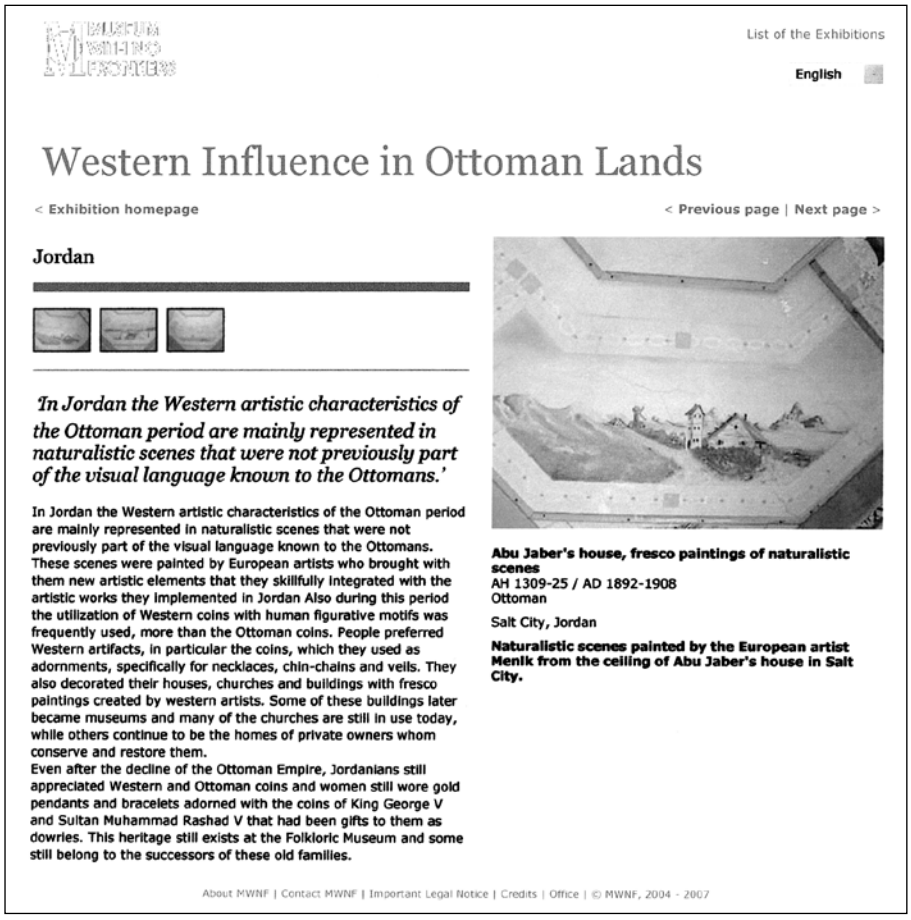
'Ajlūn and Irbid in the north, and as-Salṭ, al-Karak, Ma'ān and Aṭ-Ṭafīlah in the south. All were under the jurisdiction of the Governor of Syria.

The Hejaz railway was one of the most important achievements of the Ottoman period. A series of forts and pilgrimage stations were built along the new pilgrimage route, known as *Darb al-Bint*, which lies along the edge of the desert.

Objects from the Jordan Museum of Popular Tradition, such as the face veil (*burqu'*) and chin chain (*zenaq*), were selected to represent this theme. Finally, a residential building, the Abu Jaber house in as-Salṭ, is a fine example of the effect of western influence on Ottoman buildings in Jordan, with its paintings of natural scenes unknown in Ottoman lands done by a European artist, who signed his work (FIG. 13).

Conclusion

The on-line 'Discover Islamic Art' project provides a suitable forum for a dialogue between countries aimed at promoting the concepts of shared history, different interpretations, cultural diversity, mutual tolerance and respect for others. It therefore complements the co-oporation in economical and political spheres encouraged by the Barcelona process.



13. Jordan western artistic characteristics.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Vase
Hegira 869–97 / AD 1465-92, Nasrid
Moulded and applied earthenware with white glaze; pair with blue and brown lustre and manganese
The British Museum
London, England, United Kingdom
View description
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Great Britain, the U.S. and Paradigms of Modern Jordan's Ancient Identity

What follows represents a tiny fraction of a work in progress. The themes I discuss are part of a dissertation entitled, *Jordan First: Archaeology and Perceptions of National Identity in Jordan*, which seeks to frame archeological praxis and interpretation and the larger idea of Jordan's cultural heritage within an historical framework. While I am certainly dealing with Western, archaeologically-based notions of Jordan's identity, which are the focus of this paper, I am more interested in how late Ottoman and Western conceptions of Southeastern Bilād ash-Shām have been developed and fine-tuned over decades of Hashemite rule to serve as symbols of what Ernest Gellner called the "perennial" truth of the nation (Gellner 1983: 11). Ultimately my project addresses the degree to which the archaeological and cultural heritage has been a successful part of the cultivation of national identity in Jordan.

Trans-Atlantic Culture

There are three basic — and fairly obvious — contexts in which we can understand the meanings with which Jordan's cultural heritage has been imbued: the late Ottoman, the 19th and 20th century Western, and the Jordanian — including, of course, the interface between the regime and multiple levels of popular and intellectual understanding. This short paper touches upon only a few major themes regarding the Western context — notably the Anglo-American context. This is not to dismiss the scholarship of countless others of a variety of nationalities. But there are two reasons to focus on British and American archaeological endeavors. The first is simply political: Britain and America have historically been Jordan's two greatest foreign patrons. While this perspective naturally revolves around policy matters, British and American patronage has left indelible marks on the study, interpretation and preservation of Jordan's past, including antiquities legislation and the financing of cultural heritage projects.

The second reason to focus on the Anglo-American impact for the understanding of Jordan's past is due to British and American intellectual camaraderie, particularly in the formative years of archaeological exploration in Jordan and Palestine — dubbed the "biblical" or "Holy Land" — from the mid-19th century until the onset of the First World War. Studies addressing the confluence between Western archaeological research in the Holy Land and its multi-faceted impact on modern Middle Eastern states tend to view European and American involvement as separate, somewhat-related phenomena. They thus focus almost entirely on the connection between archaeological research and European empire or the connection between archaeology and American religiosity and missionary activity (Davis 2004; Silberman 1982). While these are important points of departure, our understanding of Holy Land archaeological exploration in its larger, trans-Atlantic, English-speaking social and intellectual context is incomplete. The indelible mark upon the study and interpretation of Jordan's past — and that of what we know today as the Middle East — was far more a result of collaborative intellectualism between English speakers across the Atlantic than European imperialism or American zealotry. British imperialism and American missionary endeavors were natural extensions of the much larger, overarching ethos of Protestantism in the liberal age.

Whether in overt religious expression or secular practice, Protestantism provided the framework for the ideal social order (Chadwick 1971). It was the basis of progressivism, industrialism, expansion-

ism, prestige and anti-Catholicism — in whatever forms these took. It was part and parcel of philosophy and science. British and American men of science, philosophy and religion were often one and the same. They took a wide variety of positions in contemporary controversies, such as those resulting from Charles Darwin's publications of *Origin of Species* in 1859 and *Descent of Man* in 1871, or those wrought by the German scholar Julius Wellhausen's synthesis of biblical criticism, *Prolegomena zur Geschichte Israels*, in 1882. Scholars crisscrossed the Atlantic to speak, enjoyed wide notoriety and readership in both places and corresponded and debated regularly with one another. Learned, scientific societies had counterparts in both places, and many shared both British and American members (Moore 1979: 6-9; Silberman 1982: 115).

Science and scientific method provided the rigor with which systematic study of the biblical Middle East began at mid-century, with the survey of American Congregationalists Edward Robinson and Eli Smith, and the Dead Sea voyage of American naval commander William Francis Lynch, who hoped one day to broaden international trade horizons for Virginia cotton and tobacco (Rook 1998). Based on Robinson and Smith's and Lynch's work, the most famous of the scientific societies dedicated to Holy Land research, the British Palestine Exploration Fund — henceforth PEF — took its purpose and design for fieldwork. The most ambitious of its projects, and that with the most lasting impact, was the Survey of Western Palestine, carried out with Royal Engineers and materiel seconded and on loan from the War Office between 1871-1877 (Silberman 1982; Moscrop 2000). The most important consequence of the Survey has been long understood: the PEF's map was the War Office's conception of Palestine, later the Mandate conception of Palestine and the borders of the State of Israel (Abu el-Haj 2001: 28; Silberman 1982: 123).

Correspondence between the PEF and its recently founded American cousin, the American Palestine Exploration Society, resulted in the simultaneous proposal of a Survey of Eastern Palestine, the border between Western and Eastern Palestine being the Jordan River. The Americans were thought to be especially well-suited for this task, and both volunteered themselves and were volunteered for the undertaking (Silberman 1982; Moscrop 2000; Cobbing 2005). While figuring prominently in the biblical narrative, the lands east of the Jordan River did not encompass the kingdoms of the biblical Jews and were therefore not as important as those on the western side of the river. The Eastern Survey established a means of intellectual and military cooperation with the Americans but enabled the British to retain the most prestigious part of the survey. With the exception of the Jordan River Valley and adjacent northeastern territories, the country east of the river, unlike the country west of the river, lacked the number of ancient tell sites upon which biblical archaeological inquiry had become based. An American presence, furthermore, would not be so threatening in close proximity to the French presence in northern Syria and the increasing German presence, at the behest of Istanbul, in southeastern Bilād ash-Shām.

Assigned to West Point graduate Lieutenant Edgar Steever, the Eastern Survey failed to meet British standards. American Holy Land experience was severely curtailed by the Civil War and its military was, by the 1870's, far less experienced than the British in work of such nature. The Eastern side of the Jordan River also posed the logistical difficulty of remaining largely off the beaten path of explorers and archaeologists and only lately had witnessed the interest in infrastructure and security that had come to Palestine west of the Jordan (Cobbing 2005). By the late 1870's the American Palestine Exploration Society and its Eastern Survey were defunct. A survey of the east was taken up by Western Survey veteran Claude Conder for the PEF in 1881-1882, until he finally roused enough suspicion for Istanbul to revoke his *firman* (Jacobson and Cobbing 2005).

Paradigms Emerge

In addition to providing at least one border for several modern Middle Eastern states, the Surveys of Western and Eastern Palestine had serious implications for our understanding of the cultural heritage of those states, as pointedly in Jordan as anywhere. In undertaking the Survey, the PEF sought a rigorous understanding of the natural and man-made landscape of the Hebrew Bible, a biblical geography based on the texts of the ancient Jewish people in whom Christians identify their origins and for whom 19th century Protestants expressed such affinity. As such, all other biblical peoples were consigned to the category of "others" — and defined primarily in terms of their interactions with the

ancient Jews as recorded in the Hebrew Bible — which were more often antagonistic or hostile than cordial. The lands in which those "others" lived likewise play supporting roles in the story of the Jews of the Old Testament, and were thus categorized in similar fashion as their peoples. Just as the Western Survey ultimately defined the borders of the State of Israel, the lands of nearly all of ancient Israel's non-Jewish neighbors are located today within the borders of modern Arab states.

While there is no reason to doubt that the non-Jewish peoples of the Hebrew bible also left texts behind, nothing thus far is known to exist on the scale of the Old Testament; there are only a handful of inscriptions and *ostraca*. Unlike our knowledge of the ancient Jewish scriptural writers, we lack the same historical narrative tradition of their non-Jewish neighbors. Our understanding of them is thus dependent on the archaeological record, which is often interpreted in light of what the writers of the Hebrew Bible had to say about them.

This situation becomes especially sticky for understanding the Iron Age in the Holy Land, particularly where Jordan, Occupied Palestine and the State of Israel are concerned. The Iron Age, defined roughly as 1200-550 BC, left behind the cultural heritage which has been most used and misused in making claims and counter-claims of the ancient past as a basis of national legitimacy. Because the largest and most comprehensive textual synthesis of this era is found in books comprising the Hebrew Bible, the Iron Age is most famously the era of David, the development of monotheism, Solomon's First Temple, the uniting of Israel and Judah, and subsequent splitting of that united Israelite monarchy on bad terms. By the end of the Iron Age, Jerusalem was lost and the Jewish people forced into exile in Babylon.

There were at least three Iron Age kingdoms in what is now the state of Jordan — Ammon, Moab and Edom — their borders and populations in flux with one another and with their neighbors in Israel and Judah. The geographical parameters of the PEF surveys were designed around Iron Age kingdoms described in the bible — Israel, Judah, Gilead, Ammon, Moab, Edom. Whether such toponyms existed before or during the Iron Age was irrelevant; the idea of the rise of kingdoms with definable geographic boundaries, linkable to an idea of ethnos, was something that 19th century Europeans and Americans could understand, given the world in which they lived. Visualizing the ancient ruins of the Holy Land in terms of their own contemporary realities gave Europeans and Americans "facts on the ground" that could be illuminated with the application of scientific method.

By this way, Palestine became divided into two distinct parts — *cisjordan* and *transjordan* — one was principally Jewish and the other was not. Christians worship the Israelite god Yahweh; not the Ammonite Milkom, the Moabite Kemosh or the Edomite Qawws. *Cisjordan* was thus important for understanding the roots of Western, Protestant civilization and *transjordan* was not. And despite decades of dedication of scholars of numerous nationalities working in Jordan, the Iron Age on the Western side of the river remains far better elucidated than that on the Eastern side.

The Western and Eastern Surveys of Palestine further more conceptualized Jordan in three distinctive parts — northern, central and southern — and its people into two categories — many desert and a few sown. And lacking the biblical significance of the western side of the river, important archaeological heritage of the eastern side naturally was understood to consist primarily of standing monumental sites, notably Jarash and Petra and some Crusader castles. These ideas have endured in popular conceptions of Jordan to this day. Jordanian Department of Statistics sources show that within Jordan's current borders, Petra and Jarash have consistently been Jordan's highest-grossing archaeological tourist attractions. This conceptualization of Jordan has, unfortunately, also endured in the minds of many scholars across disciplines, and whose interests lay within all epochs.

Mesha as Unsung Hero

The marginalization of Jordan's cultural heritage is certainly not the only reason why the Iron Age is sensitive. What is known of the Ammonites, Moabites and Edomites based on their own archaeological record and writing, demonstrates that the Iron Age peoples East and West of the Jordan River were linguistic and cultural brethren whose primary difference seems to be that each had its own deity and royal house. The cultural spheres of influence of these kingdoms obviously overlapped with one another. And whether we trust the Hebrew Bible's account of the relationship among the Iron Age kingdoms or question its motives, we don't have to suspend belief to trust scripture's assertion

that these kingdoms sometimes conquered parts of each other's territory. The most extensive Moabite text, known as the Mesha Stela or Moabite Stone, discovered for the Western world by a German missionary in1868, tells us that Mesha, king of Moab, of the city of Dhībān, by will of his god Kemosh, defeated Israel forever, thus conquering the King of Israel who, with the help of his god Yahweh, had oppressed Moab for generations (Pritchard 1969: 320-321).

Whether or not it would be desirable — and it's my position that it never is — Mesha's stela and the site of his capital at Dhībān offer a clear instance in which Jordan could make overt nationalist claims based on its Iron Age archaeological heritage in a similar fashion as has Israel. To do so would open a terrible can of worms. As one Jordanian epigraphy and archaeology professor noted in an interview, first it would have to be decided once and for all that Mesha was an Arab. Bragging about Mesha conquering the King of Israel would thus be bragging about one Arab conquering another. The king of Israel conquered by Mesha, after all, was of Omri's dynasty, and textual evidence has long suggested that Omri was an Arab. We will likely never know for certain what terms like "Arab", "Israel" and "Moab" actually meant to the Iron Age peoples who used them.

Conclusions

To remain within the scope of a brief conference paper, I must conclude by jumping ahead chronologically, almost a century. Thus I must leave a discussion of what I believe marks the transition from the era of archaeology as a series of campaigns to archaeology as a real professional discipline in the Middle East — the years immediately following the First World War — for another time. While a major leap in professionalization occurred between approximately 1918-1921, a first comprehensive synthesis of Jordan's archaeological heritage was a long time coming. American Reform Rabbi Nelson Glueck, student of William Foxwell Albright, father of American biblical archaeology, spent the entire 1930's surveying Transjordan in a way never imagined by the proponents of the Eastern Survey. Using a broad definition of biblical archaeology — the prehistoric through the historical epochs of all the biblical lands — his focus on the east side of the Jordan River was revolutionary. While numerous aspects of his paradigm have been revised by Jordanian, North American and European scholars, he was the first person to put Jordan's Iron Age kingdoms on equal footing with their Israelite contemporaries.

But there was one way in which they were, and largely remain, distinctively inferior. In the introduction to his 1971 *fetshscrift*, Glueck is quoted as describing the Ammonites, Moabites and Edomites thus, "They spoke the same language as the Judeans, perhaps with a slightly different accent; they used the same kind of script; they built the same kind of buildings; they wore the same kind of clothes; and they fashioned the same kind of pottery. Yet", he emphasizes, "they *disappeared*, while the Jewish people, physical and spiritual descendants of their Judean contemporaries, lived on to transmit the perennial tradition of Jewish religion (Sanders 1970: xx)". In his popular book, *The Other Side of the Jordan,* published in 1940 and 1970, Glueck ponders the "disappearance" of the Transjordanian Iron Age peoples and the "genius" in the enduring Abrahamic monotheism of a small minority of their Cisjordanian contemporaries (Glueck 1970: 126-127). Was it the will of God or an accident of history? While he himself never sought to answer this question directly, it is easy for us to read between the lines.

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Jordan During the Neolithic: A "Central Bus Station"?

The theme of this volume is "Crossing Jordan," focusing on the many peoples and cultures that have at one time or another passed through the Kingdom. One era to examine the ancient role that Jordan played in cross-cultural communication is with the Neolithic Period (ca. 9,700 to 4,900 cal. BC), because, in one sense, the modern world, good and bad, could never had occurred without the "Neolithic Revolution" paving the way for increasingly complex human behavior (McCarter 2007; Simmons 2007b). For most of our tenure on Earth, humans efficiently subsisted by hunting and gathering. Then, around 10,000 years ago, some people took a momentous first step towards a dramatically new way of life. They adopted farming, built villages, and became reliant on domesticated plants and animals: for the first time, humans had control over their food. Thus the Neolithic essentially set the stage for subsequent cultural development, freeing people from the daily quest for subsistence, and yet at the same time placing previously unknown demands upon them, and often having unintended consequences. Amongst the first places that this occurred was Jordan, which has rich record of Neolithic heritage.

While the Neolithic often is viewed as an economic stage, perhaps more significant were the social and ideological changes resulting from a dramatically different way to make a living. Not only was food as a commodity viewed differently, but by establishing settled and permanent villages, expanding human populations were now forced to interact with one another and their environments in ways never before witnessed. This had to have resulted in very different world views, and indeed, the late French pre-historian Jacques Cauvin (2000) went so far as to call the Neolithic "the birth of the gods". However one interprets the Neolithic, there is no denying that it forever changed the fabric of human life.

The Neolithic appears to have first occurred in the Near East. While earlier research sought to define a common geographic origin, contemporary views have made it clear that there is no one Near Eastern "core" center, but rather multiple regional zones of concurrent Neolithic activity (e.g., *Neolithics* 2003, 2004). The "Levantine Corridor", which contains numerous Neolithic sites and includes much of Jordan, contains some of the oldest settlements known. Jericho, of course, is one of the most prominent of these, providing an initial foundation for our knowledge of the Neolithic and the establishment of the basic chronological framework that is still used: that is, Pre-Pottery Neolithic A (PPNA), Pre-Pottery Neolithic B (PPNB), and Pottery Neolithic (Kenyon1957). Later research showed Jericho to be atypical, with settlements such as Bayða in southern Jordan perhaps being more representative. So, Jordan always has played a pivotal role in Neolithic research. One might even view the southern Levant as a sort of "central bus station", meaning that multitudes of people have always passed through this critical region. Certainly this analogy is appropriate for the Neolithic, where it is increasingly clear that life was far more complex than we originally thought. This contribution highlights some of the contributions that Jordan has contributed to our understanding of this tumultuous time.

It is in Jordan where we find some of the earliest permanent Neolithic settlements. During the PPNA, Jericho was one of the first villages established. After many years of wondering if the PPNA actually existed, or if Jericho was simply an anomaly, recent research throughout Jordan has documented several PPNA sites, ranging from villages such as

adh-Dhrā‘, “hamlets” like Wādī Faynān 16, and specialized sites, such as Iraq ad-Dubb cave (Simmons 2007b: 86-120). So, what is now modern Jordan has a long tradition of settled village life.

One aspect of the Neolithic is its rich ritual behavior, as reflected by architecture, artifacts, and human remains, particularly those from the PPNB. Documenting such behavior, however, is no easy task, and we must remember that during the Neolithic, the “sacred and the profane” may not have been as separate as they are in many modern contexts (Abay 2003: 21). Regardless, some of the most spectacular evidence for likely ritual behavior comes from the southern Levant. Architecturally, nothing matches the sheer magnitude of Jericho, particularly in its massive walls and tower. Whether or not these had primary ritual significance is debated (e.g., Ronen and Adler 2001), but certainly some degree of ritualistic behavior likely was associated with these features. Other sites have structures that also hint at ritual behavior. For example, at ‘Ayn Ghazāl, some buildings have been interpreted ritually, perhaps even including a temple (Rollefson 2000: 174-178). At smaller sites, such as Ghuwayr I, there also is evidence for ritual structures, such as an elaborate room containing several niches. Ghuwayr I also has an outdoor stairway and possible “theater” complex fronting an open plaza. While this may not have been oriented towards ritual behavior, it certainly demonstrates a considerable commitment to community activity (Simmons and Najjar 2006: 84-86). At nearby Ba‘ja, the site itself is so isolated as to suggest a ritual function (Gebel 2002: 126). Despite these elaborations, however, it is curious that thus far the Levant lacks the spectacular ritual architecture seen in Anatolia, at both settlements such as Çatalhöyük and specialized sites, such as Göbekli Tepe.

In addition to architecture, the Neolithic also contains abundant ritual artifacts, including masks, fine points, figurines, and unique human “statues”. Female figurines are common and play a major role in Cauvin’s (2000) ideologically-driven model, as do cattle, both in the form of bull figurines and actual cattle remains embedded within architectural features. He believed that these two entities embodied the “goddess and the bull”. Certainly among the most spectacular ritual artifacts are the magnificent statues from ‘Ayn Ghazāl. We can only guess as to their true function, but they, and their more poorly preserved counterparts at Jericho, clearly had considerable ritual significance (e.g., Schmandt-Besserat 1998).

Human remains also inform us about ritual, since death is so commonly associated with ideological beliefs. A common PPNB burial theme was to bury individuals beneath house floors and then to later decapitate them. Often, the skulls were then plastered in a human likeness, possibly for public display. The full significance of this is debated, but some sort of ancestor veneration likely is involved. Rarely were children treated specially, but at Ghuwayr I we recovered an infant beneath a floor with a single shell ornament — perhaps an earring or a necklace. On the floor above the burial were several offerings, including sheep skulls, a cow bucrania, and other artifacts. Clearly, this child was someone important, giving us a poignant look at Neolithic ritual (Simmons and Najjar 2006: 89-90). What seems clear is that the treatment of the dead during the PPNB was a complex, ritually-laden phenomenon associated with social memory (e.g., Kuijt 2001).

Another aspect of the Neolithic is the elaboration of social organization. This, again, is difficult to archaeologically document, but social hierarchies must have been complex. Large groups of people living in confined quarters had to develop new ways to deal with both daily interactions and long term planning, and much recent research attention is devoted to this (e.g., Kuijt 2000). While many believe that society was still organized in roughly egalitarian ways, it is likely that the need to control and monitor increased populations led to issues of power and prestige during this time. And yet, we see very little evidence for violence throughout the Near Eastern Neolithic. Perhaps increased leisure time and the development games alleviated some of the stress resulting from social crowding. It is clear that the emergence of craft specialists, resource allocators, and ritual practitioners occurred during the Neolithic. Curiously, however, there is little burial evidence for actual status differentiation. Perhaps during this time when humans were still experimenting with communal living, they sought to achieve a balance between equality and social status.

A phenomenon that seems concentrated in Jordan was the development of “mega-sites” during the PPNB (Beinert, Gebel and Neef 2004; Simmons 2007b: 175-197). Starting with ‘Ayn Ghazāl in the early 1980s, a series of absolutely huge settlements

are now documented. These dwarf even Jericho, often covering 15 or more acres. While some were occupied into the Pottery Neolithic, most were abandoned, and a settlement pattern of smaller villages increasingly reliant on agropastoralism came to characterize much of the subsequent Pottery Neolithic in the southern Levant. Understanding these mega-sites and their role within a wider society has re-written what we know of the Neolithic.

We also now know that the Neolithic encompassed a much wider "world" than previously believed and that trade was important. Imported goods, like obsidian, occur at many Jordanian sites. Given recent discoveries extending the early Neolithic as far as Cyprus (Peltenberg and Wasse 2004), it seems evident that Neolithic peoples throughout the Near East had consistent contact with one another. Given this, it is clear that "crossing Jordan" has a long history, extending at least back to the Neolithic. Thus, given the major role that Jordan played and the likely transmission of both ideas and actual populations, the concept of a Neolithic "central bus station" is reinforced.

Related to this, another elusive aspect of the Neolithic relates to defining ethnicity and boundaries, difficult tasks even in the modern world. But, it is probable that ethnically distinctive, perhaps even "tribal", territories emerged during the Neolithic. It certainly is clear that there is no single "Neolithic" culture; far more likely are interaction spheres composed of people with distinct ethnic identities who shared a common heritage (e.g., Kozlowski and Aurenche 2006). One can only wonder if some of the rich ethnic diversity that we see today in the modern Near East had its origins during the Neolithic.

Thus, it is obvious that substantial, and irreversible, accomplishments occurred during the Neolithic. And yet, despite all of the positive contributions, there also were negative consequences. One of these was the acceleration of ecological impacts. Indeed, we have argued that at some of the mega-sites, the residents literally ate themselves out of their environments by over farming and overgrazing (Rollefson 1996; Simmons *et al.* 1988). And yet, the resilience of the Neolithic also is evident: an adaptive strategy likely occurred at these sites that set the stage for the traditional division of Near Eastern society into "the desert and the sown": that is, during the Neolithic pastoral economies probably took emerged in tandem with that of settled villages (e.g., Köhler-Rollefson and Rollefson 1990).

Some have painted a fairly depressing picture of Neolithic life. A recent characterization is rather grim:

"…settlements…were undoubtedly …polluted with…rotting organic matter and human waste... Flies and mosquitoes transmit …infections… rats bring hemorrhagic fevers; wild dogs and other carnivores carry rabies; and wild cats bring toxoplasmosis…Clearing...the land...may have encouraged…tetanus, malaria, and…Stock rearing may have been another major source of human disease ...tuberculosis ….The Neolithic was certainly not a Garden of Eden but a world where…people knew that they were forever confronted with the Four HorsemenBdeath, famine, disease, and the malice of other men" (Akkermans and Schwartz 2003: 78-79).

I suspect this is an over-wrought picture. For example, development of so-called "crowd diseases" may have had their origins in the Neolithic (e.g., Diamond 2002), but their massive viral transmission likely occurred after the Neolithic, when population levels of both humans and animals were magnified. There is little question, however, that the Neolithic took a toll on human health, although, again, the data are somewhat equivocal. For example, diseases may have increased with sedentism and agriculture, but people also may have lived longer, if less healthy, lives (e.g., Eshed *et al.* 2004; Peterson 2002; Smith 1998: 68).

After all, if life was as dismal as some characterizations, it seems unlikely that village society would have persevered. Given the duration of many Neolithic villages, the advantages of living in them must have outweighed the disadvantages. And, while it is tempting to see the Neolithic's end as a failure brought about by growing populations, humanly induced ecological deterioration, and climatic change, it also is important to remember that settlements such as 'Ayn Ghazāl were occupied for over 2,000 years. By modern estimates, that is an impressive track record, rather than a collapse!

While necessarily abbreviated, this essay has shown that Jordan has much to contribute to a more thorough comprehensive of the tumultuous events that defined the Neolithic. We still have many unanswered questions, but contemporary research has now pushed beyond simple "where, when, and why" questions. By way of closing, what are new perspectives that contemporary and future research

should take in examining this period? While there are several answers to this question, the following seem particularly important (Simmons 2007b: 264-279).

Research on the Neolithic has gone through a series of theoretical paradigms. Initial studies focused on establishing base-line data, providing a chronological and cultural historic record. Subsequent research was more problem oriented, usually focusing on issues such as finding the origins of agriculture or the oldest Neolithic settlement. Theory is now more refined, and several processual perspectives characterize much contemporary research. These include middle-range critical theoretical examinations of site structure, mortuary and ritual practices, regional interaction, household composition, gender, and artifact analyses. While the social realm is receiving much attention, there also is a continuing emphasis on clarifying human and environmental interactions. Much of this has to do with achieving a better understanding of climatic changes and geomorphic positioning on the landscape. There are, of course, still more prosaic but necessary studies being conducted on the Neolithic as well. These relate to the detailed analysis of both chipped and ground stone, as well as architectural patterning.

The theoretical directions of much research have increasingly incorporated post-processual orientations as well, focusing on social agency and symbolic issues. As one example, consider Cauvin=s (2000) view of the Neolithic as nothing less than the birth of religion. The sort of heavily post-processual research perhaps best characterized by the re-excavations at Çatalhöyük (e.g., Hodder 2006), however, are generally not found in Jordanian Neolithic studies.

Coupled with increased theoretical sophistication, methodological improvements have greatly enhanced our understanding of the Neolithic. These involve more careful excavation and data recovery procedures, and refinements in other disciplines that confirm the need for true interdisciplinary collaboration. As but one example, geomorphic analyses allow regional models and environmental reconstructions, resulting in a better comprehension of the Neolithic and how land/use practices have altered the environment. Other applications that have benefited archaeology include more precision in absolute dating, residue analysis from ground stone, and genetic studies of both floral and faunal remains. Combined, these provide powerful tools for better interpreting the Neolithic and will direct research trends for years to come.

Finally, I would like to mention the issue of preservation, conservation, and tourism. Protecting the fragile heritage that Neolithic peoples left to the modern world has not received much attention. Resources are limited for conservation and preservation, and funds frequently are directed towards the more impressive ruins of later antiquity. However, the Neolithic badly needs preservation. Perhaps the most notable success in this perspective has been Çatalhöyük, where public presentation is integrated into the project. In Jordan, attempts at both preservation and site presentation also have been made at a few sites, but on a much more limited scope. Tourism is one avenue for increasing preservation funding. For example, on a modest scale, we have constructed a simple archaeological park at Ghuwayr I (Simmons 2007a), and plans are underway for a regionally based Neolithic Heritage Trails program. Likewise, at Bayða, replicas of Neolithic dwellings and simple signage (Dennis 2003) enhance visitors' experiences at the site. All of this ties in to increased eco-tourism. But, more needs to be done.

In conclusion, without the security of village life and surplus provided by food production during the Neolithic, subsequent cultural achievements, reflected by the development of the spectacular urban cultures of the Near East, and ultimately culminating in contemporary society, would simply never have occurred. Thus, in contemplating the Neolithic, we must achieve a balance. This requires realizing that it set in motion some of humanity's most spectacular achievements, while at the same time understanding that much of the pollution and over-crowding in contemporary society also was an ultimate Neolithic consequence. Extracting the nuances of the Neolithic is difficult — unsealing the secrets of these past ancestors is no easy task. However, continued and innovative research will yield answers to many elusive questions during this tumultuous era. This is why it is an exciting time to be conducting research on this milestone in human history. Only the future will tell if this ultimately was a successful undertaking, but one thing is certain: we would not be here today without the Neolithic.

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Surprises at the Petra Great Temple: A Retrospective

Introduction

Chiseled out of reddish Nubian sandstone, the physical landscape of Petra evokes Nabataean times. Abandoned tombs and stone rubble covering the flanks of the wadis that were once residences or public buildings, are hidden in the great rift mountains overlooking the Wādī ʻArabah — they all speak eloquently of the bustling city of Petra that used to be and is now a spectacular architectural wonder, and recently elected one of the Wonders of the Ancient World. The city's consciousness has not escaped the archaeologist and Petra enjoys a high place on the agenda of Jordanian archaeology. A host of familiar icons, including the al-Khazna, (the Treasury) ad-Dayr (the Monastery), the Sīq (the breathtaking entry to the city), the 800 plus tomb complexes, not to mention Indiana Jones — have given the Petraean capital a tremendous sense of identity. A sense of place matters. Petra is a place people deeply care about, and the Brown University excavations of the Great Temple, literally, for 15 years have grounded our team here since 1993.

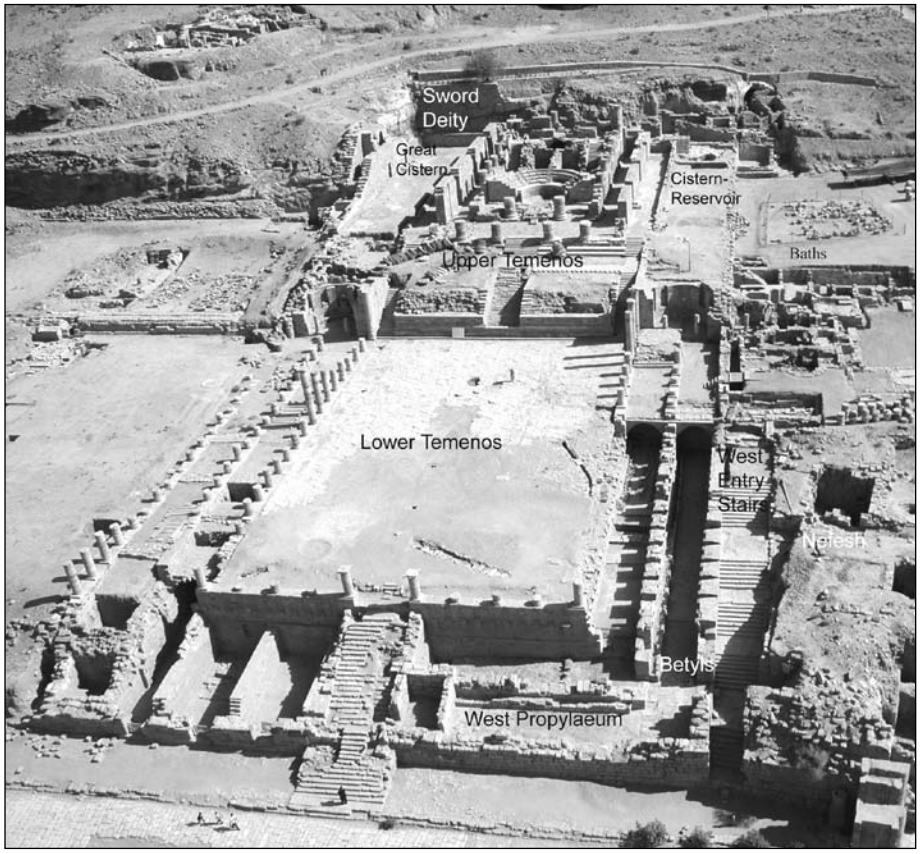
From its earliest days Petra has claimed a central role in Nabataean culture. From architecture to religion, trade to water systems, Petra is our primary source for Nabataean art, religions and culture. Petra has been populated for approximately 10,000 years by diverse peoples, such as the Edomites from the eighth to the mid-seventh centuries BC. Independently the Nabataean Dynasty arose to prominence in the second century BC under Aretas III Philhellene (84-62BC). And it was during the lengthy rule of Aretas IV, "Aretas, king of the Nabataeans, the lover of his people", (9BC-40AD) that we find the zenith of Petra. His long pacific reign plunged Petra into one of the most creative political eras in the 300 or so years of Nabataean history. In 106AD Petra was annexed by Rome, and in 130AD Hadrian named the site after himself, *Petra Hadriane*, giving the city an imperial imprint.

Shortly after we began our research at the Petra Great Temple, we were astonished by a myriad of unexpected discoveries. This submission summarizes three broad revelations particular to Great Temple, specifically, 1) Water and wastewater management; 2) Monumental architecture, and 3) Aniconic sculpture. For all its variety, Nabataean culture is beginning to gain coherence in its economic history, in its political boundaries, and in its images and symbols, for Petra and the Great Temple excavations have provided us with an encyclopedic view of Nabataean culture.

For the reader's convenience, a brief review of the Petra Great Temple is provided below with a 2006 Great Temple aerial overview in FIG. 1, and the site plan is shown in FIG. 2. We now turn to review the chronology established for the Petra Great Temple.

Great Temple Chronology

To help us in establishing a temporal span, following Hieronymous of Cardia, preserved by Diodorus Siculus (19.95.206; 96.4; 97.2-6), the Nabataean period spans the earliest mention of the Nabataeans in 312 BC until the Roman annexation in AD 106. But the earliest remains at the Great Temple are tentatively assigned to the beginning of the first century BC. The Roman period follows the annexation in 106AD and extends to the Byzantine period to 325AD (although the Great Temple partially collapses in the AD 363 earthquake). The Byzantine Period comes to a close at the Great Temple with another devastating earthquake in AD 551, when there is all but complete collapse of the precinct followed by abandonment and localized activities. Phasing of the Great Temple has been subdivided



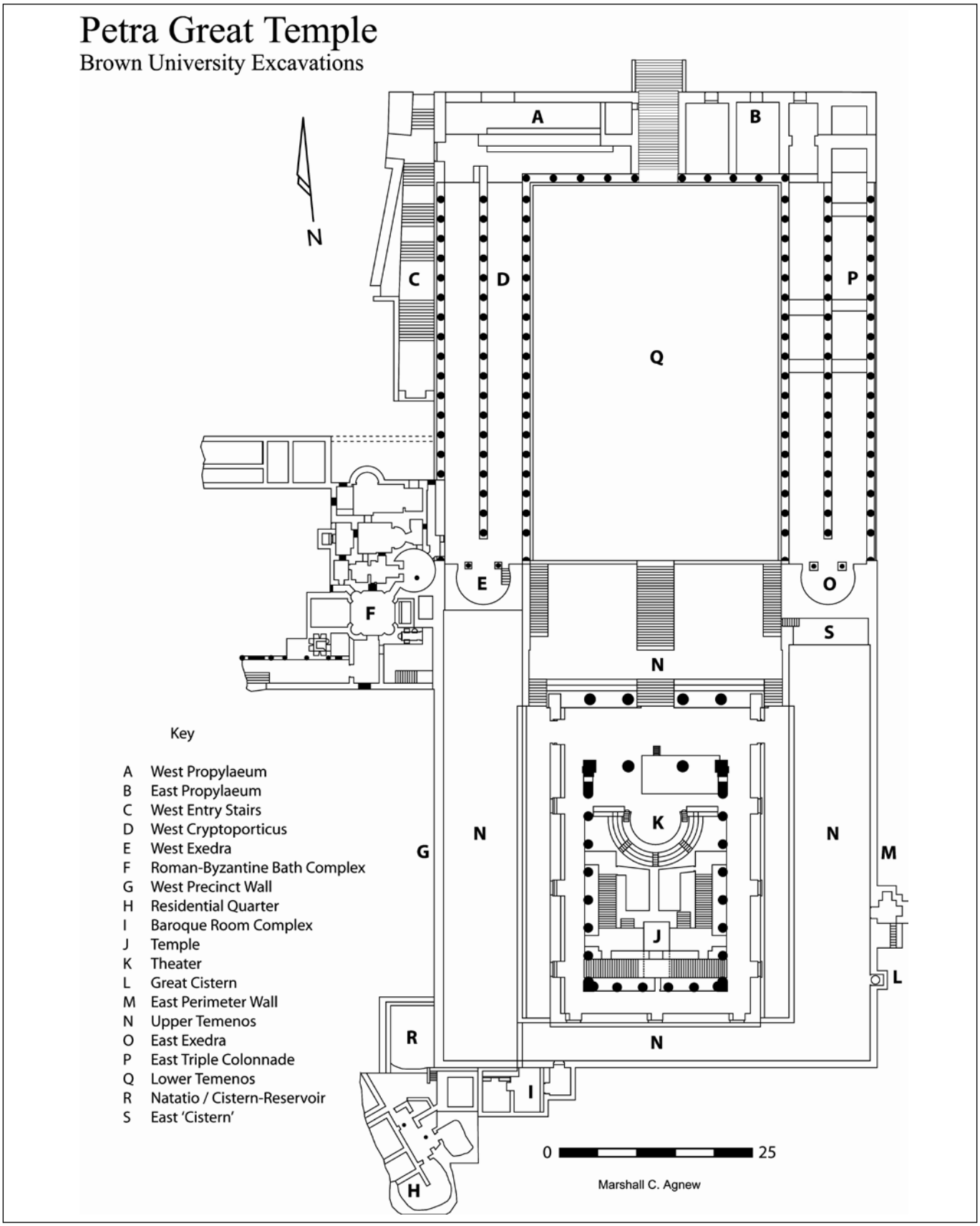
1. Aerial view of the Petra Great Temple precinct at the close of the 2006 excavations, to south (Photograph by Artemis W. Joukowsky).

into 15 phases, outlined in FIG. 3, and then we turn to discuss the water management systems at the Great Temple.

Water and Wastewater Management: Nabataean Hydraulic Engineering

Petra is one of the most water poor regions and the availability of fresh water has been central to its environment, development, culture, and economy. Little water is delivered by precipitation. Petra has an annual average rainfall/precipitation of 50-300mm, of which most soaks into the ground. Significant groundwater sources, aquifers, are found in the sand and gravel deposits. The 'Ayn Mūsā (Moses' spring) is a significant groundwater source created by the intense fracturing of the bedrock, and there are also springs like the 'Ayn Brāk that served the city. October to April is the season for flash floods, but the seasonal variability of flows and flash floods imposed major restrictions on water supplies. To regulate water flow and storage of surface water supplies required the construction of dams, channels, drains, filter basins, reservoirs and cisterns to store the precious commodity. Because of their vulnerability the Nabataeans knew how to control, direct and tame the water by cutting tunnels to divert water and to tame the rush of flash floods (Ruben 2003). The expansion of the city in the late first century BC, including the construction of the Petra Great Temple provided an incentive for the creation of municipal water systems. Extensive water systems were integral to the planned building program of the Great Temple, they were carefully engineered and constructed before any monumental building took place.

We knew the Nabataeans were ingenious hydraulic engineers, but when our excavations began, we did not suspect that they created sophisticated irrigation systems throughout the entire Great Temple site. We did not anticipate finding extensive water systems at the Great Temple, however, in our first year of excavation in 1993 we uncovered a central artery of what would become a series of extensive subterranean water canalization systems that channeled water into the precinct and evacuated the wastewater. To better understand the 135m of subterranean channels extending under the temple sloping down to the Lower Temenos, ground-penetrating radar in 1995 provided us with the relevant information (Joukowsky 1998:169-186). Subterra-



2. Petra Great Temple site plan (Marshall C. Agnew).

SITE PHASE	DATE	MAJOR CONSTRUCTION - DESTRUCTION
Pre-Site Phase I	ca. Pre-1st c. BC	Odd walls and cup marks in bedrock
Site Phase I	ca. Early 1st c. BC	Bedrock Preparation and Canalization
Site Phase II	ca. Mid 1st c. BC	Distyle in Antis temple: Portico Wall, Lowest Steps of Central Steps
Site Phase III	ca. Mid-to-Late 1st c. BC - 1st c. AD	Minor Damage
Site Phase IV	ca. 1st c. BC - 1st c. AD	Grand Design (Expansion), Tetrastyle in Antis Temple, Full Propylaeum, West Entry Stairway, Nefesh, Lower Temenos Triple Colonnades, Exedrae, Cryptoporticoes, Upper Temenos Great Cistern, East Perimeter Wall, Residential Quarter, Baroque Room
Site Phase V	ca. 1st c. AD	Nabataean Redesign and Repair, Theater Added to Great Temple, Betyls in Propylaeum
Site Phase VI	106 AD and 113/114 Earthquake	Roman Takeover, Damage to Propylaeum West, Repairs to Lower Temenos, Baroque Room Collapse, Temple Doorways and Corridors Narrowed, Bath Complex Constructed
Site Phase VII	ca. Mid 2nd c. AD	Propylaeum Repair, Wall K Razed in East and Rebuilt in West, West Room 1 Constructed, Roman Street Paved, East Propylaeum Rooms 1-3 Constructed, East Exedra Repair, Lower Temenos East-West Cross Walls in East Colonnade, Benches, Temple Doorways Narrowed and Walled-In, Theater Stage Constructed
Site Phase VIII	ca. Late 2nd c. AD	Damage, Abandonment, Collapse, Dumping
Site Phase IX	363 AD Earthquake	Collapse of Propylaeum and Lower Temenos West Triple Colonnade, West Cryptoporticus Collapse, Upper Temenos Added Features
Site Phase X	ca. 4th and 5th c. AD	Abandonment, Fluvial Deposit Accumulates, Lower Temenos Reconstruction of Colonnades with Reused Ashlars, Domestic Secondary Reuse in All Temple Areas
Site Phase XI	Post 551 AD Earthquake	Further Collapse, East Triple Colonnade Collapse, West Entry Stairs Collapse, Temple East Porch Column Collapse, Baths Out of Use
Site Phase XII	Late Byzantine 551 - 640AD	Abandonment and Robbing
Site Phase XIII	Islamic Period	Series of Major Collapses
Site Phase XIV	Modern Period	Farming of the Lower Temenos by Bedouin, Dumping, Construction of Bedouin Walls, Brown University Excavations

3. Petra Great Temple Chronological Chart of Site Phases.

nean channels had been constructed from the rear of the precinct under the Great Temple, the Upper and Lower Temene and the Propylaeum presumably to empty into the Wādī Mūsā. Of particular interest to us was that Nabataean hydraulic engineers were concerned with waste management as well.

The Nabataeans obviously adapted their skills to meet the needs of the Great Temple precinct and the pre-construction planning necessitated special water resources and reserves. The escarpment bedrock rise behind the temple precinct is a tangled web of subterranean drains and surface channels, some with ceramic pipes. In order to ensure success for watering the precinct they had to divert and tame this supply and control it by building dams and cutting tunnels to bring water into the site. When and where necessary, they lowered the water velocity and cut steps or ledges to reduce water speed.

Chiseled out of the bedrock under the Upper Temenos East Plaza to the east of the temple proper, Nabataean engineers constructed an underground cistern holding 390,000 liters (or 103,038 gallons) of water. FIG. 4 is a view of the interior of the cistern's southwest with the arch to the left and to the right two exposed faces of a southwest masonry pillar. FIG. 5 is a view to the north from the escarpment behind the temple showing the east artery exiting the cistern and extending along the west of the Upper Temenos east plaza. To date, this is the largest known cistern in the Petraean central city. From this cistern there was a complex of subterranean conduits in the bedrock under paved floors as well as above ground water passages to channel the excess water into the central artery in the temple

4. Interior of Great Cistern (Photograph by Christian F. Cloke).

5. Great Cistern overflow channel in Upper Temenos East Plaza to north (Photograph by Artemis W. Joukowsky).

forecourt. FIG. 6 shows the Upper Temenos channels nearing the end of the south perimeter wall and rounding the corner to the north towards the Great Cistern. There are additional subterranean and large water repositories like the Great Cistern in the east precinct wall reservoir (a filter basin), a settling tank in the Baroque Room Complex, the east 'cistern', and what we tentatively identified as a cistern-reservoir which, hypothetically, may have functioned as a *natatio* or swimming pool for the Roman-Byzantine Bath precinct, as well as holding tanks and pools found in the baths. Alone the Great Cistern and the cistern reservoir held a massive and astonishing 122,556.97 gallons of water. Lesser holding tanks and filter basins have also been located in the Baroque Room Complex and in the Residential Quarter. Above ground water channels are located adjacent to the Lower Temenos Retaining Wall, and at the top of the west entry stairs there are channels still encasing lead pipes. Bedrock water channels and stone ashlar reinforced channels cov-

6. Canalization along the south perimeter wall to east (Photograph by Artemis W. Joukowsky).

ered with capstones with ceramic pipes are carefully covered over or plastered to hide their presence or their recesses in the rock face. There also is a network of channels to direct rainwater away from the temple façade. The Residential Quarter and the Great Temple Roman-Byzantine Baths are riddled with water systems. Not only are water resources for the Great Temple vital for the temple itself but they also seem to have served as a repository for a variety of purposes, including a supply for adjacent precincts like the Pool Garden complex to the east and the west so-called "Baths" to the west — both of which required abundant water supplies.

(As stated before, I speculate that the "Baths" were part of a complex that may originally have served as a palace, and for this reason these Baths are referred to here as the Baths-Palatial Complex. The Baths-Palatial Complex is not to be confused with the Great Temple Roman-Byzantine Baths. The former were previously excavated by the Jordanian Department of Antiquities some 20 years ago. What we do know is that a water conduit extends from the Great Temple west exedra, under the west entry stairway to the Baths-Palatial Complex. Moreover, the archaeological evidence suggests that the city plan may have been modified with the construction of the Baths-Palatial Complex, but this is conjecture, and beyond the scope of this discussion).

Clearly, the Brown University excavations at the Great Temple have been confronted with the evidence of massive Nabataean hydrological undertakings. It took the ingenuity of the Nabataeans to collect and harness water resources as well as to direct and to ensure clean water disposal and storage. Such Nabataean environmental consciousness is astounding and both the innovations and the execution of these systems found at the Petra Great Temple are remarkable.

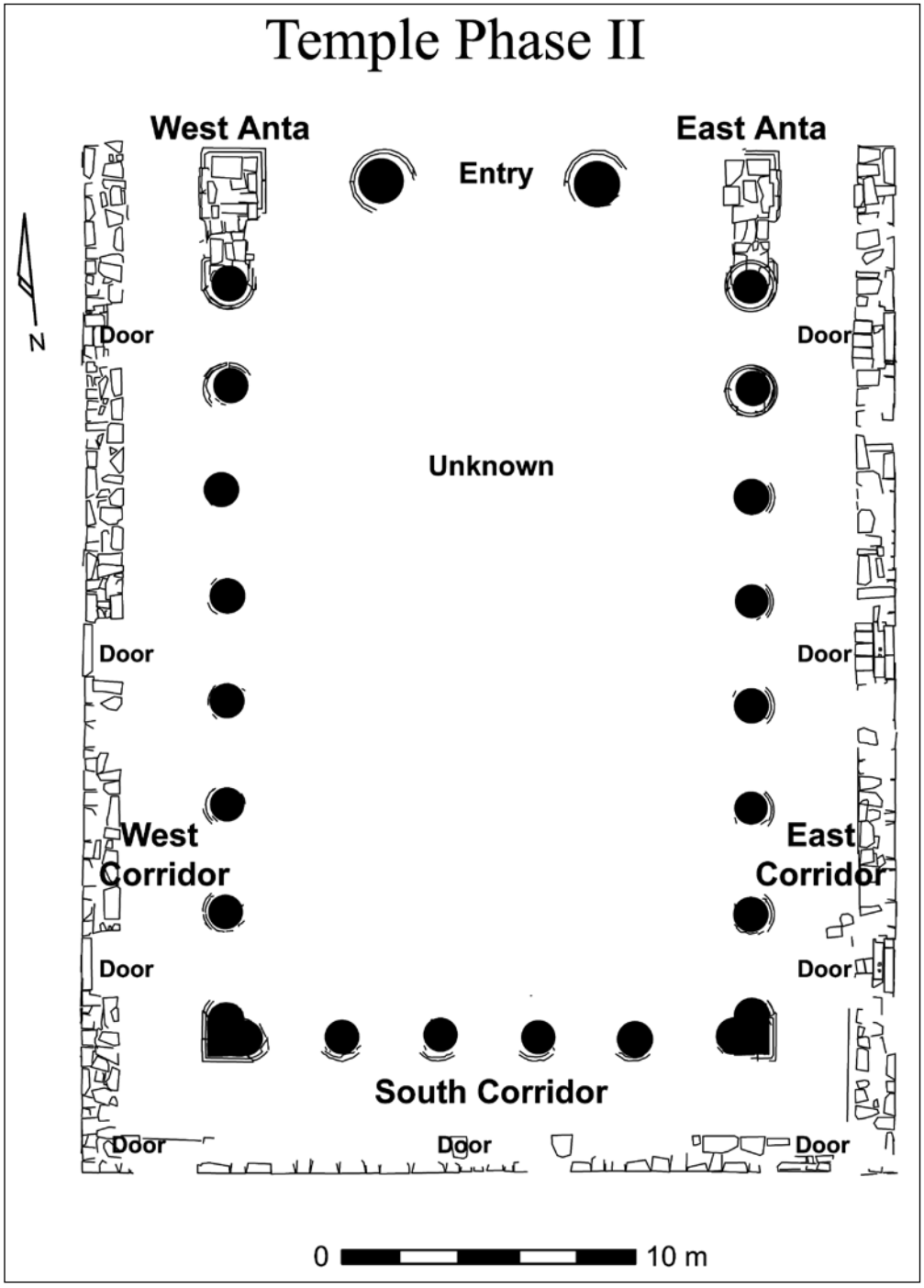
Architecture

The magical city of Petra is tucked away in the desert. Petra is a city devoted to extraordinary architectural concepts, which to this day astonishes visitors who are amazed by its mystical environment, its tombs and architecture. This sudden burst of building activity particularly in the late first century BC is compelling. The expanded Nabataean economy encouraged constructions of monumental proportions. One possible reason for the building of a Great Temple was the widespread prosperity of the Nabataeans. The design and embellishment created the distinctive features of an indigenous Nabataean style.

Outlined below are the three principal temple architectural phases, the distyle temple of site phase II, the tetrastyle temple of site phase IV, and the theater-in-the temple of site phase V.

Distyle in Antis Temple

The remains of its earliest structural incarnation, the *distyle in antis* colonnades of the Great Temple measure 30.00m in north south length x 19.50m in east west width. Its plan can be seen in FIG. 7. Founded directly on the prepared bedrock surface, two sandstone columns front the edifice in the north, flanked by two massive interior antae resting at an average elevation of 908.446m above sea level (hereafter referred to as a.s.l.). Along the sides of the temple in the east and west are eight columns, each crowned by an intricately carved limestone Corinthian style



7. Plan of Great Temple site phase II (Marshall C. Agnew).

capital of the Nabataean type. In the south, six columns extend across the temple rear, two of which (shared with the sides) in the southeast and southwest corners prominently display a heart-shaped column shaft of double-engaged design. Along the east, west and south sides of the temple, the diameter of the diagonally dressed column drums averages 1.20m and that of the pronaos entry columns and rear double-engaged columns is approximately 1.50m. The inter-axial distance between the side columns measures 3.27m at the temple south and 3.51m in the east and west.

Traces of pigment still clinging to the sandstone columns illustrate that the lower third of the shafts of the *distyle* temple's peripteral columns are veneered with smooth plaster, brightly painted in alternating hues of red and yellow. Alternately, the upper two thirds of each column are embellished

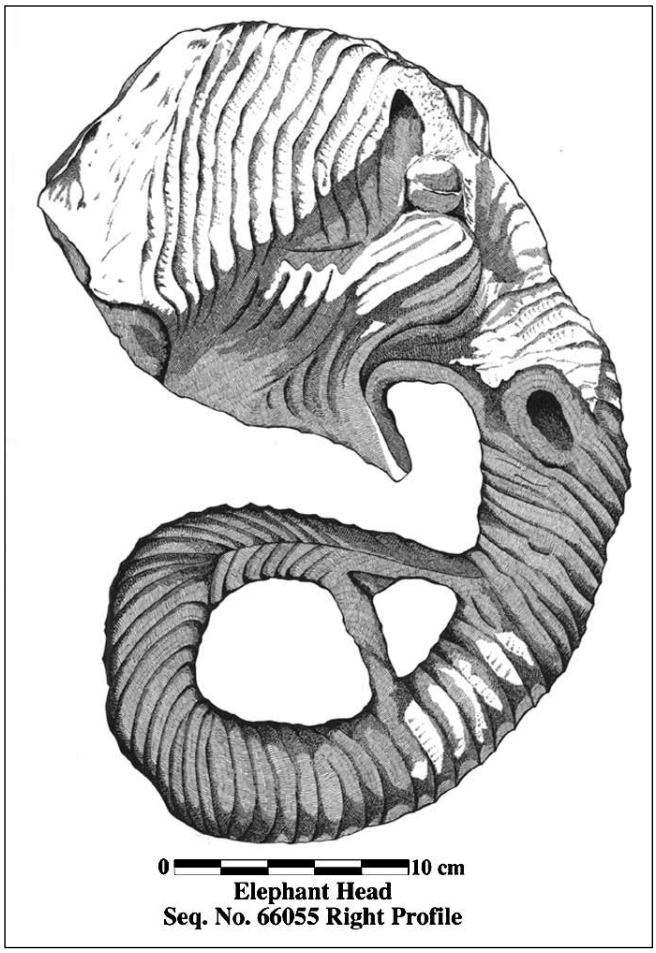
by white plaster molded in a cable design. At the front of the temple, the twin pronaos entry columns are plastered in a similar fashion, the lower portions of both painted red. In the temple's interior, and presumably extending for an unknown distance beyond the colonnades and antae in all directions, is the earliest floor of the temple precinct. Possible remnants of this original pavement (indicated by *in situ* limestone flagstones in the north part of the west corridor) are expertly laid, cut to fit snugly beneath the slightly elevated Attic bases of the temple columns and antae. The cella or main room of the temple presumably extends the full interior length and width of the colonnades. No traces, however, of this large room remain as it is covered over by later construction.

Along the temple east, west and south, towering walls are added alongside the colonnades marking the outer boundaries of the internal east, west and south corridors. Encasing the temple structure, each of these corridor walls, rising to a projected 15m height, is constructed from diagonally dressed sandstone headers (averaging 0.36m x 0.33m) and stretchers (averaging 1.38m x 0.45m). Most of the courses and rows are well laid with Nabataean mortar and are founded directly on the prepared bedrock. As they stand today, each of the three walls is divided into four north south (or in the case of the rear wall, east west) sections. Between the sections of the corridor walls are four broad doorways fitted with finely cut limestone thresholds averaging 2.10m in length, providing direct access to the corridor interiors. Displaying an irregular construction, the rugged interior faces of the corridor walls are concealed in antiquity by thick layers of decorative plaster, a quantity of which still remains *in situ* in the south and west corridors. Plaster decoration also covers the exterior surfaces of the walls, keyed into the striated diagonal tooling of the ashlar masonry. The corridors are embellished with classical ornamentation — entablatures and pediments, and the interiors are carefully plastered with moldings, cornices and cassettes, and second style Pompeian wall paintings. Elaborate floral friezes and acanthus-laden limestone capitals suggest that this enlarged temple is constructed in the mid-first century BC by the Nabataeans.

Tetrastyle in Antis Temple

This is the Great Temple of site phase IV or the "Grand Design" dating to the end of the first century BC to the first century AD. In Site Phase IV, there is significant growth and change with the addition of large ambitious project transforming the temple precinct into what we know today as the Great Temple precinct. We have rescued and redefined the site phase IV architecture of the precinct itself and the Great Temple, a major archaeological and architectural component of metropolitan Petra. The Great Temple precinct covers 7560 m^2 consisting of a Propylaeum, Lower Temenos, and Upper Temenos, the sacred enclosure for the temple proper. In the Propylaeum and Lower Temenos are east and west (north south) colonnades under which are cryptoporticoes (vaulted chambers). FIG. 8 shows the massive Lower Temenos east-west retaining wall that delimits the Lower Temenos to the south. With 145 columns topped with phenomenal Asian elephant headed capitals, one of which is shown in FIG. 9, these triple colonnades lead into semi-cir-

8. Lower Temenos east-west retaining wall to south (Photograph by Artemis W. Joukowsky).



9. An elephant from an elephant-headed capital (Drawn and drafted by John Philip Hagen).

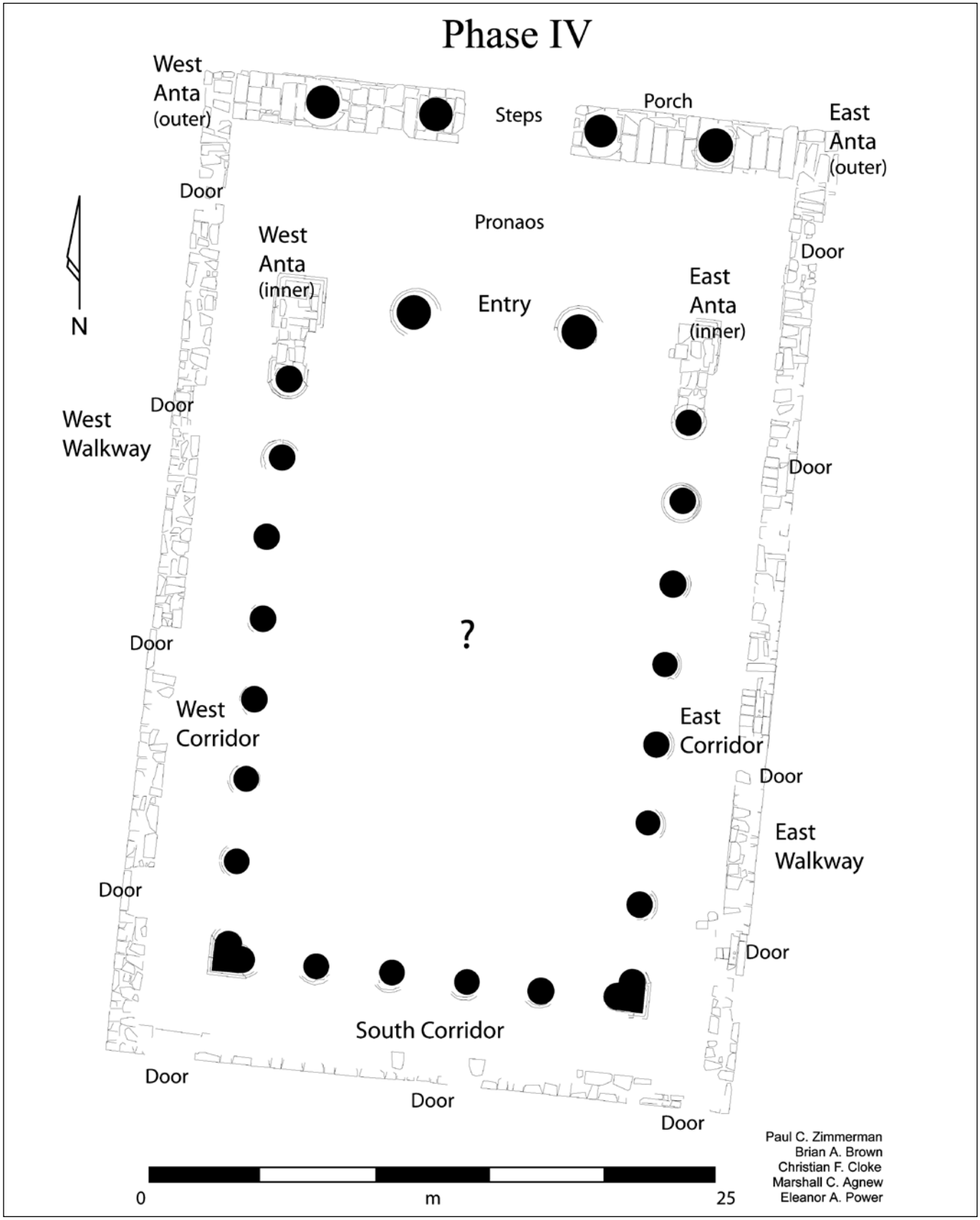
cular buttressed exedrae. Between the colonnades is a sweeping plaza with white limestone hexagonal pavers positioned above the aforementioned extensive subterranean canalization system.

As can be seen in FIG. 10, the temple plan has the addition of both a massive porch and walkways on the east and west. The structure measures 42.5m north south x 35.5m east west — it is the largest freestanding structure in Petra. In the north, serving as the grand façade of the temple's expanded *tetrastyle* design, stand the weathered remains of four massive porch columns averaging 1.50m in diameter. These columns, erected between two massive outer antae and covered with red and yellow painted plaster, are positioned 6.30m north of the original *distyle* columns and antae, and extend across the full east west width of the temple with inter-axial distances between 5.03m for the front side columns and 7.06m between the center columns. A staircase provides access from the temple forecourt to the pronaos entry. Flanking the east and west corridors are paved east and west walkways, which are added onto the building in Great Temple site phase IV. The east walkway measures 41.55m in length whereas the shorter west walkway measures 33.30m. Measuring approximately 3.70m in width, each of the walkways is bounded by a low outer wall some 0.60m wide, and these walls have seen multiple rebuilding over time. Coeval with the construction of the corridor walls, the east and west walkways serve as primary points of access from the temple plazas. Directly aligned with the lateral east and west staircases of the Lower and Upper Temene, the east and west walkways direct pedestrian traffic alongside the precinct, feeding directly into the four doorways of the east and west corridors. Additionally, cut postholes discovered at regular 3.50m intervals in the east walkway and beam support holes high in the east face of the east corridor wall suggest that this outer area is covered at one time, perhaps by tethered awnings, providing welcome shade for visitors entering the temple from the east.

Approximately 15m in height, the porch columns plus the triangular pediment and entablature hypothetically place the temple's height to a minimum of 19m. The location of the temple provided an elaborate setting for a larger building with order and elegance. The temple served as a place of worship and seat of the government. The Great Temple was enormous and assumed the plan of a temple with the ornamental vocabulary of classical influences.

Theater and Attending Support Structure

Following the *tetrastyle* expansion of the Great Temple edifice, the structure undergoes a third major structural revision during which a large semicircular theater is installed into the central cavity of the building in Site Phase V, dating to the first century AD. The small theater is illustrated in FIG. 11 and is marked as "K" on the FIG. 2 site plan. The site phase V theater-in-the-temple plan can be seen in FIG. 12. The construction of the theater and its massive substructure results in a complete reorganization of space within the temple walls. Strengthening the existing architecture, newly built intercolumnar walls between the columns of the *distyle* colonnades provide a firm substructure on which new architectural elements are founded. In the temple south, staircases are constructed along the sides and two across the rear, and platforms are



10. Plan of Great Temple site phase IV (Marshall C. Agnew).

11. Theater of Great Temple Site Phase V, to south (Photograph by Artemis W. Joukowsky).

built to support and access the theater from the rear of the complex. To the temple east and west, interior north south staircases are elevated approximately 5m above the temple floor to the second level of the precinct. Mirror images of each other, the east and west internal staircases measure approximately 2.40m in width x 7m in length and are each constructed from 21 finely laid stair treads. Built into the interior and exterior (intercolumnar) walls flanking the staircases are arched windows, providing light for the stairs, and an outward view of the temple east and west corridors and an inward view of the east and west vaulted chambers.

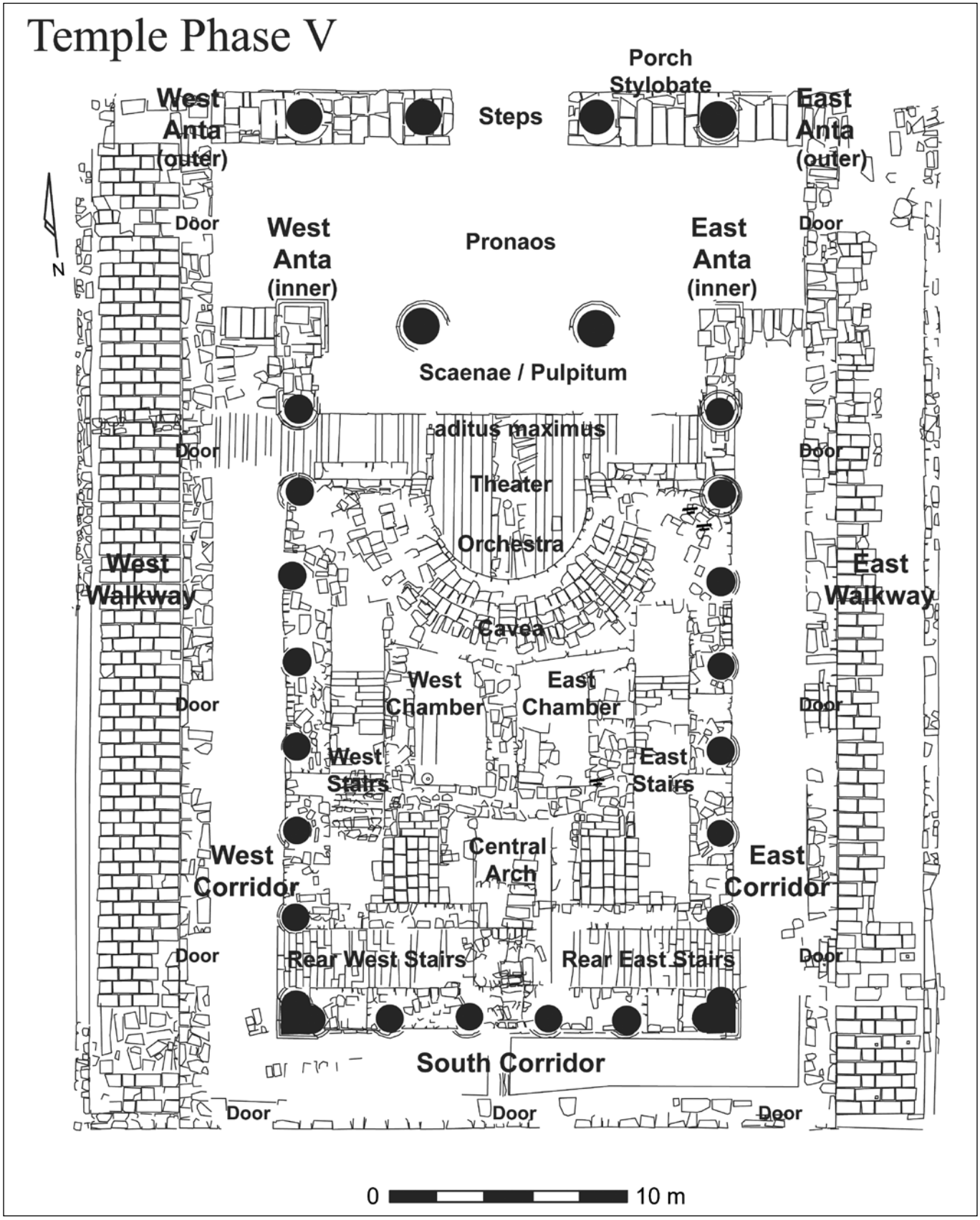
At the top of each staircase exists a paved landing 2.70m in length x 2.26m in width from which the four remaining treads of an upper pair of staircases begin the south to north ascent to the presumed upper tiers of theater seating at the temple rear. Situated between these two landings, a large adjoining platform covers a central arch, extending south to abut the east west intercolumnar wall at the temple rear. Here, flanking southeast and southwest staircases provide alternate access to the theater *cavea*, accommodating pedestrian traffic flow from the temple south corridor.

Underlying this extensive array of staircases and platforms, three interior chambers are present. The largest of these, located at the rear of the temple beneath the central platform (J on the FIG. 2 site plan) is the main support for the theater substructure, the central arch. Cut into the bedrock, the arch chamber floor (measuring 8.52m north south x 3.32m east west) contains a large four-channel canalization system with an additional smaller series of subsidiary shallow bedrock-cut channels aligned roughly parallel to one another. Directly above the canalization system is a hard-packed clay floor installed over smaller cut channels. Although the north and south portions of the arch room are collapsed, much of the substructure remains, consisting of roughly hewn sandstone ashlars measuring on average 0.35m x 0.55m, set in rows of eight. Its 16 courses are set parallel to the bedrock floor in the southern half of the arch, and tilt upward in the north at an angle of 60 degrees. To the south, the temple south intercolumnar wall forms the rear wall of the central arch chamber. Here, a small doorway measuring 0.67m in width x 2.04m in height is constructed, the sole entrance to the central arch room interior.

To the north of the central arch room are two side-by-side self-contained vaulted chambers. In the east and west, the chambers are each accessed by a doorway directly opposite the central doors in the east and west intercolumnar walls and perpendicular to the bases of the east and west interior staircases. The layout of the chambers is identical, the floor of each measuring approximately 5.50m north south x 3m east west. The walls of the chambers are constructed from hewn sandstone ashlars roofed by a vaulted ceiling. Inserted into the outer wall of each chamber, and facing onto the east and west interior staircases, is a single vaulted window, serving as the sole source of light for each of these enclosed rooms.

Surmounting the interior infrastructure of the temple is the elegant central theater. Truly the most extraordinary and enigmatic component of the Petra Great Temple visible today, the theater is constructed from finely carved sandstone ashlars arranged in a semicircular plan. At the top of the preserved *cavea*, broken edges of the upper *in situ* risers indicate the theater's original projection upward and toward the rear of the temple, housing at one time an estimated capacity of more than 600 persons. The proposed diameter of the outermost seats, should they be restored, is 33.2m.

At the base of the theater, extending the full length of the first level of the *cavea* seating is a walkway (*diazoma*) paved with alternating white and purple sandstone flagstones. Above the walkway, each of the five remaining tiers of seating measures approximately 0.40m high and 0.58m deep. Overall, the theater seating is arranged into



12. Plan of the theater-in the temple, site phase V.

four *cunei* (wedge-shaped sections) divided by three *scalaria* (staircases). Deep channels cut into the sandstone seats at irregular intervals are likely inlaid with wooden armrests, serving as dividers for single and double seating. North of the *cavea* is the floor of the orchestra (6.43m in diameter), paved with decorative white, red and purple sandstone rectilinear pavers that abut the *cavea's* northern face. FIG. 11 displays the orchestra and *cavea* as restored in 1998. Facing the orchestra are the remains of a stage/pulpitum (added at a later date) four courses high approached by two staircases on the platform's west side. Immediately south and perpendicular to the stage in the *aditus maximus* walkway are found two limestone thresholds on opposite sides of the walkway with deep square postholes carved into them. In close proximity during excavation were recovered, a number of metal fragments. This combination of finds strongly indicates that doors or gates originally separate the *aditus maximus* walkway from the inner orchestra, marking the division between public and restricted orchestra space.

Ever since the discovery of the theater there has been considerable debate and speculation about the character of the Great Temple and whether it was a sacred place or an administrative entity. We believe that it served dual purposes and with the addition of the theater, it would seem that there may have been a shift to the secular concerns and the temple became a civic building to be used for more public purposes. In other words, at this point there may have been an emerging secularized civic identity and a consciousness that defined the community in political as well as religious terms, after which it is enlarged with the theater in the first century AD in site phase V.

Beyond the grand architectural statement of the Great Temple, of greatest surprise to us was the cultural diversity exhibited in the material remains that underscore a Nabataean eclectic creative spirit. The result is a remarkable creative community comprised of Nabataeans from broad artistic and cultural backgrounds who created a complex and diverse monument using a mosaic of ideas to build their own cultural statement.

Baroque Room Complex

Clearly the Great Temple is a prime symbol of the Petrean community's identity, however, beyond the temple to the southwest is the Baroque Room complex ("I" on the FIG. 2 site plan). The Baroque Room Complex measures 5.77m north south x 17.26m east west. The three fully excavated series of interconnected rooms represent ornately decorated chambers possibly reserved for a religious function.

Behind the west wall is the opening from the Shrine Room into the Baroque Room. The most fully preserved of these rooms, the Shrine Room, measures 2.07m in north south width x 3.02m in east west length and is constructed from well-hewn, diagonally dressed ashlars preserved to a height of 3.22m in the east and 4m in the south. The once ornate decoration of the Shrine Room is revealed by the discovery of numerous brightly painted fresco fragments and a finely laid limestone hexagonal pavement. Set into the south wall of the shrine 1.32m above the floor level is a cult niche with a preserved height of 1.02m and a recessed platform providing a prepared surface for a sacred object, most likely a statue or a *betyl*.

Measuring 4.50m north south-x 3.67m east west, the Baroque Room, to our astonishment, held the massive wreckage of incredible and extensive stucco decoration, the most remarkable elements of which include a large molded ceiling medallion and wall fragments displaying delicate vegetal and architectural designs, brightly-painted panels and gilding. FIG. 13 illustrates the collapsed central medallion of the ceiling, as it was unearthed.

Residential Quarter

Adjacent and to the west of the Baroque Room is the Residential Quarter, "H" on the FIG. 2 site plan. Its excavated extent measures 15.48m north south x 9.22m east west. Here, a series of two

13. Baroque Room Ceiling Plaster *in situ* (Photograph by Artemis W. Joukowsky).

caves and eleven masonry rooms are discovered, deep within Petra's city center. Cave 1, the smaller east cave, measures 3m in north south length x 4m in east west width and its uneven floor rests at an elevation of 907.215m a.s.l. Cave 2 is the larger west cave measuring 6.25m in length x 5.40m in width with a floor elevation of 908.126m a.s.l., and a standing height of 3.85m from floor to ceiling. Here we unearthed masses (more than 30,000 fragments) of figuratively painted and plain Nabataean ceramics, bones, and extraordinary artifacts including an exquisite mother-of-pearl dolphin pendant (Joukowsky 2003: fig. 22).

Roman-Byzantine Baths

To the north of the Residential Quarter are the Great Temple Roman-Byzantine Baths. Its position is "F" on the FIG 2 site plan and an enlargement of this plan can be seen in FIG. 14. To be sure, the discovery of this complex was unexpected. We recover a platform in the north, and moving north to south, a splash bath, at least two caldaria (hot rooms), a praefurnium and a tepidarium. Below the floor level a partially sunk service corridor extends along the rear of the caldaria and isolates the baths from the Great Temple west exedra. To the south of the heated rooms is an apsidal marble-clad vestibule-frigidarium (with a cold plunge), an ornamental pool, an elegant 'well' with semi-circular cavities for drawing water, a possible apodyterium (changing room), an elegant bathroom (toilet for six persons), a small cistern, and a columned colonnade fronting on a probable palaestra-gymnasium. This is a small, compact bathing facility, a *balneum,* covering 908.80m^2 as excavated. As can be seen in the plan (FIG. 14), the complex of 22 rectangular and square rooms appears to follow the Pompeian type of bath plan (Yegül 1992: 66ff) with a simple row of windowed parallel rectangular rooms overlooking the palaestra to the west.

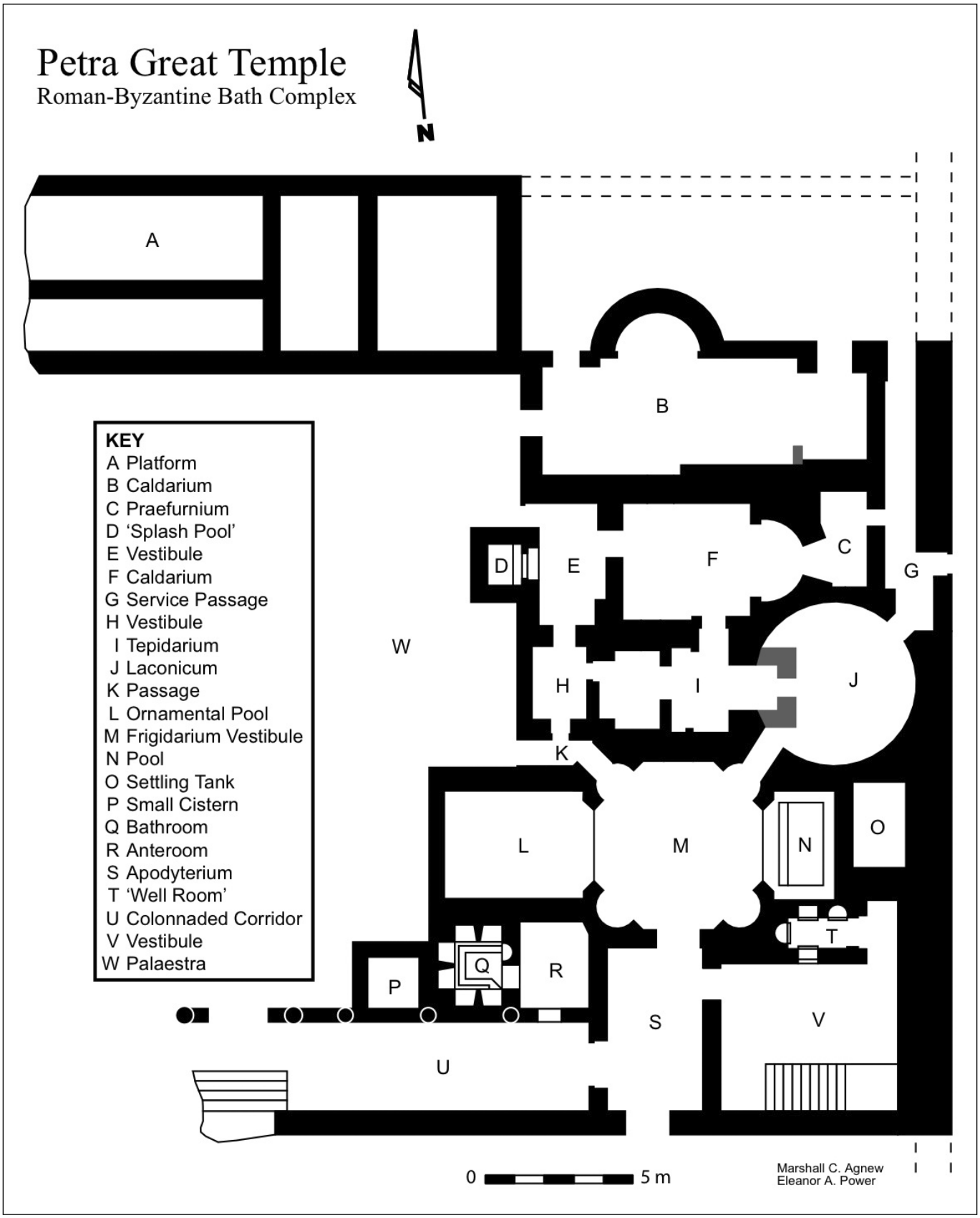
Great Temple Aniconic Sculpture

In addition to serving their own sculptural traditions, the Nabataeans drew from a broad Hellenistic stylistic repertoire; from the Parthians in the east, Ptolemaic Egypt and specifically Alexandria to the south, the Seleucids in the north, and also Petra was infused with the Roman sculptural vocabulary. We were surprised by the extraordinary array and prolific amounts of both aniconic and representational sculpture found in the excavations. Commonly appearing together at Petra and at the Great Temple are aniconic (abstract) and figurative representations of deities represented at the Great Temple. R.A. Stucky (1994: 278) states:

> "The identification of the deity represented as an extremely abstract idol is difficult because there are several female deities represented in the same manner. Apart from the Nabataean-Arabian goddesses al-'Uzza and Allat, the North Syrian goddess Atargatis is mentioned in the inscription on one of these stelai as well. What seems to be of some importance for explaining the difference between the anthropomorphic and the stylized idols is that the latter form was chosen exclusively for local or closely related Oriental deities, whereas the anthropomorphic type was used for foreign deities — although they were partially integrated into the Nabataean pantheon. The fear of "naturalistic" representation seems to be more or less restricted to the local deities; a broader spectrum of representation was obviously allowed or possible in the sphere of foreign gods".

The Great Temple aniconic sculpture included *betyls*, the *nefesh*, and the sword deity, which was published in 2001 (Joukowsky 2001: 341, fig. 12). Representational sculpture formed the bulk of the repertoire with the temple capitals (all of which have been published), the elephant-headed capitals, sculpture in the round, the pilaster blocks and other relieves (Each of the contexts these will be discussed in *Petra Great Temple Vol. II, Archaeological Contexts of the Remains and Excavations: Brown University Excavations in Jordan, 1993-2007* (in press), and they will be given specialized analysis in *Petra: Great Temple, Brown University Excavations 1993-2007, Vol. III: Architecture and Material Culture*, which is due to appear in 2009).

Betyls: At the southwest end of the West Propylaeum's north gallery's "L"-shaped extension opposite the West Entry Stairway entrance is a large niche measuring 0.97m in width and 0.69m in depth cut into the west face of the Propylaeum West central north south wall, an extension of the central stylobate wall of the Lower Temenos West Cryptoporticus. To our surprise, in this niche rest exquisitely carved twin aniconic white limestone *betyls* averaging 0.50m in height and 0.21m in width adhered to the base and rear wall of the niche by a thin plaster layer. FIG. 15 shows the West Pro-



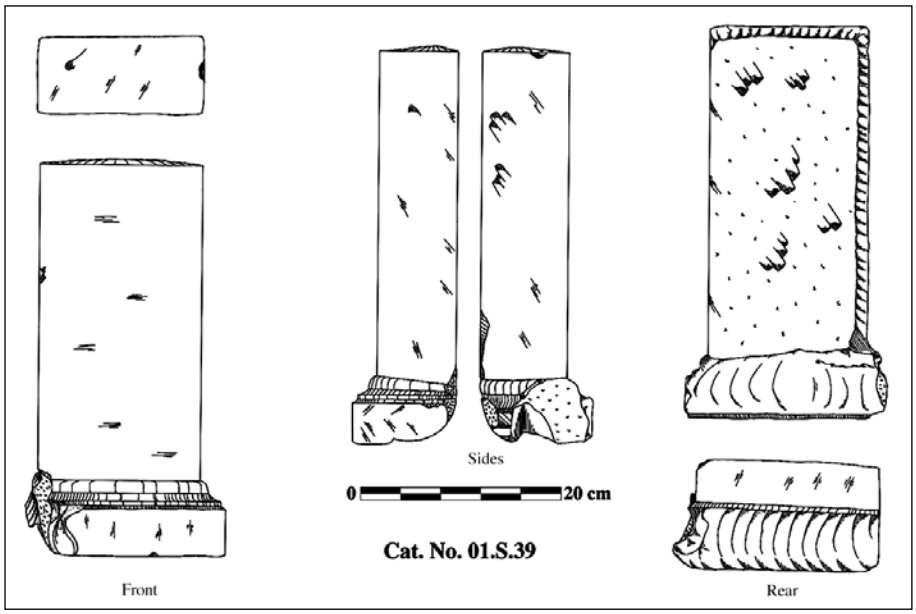
14. Roman-Byzantine Baths plan (Marshall C. Agnew).

15. Double *betyls* of the West Propylaeum, as excavated to east (Photograph by Artemis W. Joukowsky).

pylaeum *betyls* as they were originally excavated, and FIG. 16 presents a detailed line drawing of one of the *betyls*. A portable *betyl* was also found in the East Corridor excavations (Joukowsky 2001: 341, note 25). There may be additional *betyls* set into the wall below the West Propylaeum *betyls*, as can be seen in FIG. 17, showing the restored facsimiles of the *betyls*. These *betyls* are assigned to the Roman period site phase VII assigned to the AD mid second century. This is a time for repairs and rebuilding including the building of the *betyl* niche and the *betyl* installation (Joukowsky 2002: 317-318), and indicates that Nabataean traditions for aniconic representations extend well into the Roman period or post 106AD.

Betyls range from plain rectangular to conically shaped blocks representing the deity — some of them

17. *Betyl* facsimiles in the West Propylaeum (Photograph by Artemis W. Joukowsky).



16. Drawing of the *betyl* from the West Propylaeum (Drawn and drafted by Emily Catherine Egan).

have inscriptions indicating the deity represented. Some of them have eyes and noses and are known as "eye-idols" Wenning (2001: 85, note 13) states:

"The Nabataeans burned incense and poured blood on the sacred stone…Only the blood of the blood of animals was offered to the deity" (cf. Mettinger 1995: 191-192).

In her calculations, Laïla Nehmé (2003: 158) states that at Petra there are 15 independent *betyls*, and eight are independent groups of two to six betyls, Wenning (2001: 79-95) in his article, "The Betyls of Petra", classifies them into a typology. *Betyls*, Wenning (2001: 87) writes:

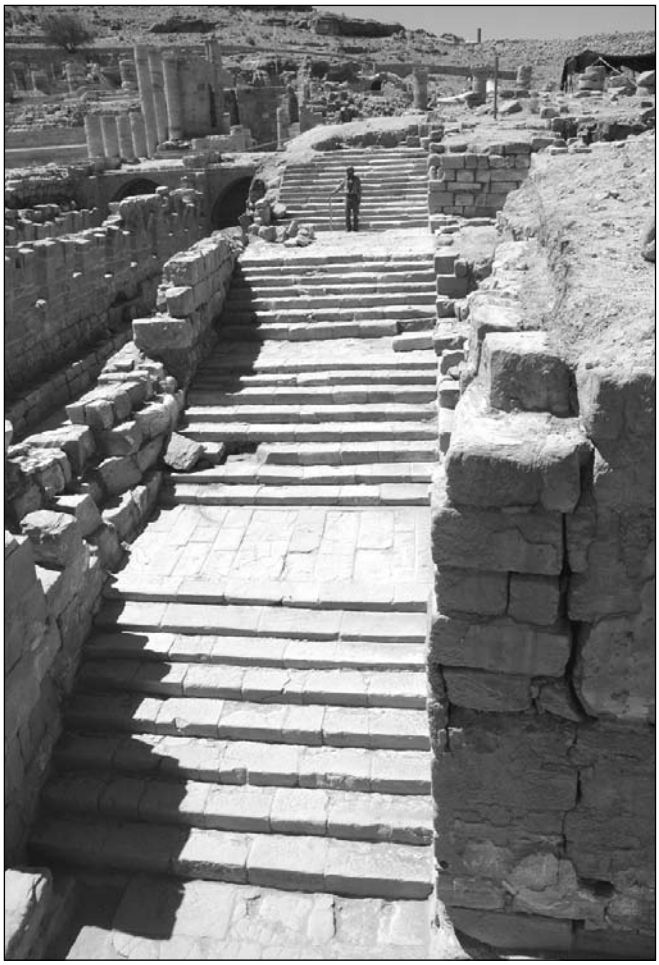
> "Each group of *betyls* must be interpreted in its own context. Niches with two *betyls* are often attributed to Dushara and Al-'Uzza, the most venerated male and female deities at Petra".

If the Great Temple *betyls* represent Dushara (the main deity of Petra and the tutelary deity of the Nabataean tribe and its royal dynasty (Wenning 2001: 81) and Al-'Uzza may be hypothetical, but what is clear is that this installation is a sacred place.

Nefesh: A *nefesh* is a sacred Nabataean commemorative monument. It was carved to consecrate a person or a family, and to be the receptacle of the soul. Often there is no burial associated with it, as in the case at the Great Temple. It serves as a witness to a Nabataean shared belief, symbolizing the Nabataean attachment to the aniconic representation of their god in association with an honorific memorial.

The recovery of the Great Temple *nefesh* found on the West Stairway entry to the precinct was unexpected. Shown in FIG. 18, this stairway is composed of five stair flights that are interrupted by four platform landings set at irregular intervals, creating a major entry passage measuring approximately 37.2m north south-by-4.60m east west, with a total area of 171.12m^2. On the uppermost platform, a *nefesh* with a *betyl*, accompanied by a separate standing *betyl* was unearthed. These Nabataean steps of site phase IV create a direct north to south ascent from the Roman Street to either the "Baths-Palatial Complex" or descent from the Great Temple or the "Baths-Palatial Complex" down to the Roman Street.

Shown in FIG. 19, the *in situ* discovery of the *nefesh* stele on the Locus 10 West Entry Stair terrace platform certainly is one of the most remarkable finds of the Great Temple excavations. The terrace platform is bordered to its east with smoothed blocks measuring 0.25m to 0.32m in size. This *nefesh* measures 0.78m in height x 0.57m in width. The carved obelisk is 0.19m in height x 0.135m in width and the *betyl* measures 0.135m wide x 0.13m in height. This *nefesh* is an incised white limestone/sandstone block with an incised obelisk carved above a squared cut *betyl* block, which is removable [The *betyl* block moved when touched, so the fill that held it in place was removed. Upon examination it could be seem that the *betyl* originally had been affixed into the square with white mortar, part of which we removed for sampling]. When the *betyl* was removed, it was found that the block had been completely carved through, and the *betyl* had been placed in a "window" of the block. The *in situ nefesh* was recovered standing, fortunately protected from collapse. This roughly carved, freestanding bas-relief, placed at a secondary entry to the Bath-Palatial Complex raises several questions. Was there a compelling reason for this memorial monument's placement? And if so, what would that rea-



18. West Entry Stairway to south (Photograph by Artemis W. Joukowsky).

19. The *nefesh* and *betyl in situ* on the West Entry Steps platform to west (Photograph by Artemis W. Joukowsky).

son be? On stylistic and iconographic grounds, why does our *nefesh* contain both the *betyl* (representing a deity) and an obelisk? (For safekeeping the *nefesh* was removed from the site, and a carved reproduction has been placed in its original position).

By Laïla Nehme's count (2003: 157) there are 34 *nefesh*, groups of *nefesh* or niches including a *nefesh* at Petra. Patrich (1990: 122) reminds us that the Nabataeans did not use the image of the deceased in their burial monuments, but used an architectonic shape to portray their dead. We can imagine they were worshipped in the same manner in the city as they had been in their nomadic lifestyle (Unfortunately we do not know to whom this *nefesh* was dedicated). Wenning (2001: 87) comments:

> "The Nabataean *nephesh* is shaped like an obeliskoid pilaster or a pointed cone, often with a blossom/pinecone or a stylized crown at the top. Most of the *nepheshes* are set upon a base, where the name of the dead person is given…Freestanding *nepeshes*…are rare".

By their *in situ* location on the west entry stairway platform this *nefesh* and *betyl* therefore, are rare, and are intentionally positioned in a high place to view the city surround. Both symbolize the presence of the deity, lending them a theological legitimacy. The prominently located open-air stairway platform terrace serves as a watch place, to place offerings — it is public, a place that sees pedestrian traffic, and yet it serves a public cult. The presence of these cult objects symbolizes and suggests a conspicuous cultic function for this platform. And what should be borne in mind is that a separate rectangular *betyl* was found adjacent to the *nefesh*, lending the platform a particularly significant commemorative religious and sacred place. Both the *betyls* and the *nefesh* are thought to be the symbol and embodiment of the gods. Their unexpected recovery and contexts were astonishing, because they occupied such a prominent position in the Great Temple landscape.

To a great degree, these are silent sentinels that witnessed a fascinating but enigmatic past. But being placed where they are they are far from silent about who witnessed their presence. As they are subject to interpretation, perhaps we can speculate the *nefesh* was a place to remember the honored dead? Unquestionably there is an actual cult of the dead associated with significant religious ritual in Petra; obviously death also plays a prominent role in life.

Is the erection of these religious icons spontaneous and private or do they serve as part of an official act? Did some elite Petrean commissioned a mason to execute these steles? These are intriguing questions that deserve more attention. M. Gawlikowski (1972: 5-16) states "The concept of the *nefesh* thus seems a phenomenon introduced into Syria by the Arabs from the Hellenistic period. It does not belong to the religious foundation common to the Semites, if such a foundation ever existed, but rather is attached to a type of monument that, itself, is very ancient – the standing stele around the tomb that takes very diverse forms, architectural or anthropomorphic. … Under the [implosion?] of the Arab beliefs, one observes, everywhere where these nomads are established, the appearance of the *nefesh*".

F. Zayadine (1982: 302) considers the *nefesh* by stating "The notion of *ḥaram* ['set apart', 'sacred'] was, in the Arabic traditions, attached to both the sanctuaries and burials. In both cases, these places could serve as an asylum and were considered sacred; the same name was also used to describe their character. The stelae called *nefesh*, representing deceased individuals placed usually but not necessarily on their tombs, have been identified, as is commonly accepted, with the souls of the dead who inhabited them, in the same way as a divinity inhabited a *betyl*". Zayadine suggests that the origin of the architectural form is to be looked for in Alexandria, which is indeed very possible. He continues "The underlying concepts and beliefs, however, need not be a tributary of the Egyptian practice. They seem, on the contrary, well in line with what is known about the customs of Arabia. The *nefesh* monuments are not mentioned in the Bible or other contemporary sources, and appear only in the Hellenistic period. Older populations have sometimes adopted the term *nefesh*, but not the notion of the soul incorporated in it; instances can be quoted of family tombs thus called in Palestine, Palmyra, and elsewhere". Also see, Dalman (1908); Healey (2001); Starcky (1965) and Macdonald (2003: 40).

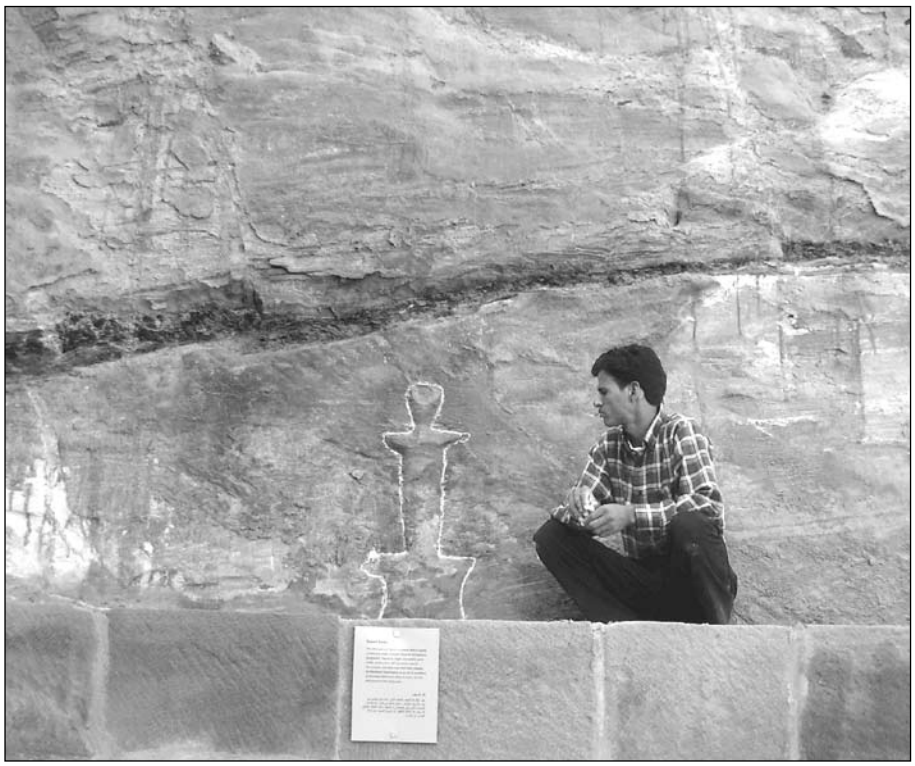
These *betyl* and *nefesh* images must have been a powerful part of the Nabataean ethnos. Their iconography is part of the Nabataean visual lexicon. The use of the *nefesh* and *betyl* must have been a reminder of the long-standing nomadic tradition, and their iconography and spiritual meaning are a part of Nabataean cultural identity. In particular, the *betyl* demonstrates a visual continuity of ideas — the metaphysical presence of the divine, an icon with sacred power.

Sword Deity: Bonded to the southeastern corner of the east perimeter wall, and extending westward from the southern edge of the grand east plaza is the south boundary of the Great Temple precinct, the south perimeter wall. Like its counterpart in the east, the south perimeter wall is constructed against the bedrock escarpment from double rows of sandstone ashlars, bearing traces of plaster on their exterior surfaces. Unfortunately, all but two of the lowest courses and three or four of the upper courses of the wall have buckled, exposing the bedrock beneath. Visible here is the schematic cult figure of what we have identified as a "sword deity" carved in relief just under a natural fissure in the bedrock escarpment (Joukowsky 2001: fig. 12). This relief is outlined with white chalk in FIG. 20, and the overall measurement is 0.65m in height. The short arms (or dagger hilt) extend approximately 0.19m from the body and the altar stone stands 0.27m in height x 0.28m in width at its base. Placed at a high, inaccessible point on the southeastern cliff face at the rear of the complex, this deity may have been chiseled by Nabataean stonemasons as an act of contrition to the deity, Dushara (Dalman 1908: 244-245) for the defacement of the living rock. In Nabataean times the figure was covered by the wall, so it would have been concealed behind the wall. Alternatively, as the deity relief is located just above a natural fissure in the escarpment (which may have served as a water channel), the relief may have been carved in praise of water, honoring this scarce commodity as would befit a deity. It was unusual to find this relief in the Great Temple escarpment, although such masons' marks are commonly found in the quarries that abound in Petra.

Conclusion

The Great Temple has transformed the urban landscape of Petra. Over the past 14 years of excavation, the Petra Great Temple has offered the Brown University archaeological team unique surprises for the study of Nabataean architecture and material culture.

The Great Temple has transformed the urban landscape of Petra. Over the past 15 years of excavation, the Petra Great Temple has offered the Brown University archaeological team unique surprises for the study of Nabataean architecture and material culture. As the Nabataeans are re-emerging from centuries of semi-eclipse, their true achieve-



20. Sword Deity outlined with white chalk, on the south escarpment (Photograph by Martha Sharp Joukowsky).

ments are being realized through archaeological excavation. For all its variety, Nabataean culture is beginning to gain coherence for its hydraulic achievements, architecture, and images and symbols. As we mentioned at the outset of this submission, the Great Temple excavations have provided us with an encyclopedic and most surprising view of Nabataean culture, some reflections of which have been described here.

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The View from Khirbat al-Ḥammām : Neolithic at a Crossroads

The crossroads metaphor is an apt one for the Neolithic of Jordan. Bioculturally, the advent of domestication economies represents a fundamental transition as human: environment relationships are altered in fundamental and far-reaching ways. But our own archaeological understanding of these phenomena is shifting as well. The Neolithic map of Jordan has 'filled out' considerably in the last several decades. As our appreciation of the Neolithic landscape spreads geographically across Jordan, how we understand this critical stage in the human career are at a crossroads as well. In particular, macro-scale models of the Pre-Pottery Neolithic that emphasized cultural homogeneity and focused on systemic change are bumping up against the archaeological reality that documents substantial local variation.

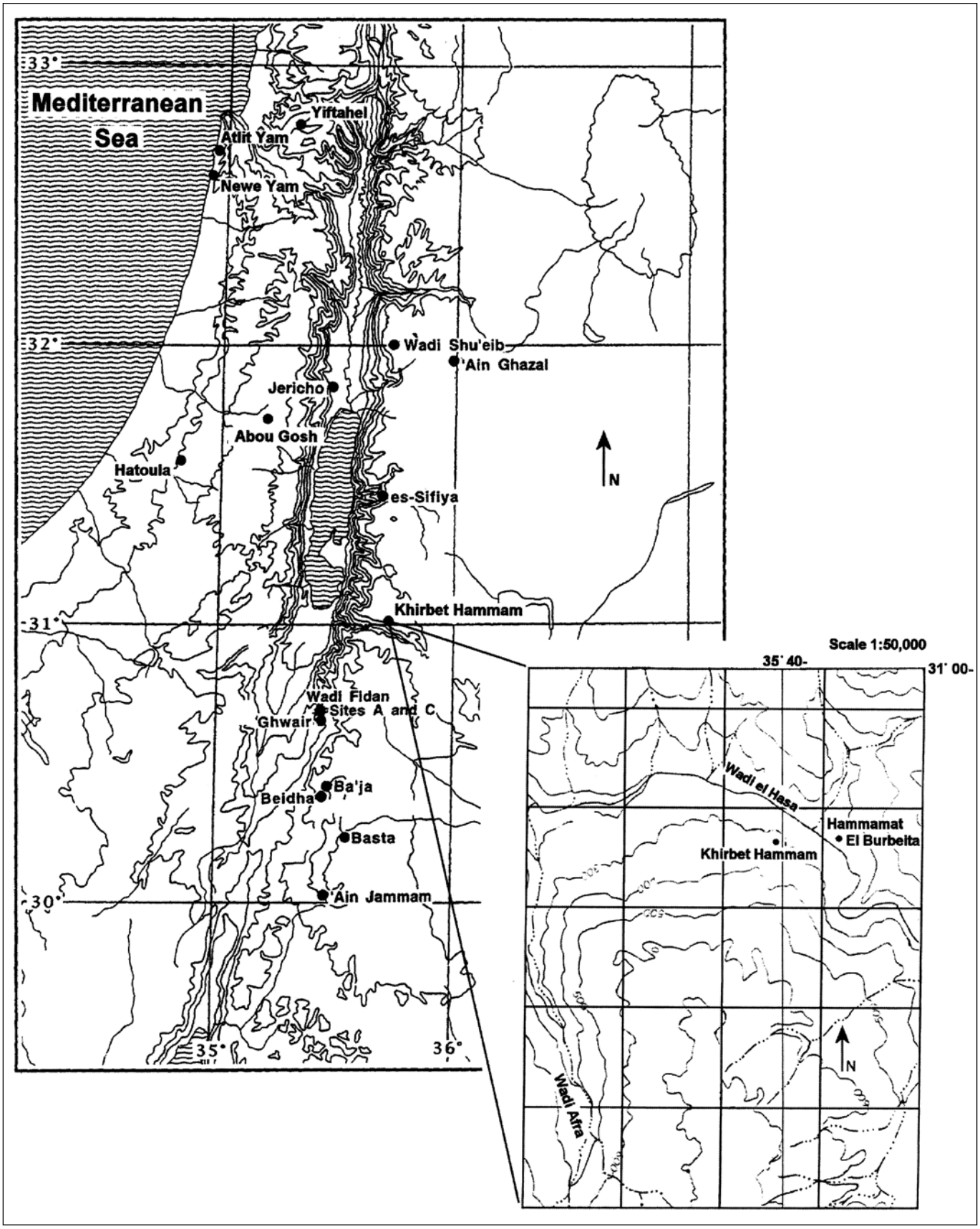
The tension between broadly synthetic and detailed, particularlistic explanations for culture change is hardly new. The pendulum arcs back and forth in predictable and productive ways. For the Neolithic Levant, emergent data suggest variation in local patterns of exchange, sexual labor, ritual performance and traditions, architecture and household organization, health status, and craft production. Exploring and comparing the pace and character of local changes can improve the resolution and advance our understanding of the dynamics of Early Neolithic society in Jordan (Asouti 2006; Peterson 2002; Verhoeven 2004).

This report of our recent excavations at Khirbat al-Ḥammām provides a case study of this local variation from the perspective of the Wādī al-Ḥasā. Several seasons of test excavation and analysis support a view of PPN villagers devising local strategies and local identities while forging meaningful regional connections.

Site Location and History of Previous Work

Khirbat al-Ḥammām is located on the south side of the Wādī al-Ḥasā, the southernmost major drainage into the Dead Sea depression (FIG. 1). Today, it's a region of rugged topography and distinctive geology and landforms, with over a 1,000m drop between the plateau and the terrace upon which Khirbat al-Ḥammām rests at approximately 290 masl. The wadi provides a source of perennial water, and the Ḥasā Dam was recently constructed upstream from the site. Khirbat al-Ḥammām is among a growing number of PPNB sites documented in central and southern Jordan (e.g. 'Ayn Jamām, Ba'ja, Basṭa, Bayḍa, al-Ḥimmah, aṣ-Ṣifayya, Ghuwayr).

Khirbat al-Ḥammām was first described by Nelson Glueck (1939) as a large site with standing ruins. Burton MacDonald's multi-year survey of the south bank of the Wādī al-Ḥasā relocated and published additional details about the site (MacDonald 1988). Gary Rollefson and Zeidan Kafafi suggested a Pre-Pottery Neolithic occupation based on a closer look at the surface artifacts and the exposed roadcut (Rollefson and Kafafi 1985). In 1999, I conducted the first subsurface investigations, opening a small 2 x 1m unit off the roadcut. Radiocarbon dates, typological assessment of projectile points, and a paucity of specialized naviform core and blade technology all pointed towards a LPPNB occupation — although admittedly we never reached the bottom of cultural deposits in that unit (Peterson 2004). Shortly after the 1999 season, the Jordanian government purchased the site insuring its protection from the escalating farming activities and other threats to the site's integrity. In 2006 we were able to resume research at the site in conjunction with test excavations at some nearby Natufian sites (Neeley, this volume). Our efforts concentrated on conducting an intensive survey of visible



1. Location of Khirbat al -Ḥammām and other Pre-Pottery Neolithic sites mentioned in text.

architectural elements, surface collecting a small area, producing a detailed topographic map, examining the immediate area for evidence of Holocene landscape alterations, and excavating a modest 8m^2 in a new area of the site that we described as the East Field.

Khirbat al-Ḥammām , unlike most of the other PPN sites in central and southern Jordan, has not been actively 'downsized'. The site terrace has been protected from the severe erosion that has substantially truncated many other sites in the central and southern parts of Jordan (FIG. 2). As a result, we can calculate the surface area of the site with a certain degree of confidence that is not present in many other cases. After examining the area below the road cut and finding evidence for Neolithic-style walls and large pieces of site furniture (primarily large boulder querns and mortars), we estimated that the site covers between 6-7 hectares, effectively doubling our 1999 estimate (FIG. 3). So Khirbat al-Ḥammām is a medium-sized PPN site that is uniquely preserved compared to others in central and southern Jordan.

2. View of Khirbat al -Ḥammām Terrace.

Chronology of Early Neolithic Developments

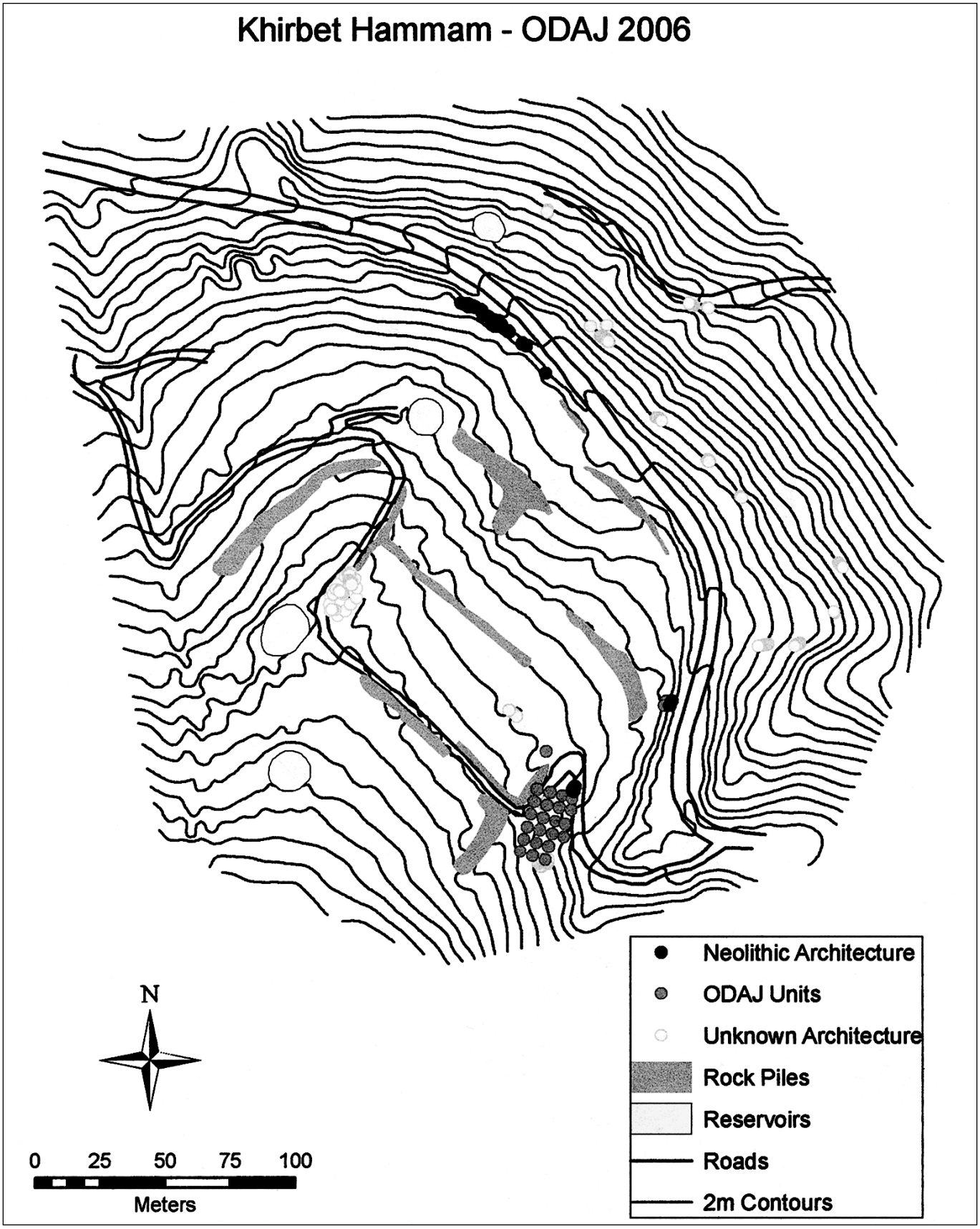
When the 2006 fieldseason began, Khirbat al-Ḥammām fit, more or less comfortably, within the established chronology for PPNB developments. Evidence from test excavations in 1999 suggested that the site was among a number of LPPNB sites established in central and southern Jordan. But new AMS dates and techno-typological consideration require revision of this scenario.

Two AMS dates the East Field excavations suggest that the site may have been occupied during the MPPNB as well (TABLE 1). One sample (#221348) comes from wood charcoal that was in contact with a hard-packed surface that contained chunks of plaster that we defined as a floor. The other sample (#221347) comes from 5cm above this surface. The conventional and calibrated B.P. dates fit within the MPPNB sequence using the chronology proposed by Kuijt and Goring-Morris (2002: 366). Furthermore, the calibrated B.C. dates straddle the MPPNB/LPPNB boundary using the Aurenoche *et al*. (2001) chronology.

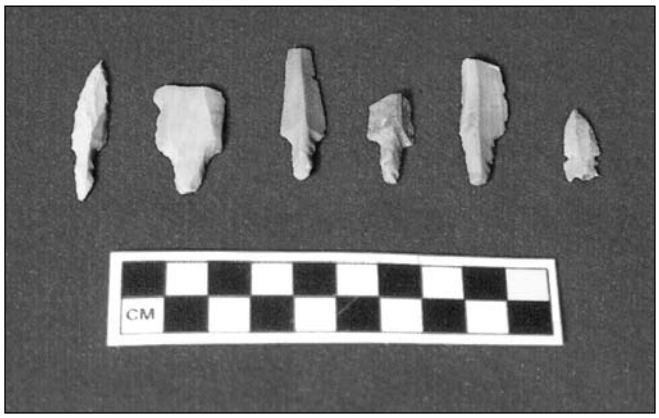
Typological evidence also suggests an earlier component. Byblos points are, by far, the most numerous point type. But there are several notable exceptions. Specimen #25 (FIG. 4) was found on the surface of Test Trench 2 before excavations began. The point produced on a blade has bilateral notches. The base is broken but it appears to have had either barbs or a contracting tang/stem. Morphologically the point is most similar to Helwan points. Specimen #60 was found in the first 10cm of fill which had been greatly disturbed from both natural and cultural causes, and appears to be the base of an el Khiam point (Rudnicki n.d.). These point types are widely regarded as types fossiles of the PPNA and EPPNB (Banning 1998; Bar-Yosef 1981; Gopher 1994). Erosion of the sloped site terrace, as well as a range of modern subsurface disturbances may be

TABLE 1. AMS Dates from 2006 al -Ḥammām Excavations (Beta-Analytic Laboratories).

Sample Number	Material	Conventional B.P. dates	Calibrated B.C. dates (2 sigma)	Calibrated B.P. dates (2 sigma)	Context
Beta-221347	Wood charcoal	8310±40 B.P.	7500-7290	9450-9240	
Beta-221348	Wood charcoal	8440±40 B.P.	7570-7470	9520-9420	Floor contact in Feature 3



3. Topographic map of Khirbat al -Ḥammām.



4. Projectile points from Khirbat al -Ḥammām . Specimen #25 on far right.

responsible for the stratigraphic inversion of earlier points on top of later, *in situ* deposits.

Strategic exploitation of high quality raw materials for naviform blade production is a hallmark of MPPNB chipped stone at sites like ‘Ayn Ghazāl, with substantial shifts to flake-based production evident by the PPNC (Quintero 1998; Rollefson 1990). The shift away from naviform blade production has been correlated with LPPNB/PPNC manifestations at a number of sites (Gebel and Beinert 1997: 242; Nissen, Muheisen, and Gebel 1987: 98-100; Rollefson 1999: 7-8), although local variation in the timing of the shift away from naviform blade and tool production is beginning to be documented as well (Barzilai and Garfinkel 2006; Galili *et al*. 2005). Technologically, the blade: flake ratios show a marked increase at and below the floor contact levels (Levels 4 and 5) (TABLE 2). Most of the blades show evidence of naviform production and were made on high quality chert with evidence of weathered cortex indicative of having been quarried from bedded deposits. This material stands in stark contrast to the local wadi cobbles that are also used in knapping, but which can be differentiated on the basis of their lighter color, mechanically weathered cortex, and internal flaws that hamper standardized blade production (Koska n.d.).

TABLE 2. Flake and Blade Ratios by Level.

Levels trench 2&3 combined	Blades	Flakes	%Blades
1	23	82	28%
2	21	56	37%
3	22	83	27%
4- floor and floor fill (5cm)	58	79	73%
5- subfloor	29	54	58%

There is obviously still much to be learned about the chronology of Khirbat al-Ḥammām . We have yet to reach the bottom of cultural deposits. But the current temporal data are more parsimonious with the notion that Khirbat al-Ḥammām has a complex, multi-phase occupational history. And within the Wādī al-Ḥasā, Khirbat al-Ḥammām is not alone in this respect. Recent excavations al-Ḥimmah, a site several kilometers from Khirbat al-Ḥammām on the north side of the wadi channel, Cheryl Makarawicz and her crew report evidence of PPNA, LPPNB, PPNC, and PN components (Makarewicz and Austin 2006; Cheryl Makarewicz personal communication). It seems to me that the possibility of relatively long, *in situ* developments during the Pre-Pottery Neolithic now have to be seriously considered in the Wādī al-Ḥasā .

Environmental Parameters

Our environmental reconstructions rely heavily on the work of Brett Hill, who relocated sites in the Ḥasā area and analyzed landscape change using settlement data and paleoenvironmental indicators in the region (Hill 2002, 2006). The data base he compiled includes settlement data from both the MacDonald (1988) surveys of the Ḥasā’s south bank and the Clark (Clark *et al*. 1992, 1994) surveys of the Ḥasā’s north bank. Hill observes that Neolithic and Chalcolithic sites in the Ḥasā are often perched on steep, sometimes unstable slopes with awkward access to agricultural lands either in the floodplain below or plateau above (Hill 2006: 77-78). Did people choose to settle in these awkward settings because they were the only options in an environment with few attractive options for farming? A more likely explanation, Hill believes, is that the Ḥasā of today looks drastically different than the Ḥasā of 8-10,000 years ago.

Specifically, Hill suggests that a substantial amount of channel incision, due to both climactic and anthropogenic changes, can be inferred from site data, Dead Sea sedimentation records, and isotopic studies of speleotherms. Geoarchaeological survey during 2006 led us to hypothesize that the Neolithic Wādī al-Ḥasā may well have been domi-

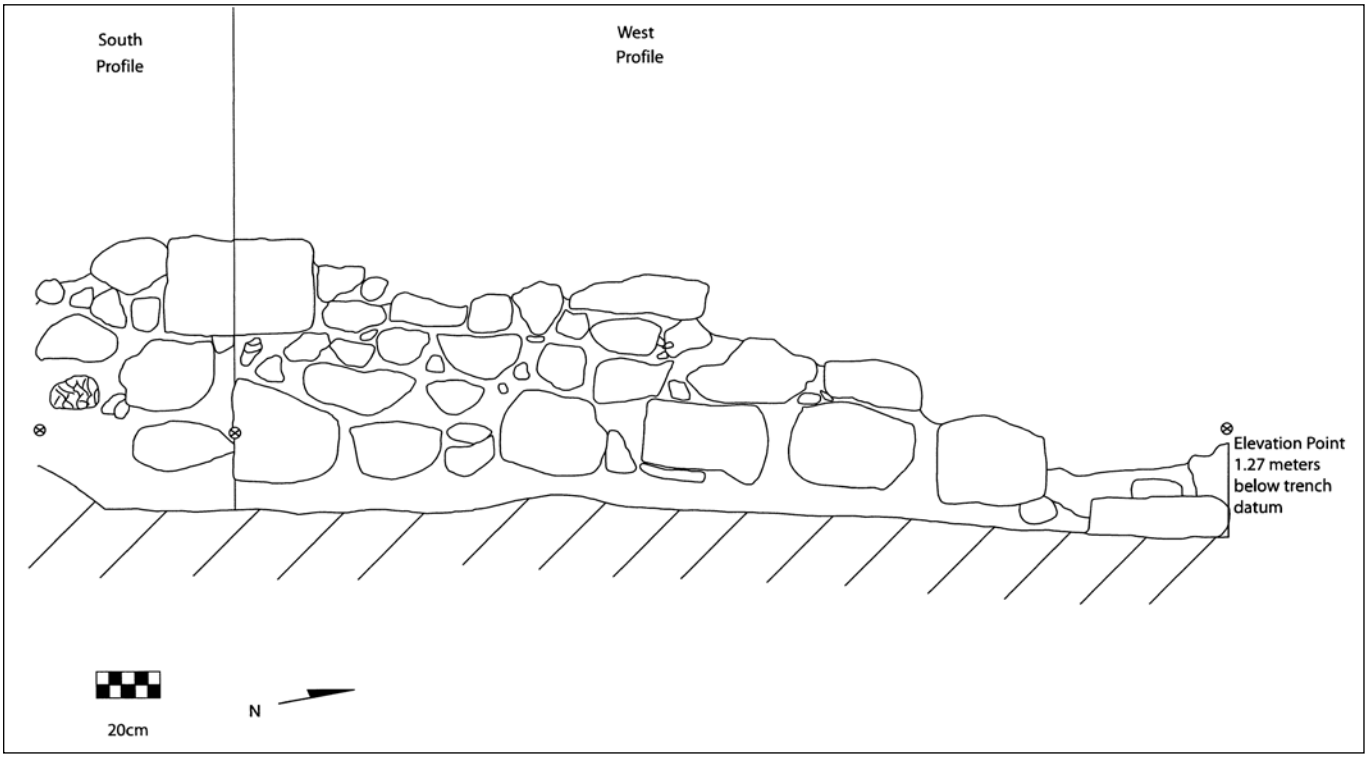
nated by a wide, slow moving waterway – one that built up rich, alluvial soil rather than scouring it away. This wadi valley may have provided large expanses of arable land in a broad, flat floodplain. Hill identified a landform in a tributary wadi that may represent a remnant of the ancient wadi channel that was preserved by a fluke and remains intact elevated 30m above the current wadi bed. Further exploration of this landform by a quaternary geologist should be able to date the feature and lend support to this hypothesis. High agricultural productivity at Khirbat al-Ḥammām is supported by indirect, artifactual evidence. The site's surface is littered with hundreds of handstones and large querns. And other researchers are beginning to concern themselves with the local landscape reconstructions as well. Hydrological investigations at Ba'ja, for example, led Gebel and Kinzel (2007) to suggest that significant amounts of channel incision postdate that site's PPN occupation (Gebel and Kinzel 2007).

Reconstructions of local environmental conditions are beginning to portray the Wādī al-Ḥasā as agriculturally productive and capable of supporting a large, thriving community – perhaps several contemporaneous communities. And available chronological data suggest a long, multi-phase occupational history. Artifacts and economic data sets further add to our knowledge of Neolithic lifeways in the Wādī al-Ḥasā and are discussed next.

Local Character and Regional Connections

Architecture

There are many examples of the distinctive, shared-wall architectural style that can be found at PPNB sites across central and southern Jordan (Byrd 2005; Fino 2004; Gebel and Kinzel 2007; Kinzel 2004; Mahasneh 1997; Makarewicz and Austin 2006; Nissen, Muheisen and Gebel 1987, 1991; Peterson 2004; Simmons and Najjar 2006). And there is also considerable variation in how this shared-wall tradition is expressed from site to site. The 1999 test excavations established that stone walls were preserved to a height of over 2m at Khirbat al-Ḥammām, and the site appeared to share in this agglomerative tradition. The larger, horizontal exposure in the East Field confirmed this uncovering additional, well-preserved architecture (FIG. 5). Feature 1 was assumed, throughout the excavation of Test Trench 2, to be a single wall formed double row of rectangular limestone blocks. However, when we moved southwards and opened Test Trench 3, the two rows diverged suggesting that they defined walls of separate structures that abut-



5. South and west profiles of Test Trenches 2 and 3.

ted one another along only one side. There is also evidence that individual structures went through cycles of internal modification. For example, the internal dividing wall (Feature 2) within the structure does not extend to the floor, suggesting that it was a later addition. Lime plaster is used within these complex, interior spaces, to create floor surfaces and floor surfaces are sometimes elaborated with red painted designs, a feature of PPN culture with a wide geographic distribution in the southern Levant (Peterson 2004). Lastly, we documented a number of subfloor, stone channel constructions during a survey of the roadcut (FIG. 6). These are evocative of similar features at Basta (Nissen, Muheisen and Gebel 1987, 1991).

I suggest that the agglomerative architectural tradition extends back into the MPPNB in central and southern Jordan (e.g. Ghuwayr, Khirbat al-Ḥammām). Given the climate, topography, and available construction materials, the 'pueblo-style' construction is a sensible solution to home building. So sensible, in fact, that this vernacular architectural tradition is still being practiced in the area today (Kinzel 2004). Undoubtedly socioeconomic, ideological, and practical factors were influential in the adoption of this architectural canon. The development of extended family households and the proxemics of these households have been explored by a number of ethnographers. Among the Ketchi Maya, for instance, larger, extended families emerge when heritable resources (agricultural land, flocks of animals, etc.) become economically more important (Wilk 1990: 39-40). In the Puebloan Southwest households expand vertically and horizontally as families and lineages grow, rooms become structurally unsound, and vermin infest structures – just to name several influential factors (Adams 1983; Mindelhoff 1891; Morgan 1881).

Lithic Technology

The chipped stone assemblage from Khirbat al-Ḥammām demonstrates broad technological similarities with widespread, PPNB lithic patterns. The increase in naviform technology through time and standard point types were discussed earlier. In addition, the range of tool types is consistent with Early Neolithic sites elsewhere (TABLE 3). Unifacially retouched Byblos points predominate among the projectile points (FIG. 4). And a massive tool component is present -- presumably linked to agricultural labor and field clearance.

A preliminary functional analysis of the glossed blades from 2006 excavations at Khirbat al-Ḥammām shows that the majority were unretouched with unilateral usewear. Exceptions are one denticulated specimen and one steeply backed, more massive specimen (FIG. 7). Tool metrics combined with location and invasiveness of gloss suggest that most of these tools were hafted and suitable for harvesting cereals. The Khirbat al-Ḥammām assemblage shows strong similarities with the 'Ayn Ghazāl glossed blades with respect to a number of metric attributes and breakage patterns (Olszewski 1994; Vande Walle n.d.). Vande Walle asks whether some of the retouched and utilized blades might have been harvesting implements on which gloss had not yet formed. However, the unglossed specimens tend to exhibit distinctive patterns of retouch and/or wear suggesting different functions. For example, wear and retouch are often discontinuous, bilateral, or both.

A sample of the ground stone was analyzed and

6. Subfloor channel exposed in roadcut.

7. Glossed blades.

Class	1999 n	1999 % [1]	2006 n	2006 % [1]	Total n	Total % [1]
Projectile point	5	7.5	17	16	22	13
Glossed blade	4	6	14	13	18	10
Burin	3	4.5	6	6	9	5
Truncation	2	3	0	-	2	1
End scraper	2	3	2	2	4	2
Side scraper	1	1.5	2	2	3	2
Notch	7	11	5	5	12	7
Piercing tools Awl, drill, borer	5	7.5	10	9	15	9
Large bifacial Adze, pick, chisel	7	11	1	1	8	5
Composite tool	1	1.5	0	-	1	0.5
Microlith	1	1.5	0	-	1	0.5
Retouched flake/blade	25	37.5	29	27	54	31
Unclassified	3	4.5	21	19	24	14
Total	**121**	**100**	**107**	**100**	**173**	**100**
Utilized flake/blade [2]	55		45		100	

[1] Provides percentages excluding utilized , and unclassified pieces.
[2] Utilized pieces reported as item of interest, but not included in totals.

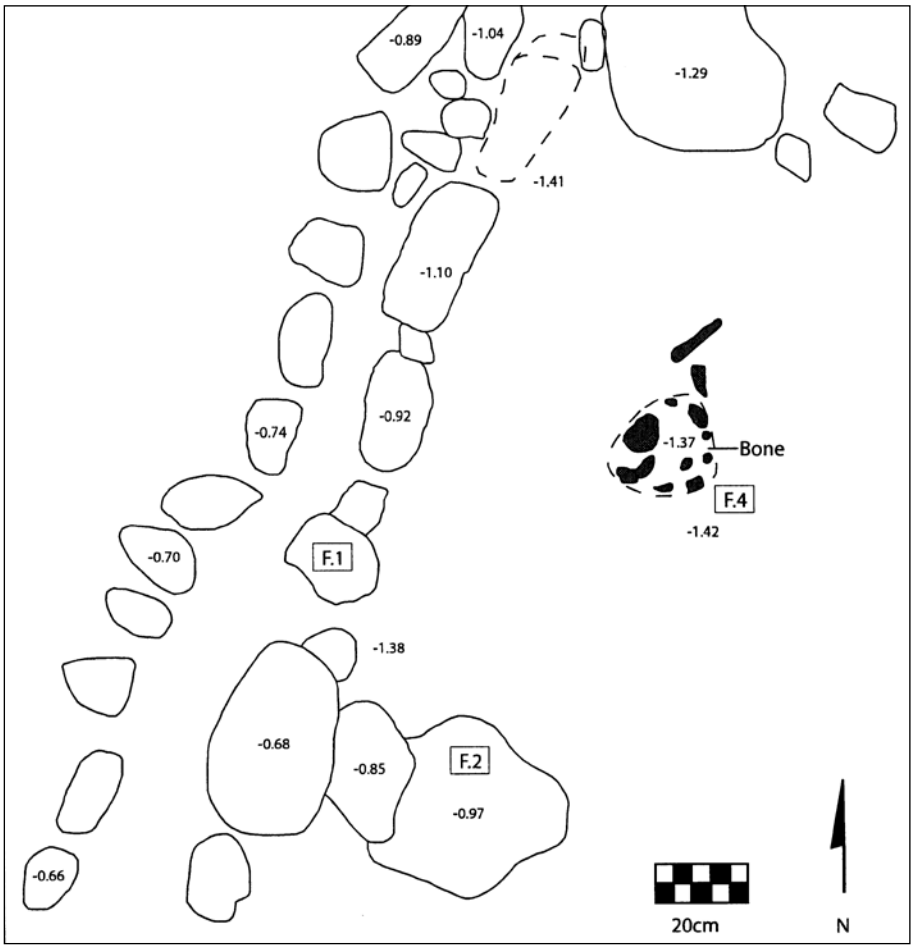
TABLE 3. Chipped Stone Tool Forms (1999-2006)

reported from the 1999 fieldwork (Peterson 2004). A noteworthy addition from 2006, are the three large 'pierced stones' found on the floor of the main room we excavated (FIG. 8). In the relatively unstandardized terminology applied to ground stone these are variously described as mace heads, digging stick weights, loom weights, etc without much in the way of formal description. These specimens are quite large compared to those described elsewhere (average diameter 17cm, thickness 7cm, weight 4 kilograms) (Wright 1992). A child's skull lay directly under two of these large pierced stones, which were resting on a rough ḥuwwar floor (FIG. 9).

8. Pierced ground stone items.

Human Remains and Mortuary Treatment

The skull, just mentioned, was fragmented from the weight of the stones, but the fragile bone fragments had remained tightly clustered, as if to suggest that they had been placed in a container that subsequently disintegrated. The fill directly associated with the skull contained a glycermis shell bead. The skull appeared to be resting on the floor of the structure, rather than in a pit. So perhaps the skull was placed in the structure to mark its aban-



9. Plan view of Test Trench 2 at Floor, Level 4. Cluster of bone designates location of child's skull.

donment rather than its founding.

Based on root development of the first premolar, the individual died at age 3 or 4 (Moorresson, Fanning, and Hunt 1963). Infants and juveniles are represented at other PPN sites. The assemblage of plastered skulls, for example, includes some juveniles (Bonogofsky 2003). And at MPPNB 'Ayn Ghazāl infants were found in subfloor pits and foundation deposits (Rollefson, Simmons, and Kafafi 1992). The numbers of infant and child remains has been increasing with new examples from several sites in southern Jordan: e.g. Ghuwayr I (Simmons and Najjar 2006) and Ba'ja (Gebel *et al*. 2006).

The osteologist reports that the method of skull removal is not clear from the remains. The cranium and mandible are complete, but no cut marks are present. Neither are there vertebral fragments are present. The central and lateral permanent incisors, that were still been developing beneath the gumlines, show evidence of multiple hypoplastic bands. These bands are hallmarks of events that disrupt normal growth patterns (laying down the enamel) in teeth. The presence of multiple enamel hypoplasias on multiple teeth is indicative of systemic stress (as opposed to localized damage to an individual tooth) that affected the child over a significant period of his/her short life. The placement of the bands can be used as a rough estimation of the timing of stress events and suggests critical problems beginning around age 2 (Sullivan n.d.). Hypoplasias were common among adolescents and adults from MPPNB burials at 'Ayn Ghazāl (Rollefson, Simmons, Kafafi 1992).

The tradition of skull caching and intramural burial has been a hallmark of the PPN. And the residents at Khirbat al-Ḥammām appear to be participating in this ritual practice. But placing a child's skull in a container on the floor of a structure is less well-documented. The variation may indicate an interplay between local and regional forces in forging mortuary practices. Other cases of local variation in PPNB mortuary practices reinforce this interpretation (e.g. collective burials at Ba'ja described in Gebel, Hermansen and Kinzel 2006).

Shell
Preliminary work on the shell from the site has been completed by Aldona Kurzawska (TABLE 4). Both freshwater and marine shell specimens are included in the 2006 assemblage (n=46) and both types are culturally modified. Khirbat al-Ḥammām's shell inventory mirrors general trends found at many PPNB sites and she notes that Yiftahel, Abu Gosh, and Jericho have similar profiles (Kurzawska n.d.; Peterson 2004). The shell data are relevant because they document that the site's residents were actively involved in fairly widespread economic and social networks on par with other large, well-documented PPNB sites.

Fauna
Our faunal remains were relatively well-preserved and have undergone preliminary analysis. From the 2006 fieldwork, one hundred forty-four (144) specimens could be identified to species. Of these 90% were caprines, with fox, cattle and possible wild ibex present in small numbers. Interestingly, within the caprine sample, all of the specimens were goat. The size of the goat bones is broadly comparable from those from PPNB 'Ayn Ghazāl and are interpreted as domestic (Wasse n.d.). The only gazelle bone was a single heavily worn awl made on a distal metapodial. Otherwise gazelle is entirely absent from both the 1999 (n=616) and 2006 excavated samples (Peterson 2004; Wasse n.d.). Gazelle were the game of choice among Natufian hunters at the Wādī Juhayra sites on the plateau nearby (Wasse n.d.). And they continue to be hunted by PPN villagers at other sites across central and southern Jordan (Driesch, Cartajena and Manhart 2004; Mahasneh 1997; Nissen, Muheisen and Gebel 1991; Simmons and Najjar 2006). The lack of gazelle from the PPNB deposits at Khirbat al-Ḥammām is unique, and may point to significant socio-economic variation among sites.

Flora
Chantel White has identified grass phytoliths from several soil samples submitted. They have not currently been identified to species. She also analyzed five samples for us looking for spherulites – which trace the presence of fecal material in archaeological deposits – which have been used to identify animal penning areas. Spherulites were present, but in low concentrations, that may be the by-products of humans, dogs, or birds rather than flocks of ruminants. That they are preserved even in low quantities suggests future potential for this line of inquiry (White n.d.). A limited flotation program has failed to produce substantial macrobotanicals from the site (Crawford n.d.). However, good preservation of seed and wood remains at nearby al-Ḥimmah (Makarewicz and Goodale 2004) encourages us to expand this aspect of our research program.

Conclusions
Two decades of survey, excavation and geoarchaeological study in the Wādī al-Ḥasā have produced a wealth of information. And the test excavations at Khirbat al-Ḥammām are beginning to shed light on Neolithic occupation in the area. It's clear that the residents at Khirbat al-Ḥammām were inextricably linked to a larger PPNB world via ritual practice, symbolism, trade relationships, and shared technological repertoires (plaster production, chipped stone styles, etc.). But from the vantage of Khirbat al-Ḥammām's multi-phase occupation, I suggest that local Neolithic populations made the transition from MPPNB to LPPNB *in situ*. Geoarchaeological investigations suggest that the Ḥasā environs may well have provided a stable and productive foundation supporting these developments. And continuity between the MPPNB and LPPNB is manifest across a range of behavioral correlates including masonry construction techniques, shell acquisition, and faunal exploitation patterns. Based on these data, I would advance the idea that there are significant local vectors that contribute to PPN culture and identity-construction in the Wādī al-Ḥasā. To further explore and refine the interplay between large-scale, regional and local influences on PPN lifeways is the challenge facing us now.

Acknowledgements
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Species	Origin[1]	TT1	TT2	TT3	surface
Nerita polita	RS	-	-	-	1
Theodoxus jordani	F	-	-	1	-
Melanoides tuberculata	F	-	2	1	-
Melanopsis praemorsa buccinoidea	F	-	9	9	-
Cypraea isabella	RS	-	-	-	1
Cypraea sp.	RS/MS	1	-	1	-
Nassarius gibbosulus	MS	-	1	-	-
Sphincterohila zonata	L	-	3	5	-
Gastropod	RS/MS	-	-	-	1
Glycymeris sp.	RS/MS	-	2	1	1
Acanthocardia tuberculata	MS	-	-	2	-
Cerastoderma glaucum	MS	-	-	1	-
Donax sp.	RS/MS	-	-	1	-
fossil bivalve	Fs	-	-	1	-

1 RS = Red Sea; MS = Mediterranean Sea; F = freshwater; L=land; FS= fossil

TABLE 4. Summary of Sell from 2006 Excavations at Khirbat Ḥammām.

Larissa Rudnicki, and Abby Vande Walle made sizable contributions to the analysis of the 2006 lithic collections. Becky Shafstall assisted with the figure preparation. A special debt of gratitude is owed to Michael Gregory who took care of our two sons in my absence and is unfailingly supportive of my research.

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Landscapes of Divine Power at al-Ḥumayma

A civic landscape is a product of natural, human, and divine influences. The natural constraints of an environment make some places more desirable to live than others. Human motivations then determine which actual site is chosen, a decision, which is sometimes also apparently influenced by divine guidance. Natural, human, and divine factors also interact to influence the physical appearance of a town, both at its foundation and as it evolved through time. The site of al-Ḥumayma (ancient Ḥawāra) in Jordan's Ḥismā desert provides a good example. The town was founded by the Nabataeans in the first century BC and remained a small but important settlement through the Roman, Byzantine, and early Islamic periods. This paper will examine how the residents of al-Ḥumayma conceptualized and valued their local environment by examining the physical appearance of the settlement in each time period. As we shall see, the most salient structures in each period were not situated randomly, but rather were placed in accordance with each groups' ideas of what was most important about their settlement.[1]

Al-Ḥumayma is located in the Ḥismā region of southern Jordan, a desert plain bounded on the north by the ash-Sharā limestone escarpment, on the west by a concentration of sandstone hills and inselbergs, and on the south by 'Aqaba's granite mountains (see Oleson, this volume, Fig. 1). The plain of the Ḥismā is bleak and unwelcoming. This is a steppe desert covered with sand and rocks. What might be a monotonous landscape, however, is occasionally and dramatically broken by scattered sandstone inselbergs, which rise up to 300 m above the desert floor (Henry 1995: 17-18).

1. E125 shrine precinct during excavation, overview facing west from courtyard door.

The inselbergs and the northern ash-Sharā escarpment are essential for the life of the Ḥismā. In the Nabataean through early Islamic periods, aquifers were too deep to be tapped by wells so winter rains provided the region's predominant source of water (Oleson 1996). Yet with an average of only 95mm of rain a year, and in some years as little as 40mm (Eadie and Oleson 1986: 54), this precious resource would be all but lost were it not for the rocky hills, which naturally collect and channel the rainfall towards the desert floor. This runoff hits the desert floor as a flood, which, as it sinks into the soil, allows vegetation to flourish. Humans who attempt to live in this region need to be cognizant of how and when the life-giving water will flow. Particularly strategic humans can even trap the winter

[1] The starting point for this analysis was the Nabataean and Roman period shrine in Field E125, whose excavation I have been directing. In extending the analysis to the site's other major periods, I have made use of the publications of my al-Ḥumayma colleagues, particularly John Oleson, Robert Schick, Khairieh 'Amr, Rebecca Foote, Erik de Bruijn, and Andy Sherwood. This analysis would not have been possible without their work, but for the specific line of interpretation presented in this paper, I take full responsibility.

flow for use throughout the year (cf. Oleson 1992, 1995, 1996, 2001, 2007b).

Both history and archaeology record that the Nabataeans, who controlled the Ḥismā from approximately the fourth century BC to early second century AD, were experts at finding and storing water in the desert. According to Diodorus Siculus:

"They live in the open air, claiming as native land a wilderness that has neither rivers nor abundant springs from which it is possible for a hostile army to obtain water…Whenever a strong force of enemies comes near, they take refuge in the desert, using this instead of a fortress. For the desert lacks water and cannot be crossed by others, but to them alone it furnishes safety, since they have prepared subterranean reservoirs lined with plaster... After filling these cisterns with rain water, they close the openings, making them even with the rest of the ground, and they leave signs that are known to themselves but are unrecognizable to others..." (Diodorus Siculus 19.94.2-10, extracts, trans. Oleson 2007b: 218).

Clearly the Nabataeans knew how to gain control of the Ḥismā's limited water resources. Yet the Nabataeans described by Diodorus also lived a nomadic lifestyle. They stored water in manmade structures, but, as Diodorus further noted, they did not plant grain, set out fruit-bearing trees, nor construct houses. They moved freely though the desert, watering themselves and their flocks, but they did not choose to settle down. Indeed humans do not usually create permanent settlements in a desert without some incentive.

For the Nabataeans, an incentive to settle in the Ḥismā had been recognized by the first century BC. By this time a radical and profound shift in Nabataean society was probably already at least a century underway (Bowersock 2003). The previously nomadic Nabataeans were now building permanent settlements with impressive architecture, planting crops, accumulating luxury goods, minting their own coinage, and acknowledging their leaders as kings. All of these changes no doubt resulted from the Nabataeans' ability to control the lucrative incense routes running from southern Arabia to the Mediterranean Sea. These routes passed through the Nabataean territory and Diodorus Siculus (19.94) reports that, due to this trade, the Nabataeans far surpassed the other Arabian tribes in wealth. It was thus probably to cement their control over the trade routes that the Nabataeans had begun building permanent settlements along all the major roadways in their territory by the first century AD (Graf and Sidebotham 2003: 70). In the Ḥismā desert, their largest settlement would be located along the ancient King's Highway at a place they called Ḥawāra (modern al-Ḥumayma).[2]

Nabataean Ḥawāra

As John Oleson has shown, it was probably no accident that the Nabataeans chose Ḥawāra for the site of their largest and strategically most important Ḥismā settlement (Eadie and Oleson 1986; Oleson 1992, 1995, 2007b). Ḥawāra provided an excellent environment in which to create a permanent settlement because the sandstone hills immediately west and north of the site created a floodplain on the desert floor below. By building their trademark cisterns within this floodplain, the Nabataeans were able to store enough water throughout the year to sustain a small permanent community. Such a community would be able to monitor the caravans passing along the King's Highway. Moreover, with the addition of a 27km long aqueduct stretching all the way to the ash-Sharā escarpment, the settlement also had enough extra water to sell to caravans, likely at exorbitant prices.

Logically, therefore, both the natural geography and human motivations lay behind Ḥawāra's foundation: the Nabataean king wanted to establish a settlement in the Ḥismā along the trade routes and he needed a location with ample natural water supplies. The site of al-Ḥumayma would have fit his needs well. It is interesting therefore that neither the hydraulic nor the trade advantages of this location are mentioned in the site's ancient foundation myth. There it is recorded that one, and only one, factor led to the site's selection, the directive of a god:

"…Aretas [probably Aretas III (Oleson 2007a: 447)] set out to investigate the oracle, which was 'to seek a place *auar*' — that is 'white' in Arabic or Syrian. When Aretas had arrived and was keeping watch, there appeared to him an apparition, a man clothed in white riding a white camel, and when the apparition disappeared, there appeared spon-

[2] "HWR" in Nabataean; "Auara" in Greek, "Havarra" in Latin. Since the early Islamic period, the site's official designation has been "al-Ḥumayma", although locally "Ḥawāra" also survived to modern times (Musil 1926: 59 n. 20; Lawrence 1926: 665). Both ancient and modern spellings vary.

taneously a craggy hill, firmly rooted in the earth. There he founded a town. (*FGrH* 675 frag. A.1.b, trans: Oleson 1990: 145)".

Hence according to Ḥawāra's foundation myth, preserved in a sixth century AD encyclopedia but dating to at least 200 years earlier,[3] Ḥawāra was founded in response to an oracle. Ancient kings sought the advice of oracles because they were known to give good advice. On the other hand, however, oracles had a reputation for giving responses, which were obtuse. Thus after receiving the advice of an oracle it was the responsibility of the recipient to figure out what it meant.[4]

In this case, the Nabataean prince (who would become Aretas III) had apparently asked the oracle where to establish a new town and had been told to seek a place that is "white". Moreover the foundation myth underlines the significance of "white" by rendering it in three different languages (Arabic, Syrian, and Greek). Previous scholars have suggested that Ḥawāra's whiteness refers to the color of the soil and/or rocks either at the site or in its general vicinity (e.g. Graf 1992: 73-4; Musil 1926: 59 n. 20; Oleson 2007a: 447). I would like to point out, however, that Ḥawāra is not the whitest spot in the region either in terms of soil or rock color. Moreover it seems to me to go too far to link the settlement's name with even relatively nearby hills when the foundation myth's emphasis is on a particular (non-white) rock formation. As is apparent in Figure 1, the flagstones used in this ancient pavement are white, but the craggy hill of the myth, shown in the background, is not.

So when the Nabataean king was told to found a town at a "white" place what might a knowledgeable but obtuse oracle have been telling him? Note first that the oracle never mentioned soil or rock color, just a white place. Note also that whenever a king asked an oracle's advice, the oracle (or at least the oracle's priestly staff) probably knew precisely what the king desired. In this case the king was presumably wondering where along the desert caravan routes he could establish a permanent settlement. With that in mind, I suggest that the knowledgeable oracle was really advising the king that, in order to found a settlement in the Ḥismā, he needed to find a place with enough runoff water to make the Ḥismā bloom. Ḥawāra was one such place (TABLE 1).

TABLE 1. Wild Plants Most Abundant in Soil Samples as Charred Seeds.

Common Name	Scientific Name	Total %
➜White Broom	*Retama raetam*	14.1
Goosefoot family	UnID *Chenopodiaceae*	4.3
➜Mouse-ear chickweed	*Cerastium sp.*	3.7
Plantain	*Plantago sp.*	3.4
➜Common peganum	*Peganum harmala*	2.9
Medick	*Megicago scutellata*	2.9
Sea-Blite	*Suaeda sp.*	2.1

Table 1 shows the wild plants representing at least 2% of all charred seeds recovered from the al-Ḥumayma Excavation Project's published soil samples (Oleson 1997: Table 2). The entries with an arrow beside them indicate plants, which bloom white. These include the first, third, and fifth most prevalent plants in the ancient soil samples and 20.7% of all charred seeds recovered. Incidentally, the plant most prevalent in our ancient soil samples — white broom — was also thriving at the site in a more recent "unsettled" period; i.e. in 1910 when Alois Musil visited and photographed the site (Musil 1926: figs. 16 and 17).[5] When these plants were blooming, Ḥawāra would have been covered in white vegetation. Perhaps, therefore, what the oracle was really telling Aretas was that in order to found a settlement in the desert, he needed to look for a place where the desert blooms.

It thus seems that natural resources, human motivations, and divine guidance all combined to bring about the establishment of the Nabataean town at this desert location. The Nabataeans named their town Ḥawāra in recognition of what made it

[3] Stephen of Byzantium, in his sixth century *Ethnica*, repeated the myth from Uranius' *Arabica*, which is generally thought to have been written in the fourth century AD (West 1974: 283-4), although Bowersock (2003: 25) has argued for a sixth century AD date. Uranius' source for the myth is not known, but Bowersock notes that "…the surviving fragments all demonstrate an unusual familiarity with Arab customs, toponyms, and onomastics" (2003: 25).

[4] One of the most famous examples of this is when Athenians sought advice from an oracle during the Persian invasion of Greece in the 480s BC. The Delphic Oracle told the Athenians that they would be safe behind their "wooden walls". The task for the Athenians was to figure out that that "wooden walls" meant a wall of ships (Herodotus 7.140-4).

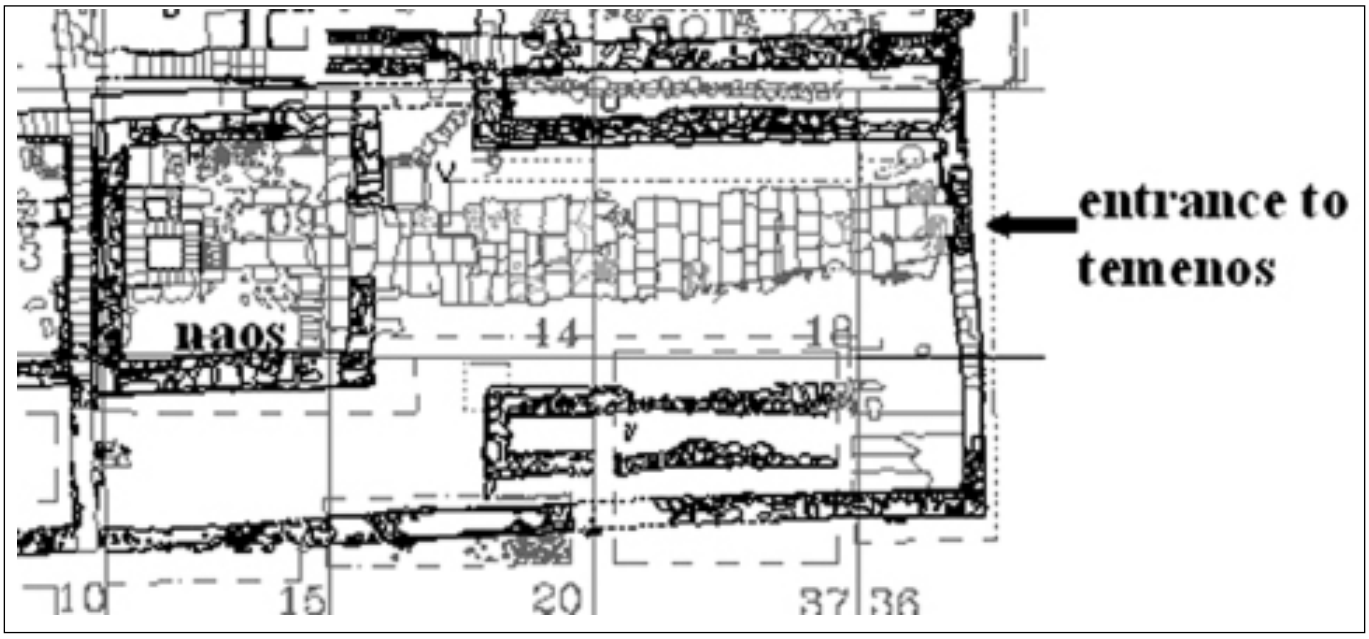
[5] According to Jennifer Ramsay (personal communication, July 2007) the largest shrubs in Musil's photos are white broom.

special, and that name, with slight variations would remain until the early Islamic period when the community's official name changed to al-Ḥumayma, a name which can also mean white.[6]

Due to subsequent occupation, little is known about the appearance of the Nabataean town, except for its hydraulic structures and a few of its religious centers. One particularly important structure for understanding how the Nabataean settlers regarded their local landscape is a shrine located in Field E125 (Reeves, in prep.). Figure 2 provides a plan of the shrine as it looked in a later (Roman period) incarnation. The shrine's essential features at that time included a *temenos* wall, a processional way, an external altar, a fresh-water basin next to the *naos* door, a square enclosed *naos* with a cult figure inside (FIG. 3), and an east-west visual axis running from the door of the *temenos* to the cult figure. Although its extant features date from the Roman period, it is likely that the essence of the shrine remained constant from its Nabataean foundation. Consider, for example, the remains of finely constructed ashlar walls beneath the Roman period rebuild (FIG. 7L). These Nabataean walls encircled the original *naos* and suggest that an impressive structure must have stood here during the site's Nabataean phase.

For the purposes of the present discussion, I will only focus on the orientation of the shrine and on the primary cult image found within. As previously mentioned, the shrine's major axis ran westward from the door of the *temenos*, down the processional way, through the door of the *naos*, and to the cult figure (FIG. 3). This cult figure was rendered in the traditional Nabataean fashion as an upright stone sitting on a base. The Nabataeans would have associated the standing stone with a god and the base with his or her throne. What is particularly interesting about the carefully carved betyl in Ḥawāra's shrine is the notch in its base. Although there are hundreds of extant betyls from the Nabataean realm, I have not been able to find a parallel for such a notch. The betyl in Ḥawāra's shrine thus seems to be unique. Note moreover how the craggy

3. *Naos* of E125 shrine with betyl *in situ*, facing west.



2. Plan of E125 shrine precinct; north at top.

[6] There is no record of why the official name changed. For a discussion, see Reeves 1996: Appendix C.

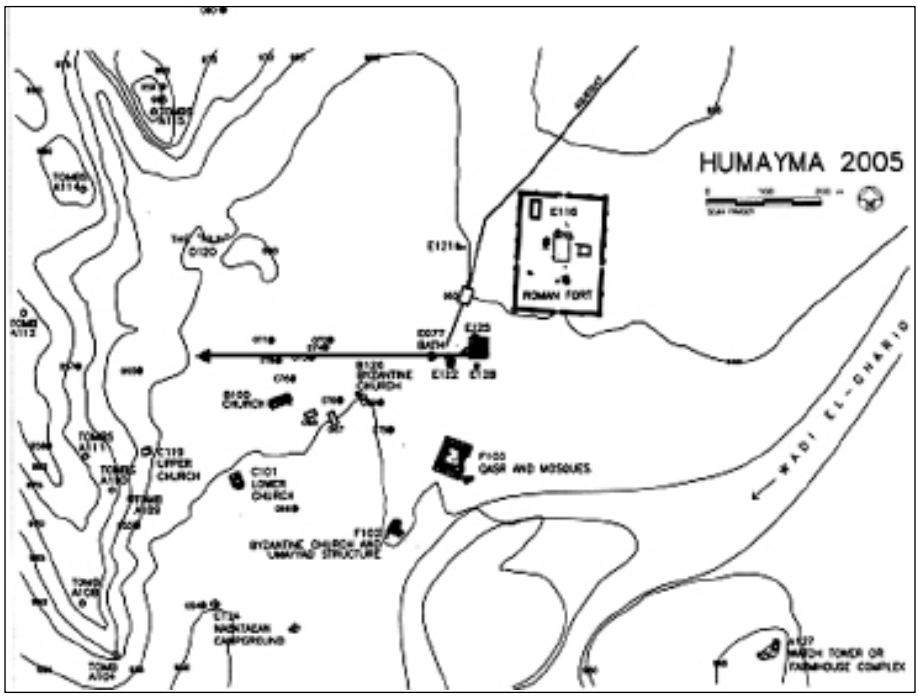
hill behind the shrine, the craggy hill of the foundation myth, has a notch in its top, a notch which the project geologist assures me was probably there 2000 years ago (G. S. Baker, personal communication, June 2002). It seems quite possible therefore that the betyl in Ḥawāra's shrine may represent the god who lived in the local notched mountain, the god who sent the runoff water that made life possible on the desert below.

Support for this theory comes from the orientation of the shrine (FIG. 4). Based on architectural reconstructions we know that people entering the shrine's *temenos* and starting down the processional way would have had a clear view of the craggy hill with the notch (FIG. 5). Moreover from analyses of freestanding betyls from other Nabataean sites, we know that the Nabataeans frequently oriented their betyls so that a worshipper could visually associate a standing stone with a particular hill (Avner 1999-2000: 107-8). It is thus reasonable that the betyl in Ḥawāra's shrine represents the god of the craggy hill against whose flank Aretas had established his town. Finally, as to the name of the god worshipped in this shrine, the betyl itself is unlabelled, but a Nabataean inscription carved into the flank of the hill by a self-declared "servant of 'Al-HWR" informs us that the god "HWR" was worshipped in this town (Graf 1992). In summary, therefore, there

5. E125 shrine precinct facing west (Computer reconstruction by Chrysanthos Kanellopoulos and Platon Konstandopoulos; funded by ASOR Harris Grant).

was a Nabataean god "HWR", whose name was probably vocalized as Ḥawāra.[7] This god was worshipped in the town of Ḥawāra in a form reminiscent of the local hill and in a shrine oriented on that hill. Given the god's name, the foundation myth's emphasis on the craggy hill, and the hill's connection with the runoff, it is likely that Ḥawāra was the patron deity of this Nabataean settlement.

The Nabataeans naturally would have wanted to remain in the favor of the craggy hill's god both



4. Orientation of the E125 shrine.

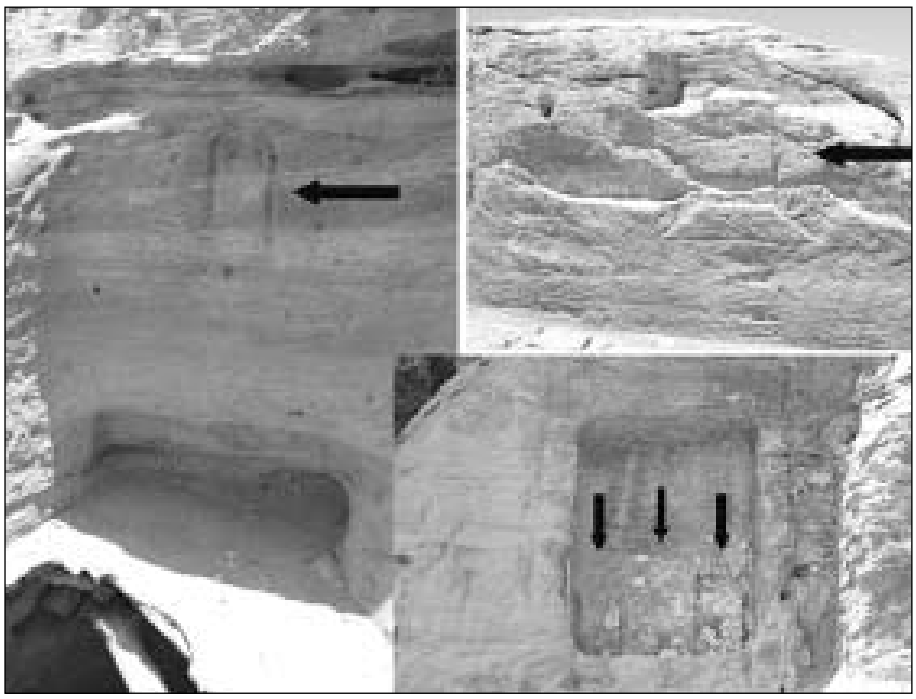
[7] It is also possible that HWR is an abbreviation for "Dushara who is at Hawara" (cf. Graf 1992: 75).

when founding their settlement and throughout its existence. Such divine favor would have been necessary to ensure their water supply. Moreover, because Nabataean society was polytheistic, there were probably many other gods whose favor the local inhabitants would have wanted to maintain. Thus, when constructing their manmade structures, Ḥawāra's Nabataean townsfolk made sure they tapped into both the natural and divine assets of the local environment by carving images of gods or paraphernalia associated with divine worship into the cisterns, dams, and quarries of their new town (FIG. 6). Thus in the foundation and maintenance of Ḥawāra's Nabataean settlement, natural resources, human ingenuity, and divine support were all completely intertwined.

Roman Ḥawāra

Neither the historical nor the archaeological evidence transmits the circumstances under which the Nabataean period at Ḥawāra came to an end. Perhaps the Roman military attacked and damaged the town, or perhaps an earthquake had damaged the town, or perhaps this town remained unscathed at the end of the initial annexation. Whichever of these is true, however, is largely inconsequential compared to what happened after the annexation, when the Romans built two primary forts in Arabia: one at the capital of Bostra to maintain Roman authority over the northern half of the province, and the other at Ḥawāra to control the southern regions and the incense routes. Even if Nabataean Ḥawāra were not in ruins when its Roman garrison arrived, it soon would be because in the process of building a stone fort able to house 500 soldiers, the Romans took their building stones from the pre-existing Nabataean structures. In essence, the Romans dismantled the Nabataean town to build the Roman fort. Consequently all that remains *in situ* of the Nabataean town's ashlar buildings are just the bottommost courses of stones, buried deep beneath the soil or under Roman buildings (FIG. 7).[8]

On the one hand, the robbing out of the extant civic structures in order to build a military fort could be dismissed as practical: the Romans needed to build a large fort quickly and it was simply easier to use nearby extant building materials rather than having to cut new stones from quarries in the hills. On the other hand, however, the prioritizing of the fort over the town was clearly the act of a dominating force. Moreover the fort was clearly meant to dominate the settlement in other ways as well. For one thing, consider the size of the fort whose walls towered over the settlement. Note, too, how the fort's height and the impenetrability of its walls was reinforced by the fort's placement on a small



6. L: altar or betyl carved over cistern; RT: betyl carved at quarry/religious site; RB: *aediculum* containing 3 betyls carved into hill.

[8] Nabataean mudbrick walls, presumably from less important buildings than the ashlar blocks, survived the transition with less damage and were often reused in later period structures.

7. L: Nabataean ashlar wall beneath crude Roman wall in E125; R: Nabataean leveled walls south of Roman Bath E077.

ridge (above the floodplain) and slightly northeast of the old town center so that its walls could be seen in three-quarters view (cf. Oleson, this volume).

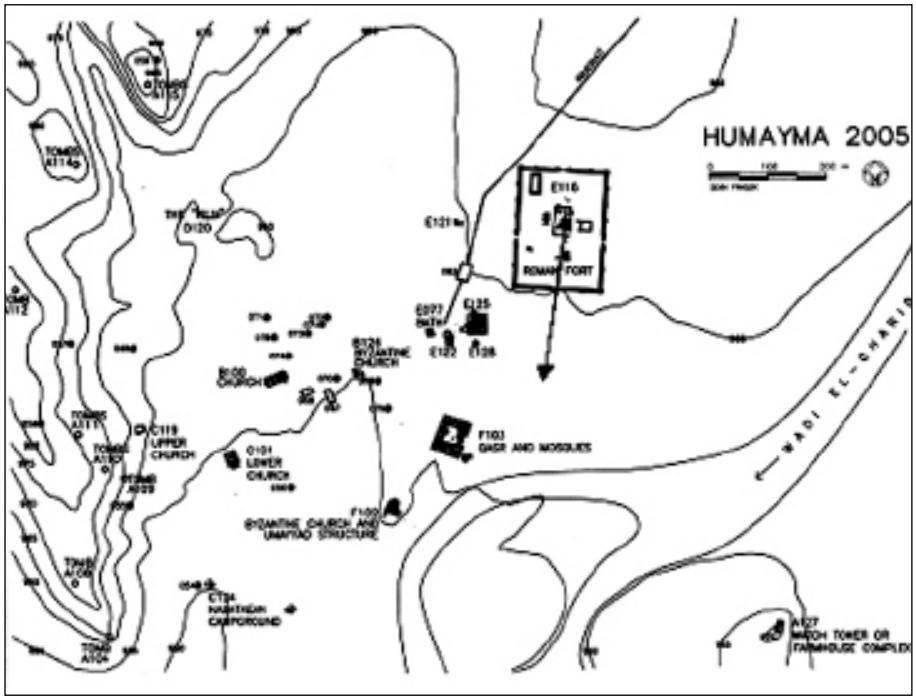
The fort's walls, which enclosed a garrison of 500 soldiers, would have also served to remind Ḥawāra's civilian inhabitants that in many ways the garrison comprised a separate, distinct subgroup. Moreover, this military subgroup was originally probably meant to be viewed as the site's most important community. Consider first the water. John Oleson has estimated that the water delivery system at Ḥawāra, as built by the Nabataeans, would have supported a permanent population at the site of ca. 700 people (Oleson 1997: 177). Suddenly in the early second century AD, with the imposition of the 500 man garrison, Ḥawāra's military populace took up more than half of the available water supply. This meant both that in the Roman period there would have been more soldiers than civilians living at the site and that, because of the garrison, the size of the civilian populace would never have been able to re-achieve its pre-annexation potential. The garrison's dominance over the site's water supply was furthermore architecturally reinforced by a conduit, which funneled water out of the aqueduct before it reached the civic population (Oleson 2007b: 240). Even in the community, the bronze stop-cock which controlled the water supply for the Roman period bath-house (E077), reminds us that Roman officials probably would have maintained some control over everyone's access to water in the garrisoned town (Oleson 1990: 161, 2004: 357).

Another symbol of the military community's supremacy was, of course the quality of its buildings. The best stones had been used in the military structures, leaving the new civilian community to make do with earthen architecture and military rejects. Moreover, the nicest house in Roman Ḥawāra was located inside the Roman fort. The elegance of this house, and the sophistication of its owner, the Roman commander, was signified by its mosaic floors — unparalleled in the Ḥismā — and a room heated by a hypocaust (FIG. 8, Oleson *et al*. 2003: 43-45; in press). Visitors to this house would have left in no doubt that the fort's commander was the most important person in the Roman period settlement.

Thus both in their appearance through their control of natural resources, the military constructions at this former Nabataean town could be seen as symbols of Roman dominance over the native population. Moreover this dominance extended beyond the human realm into that of the divine. Roman tradition attributed the Romans' success in conquering and ruling other peoples to the support they received from their gods (e.g. Livy, *ab urbe condita*; Vergil, *Aeneid*). Thus each military unit had sacred symbols (representing the soldiers and empire), which must be cared for and protected

8. Mosaic floors in the commander's house (*praetorium*) inside the Roman fort.

at all cost (Watson 1969: 127-31). When the military units were not marching, these sacred symbols were stored in an *aedes* (shrine) at the center of their fort. Because Roman forts were built to standardized plans we know that this *aedes* was located in the center of the suite of rooms at the back of the *principia* (headquarters building) (Johnson 1983: 111-7). For reasons of maximum safety, the *principia* and the *aedes* were located in the center of the fort, but, for religious reasons, there was also a direct line of sight between the *aedes* and the front gate of the fort. Because Roman encampments (both permanent forts and marching camps) were always positioned so as to face the enemy (Pseudo-Hyginus, *de munitionibus castrorum*, 56), this meant that the symbols of the soldiers' divine support always stared out the front gates of their encampment at their enemies (Martin 1969: 258). In the case of Ḥawāra (FIG. 9), it should be remembered that the Roman fort was built immediately



9. Orientation of the *aedes* in the Roman fort.

after the annexation of the Nabataean Kingdom. Whether or not the garrison had any reason to fear the local inhabitants, we do not know. The garrison, however, must have felt safe in a fort, which dominated the local landscape, and with the support of their regimental gods, who helped them to watch over that landscape.

The symbolism appropriate at the time of the annexation, however, was not the same symbolism that was appropriate some decades later. The Nabataeans had become Romans and Ḥawāra's garrison was probably composed of soldiers who had now lived in the Roman Province of Arabia for some time, or had been born there. The soldiers at the fort now seem to have wanted to be seen not so much as dominators as co-members of the local community. Thus in the late second or early third century the civic shrine in E125, which like other Nabataean stone structures had been leveled for its building blocks, was rebuilt with the support of Ḥawāra's garrison (FIG. 10). At the center of the rebuilt shrine's *naos* stood the betyl representing the town's Nabataean tutelary deity. Next to this betyl was placed an altar whose inscription explicitly tells us that it was set up by the soldiers stationed at Ḥawāra (Oleson *et al*. 2002: 112-6, 2003: 47-8). The inscription also tells us that the soldiers were calling upon their regimental deity, Jupiter Ammon, to protect the emperors and hence the empire.

It is interesting that this altar on the one hand towers over the betyl but on the other hand did not displace the betyl from the focal point at the center of the *naos*. In the placement of these two symbols of divine favor I believe we can see a message that

10. *Naos* of the E125 shrine (Computer reconstruction by Chrysanthos Kanellopoulos and Platon Konstandopoulos; funded by ASOR Harris Grant).

concordia (harmony) between the soldiers and civilians is now more important than dominance by one group over the other. The third century inhabitants of the site (soldiers and civilians together) are acknowledging that their prosperity now comes both from the town god, the god of the mountain, and from the tutelary deity of Ḥawāra's military garrison. Significantly a pair of mid third century coins from Bostra, the site of Arabia's other major garrison, convey exactly the same message by showing Jupiter Ammon (patron deity of the legion) shaking hands with the Tyche of Bostra (the city goddess of Bostra) (Kindler 1983: nos. 48, 56). Around the coin an inscription reads *CONCORDIA BOSTRENORVM* (the harmony of the Bostreans). Thus the coin issued by Bostra and the civic shrine at Ḥawāra conveys the same message of solidarity. Ḥawāra did not mint coins, but if it did, one suspects that contemporary issues would have read *CONCORDIA HAWARENORVM* (cf. Reeves, in prep.).

Byzantine Ḥawāra

It is thus clear that from the Nabataean to the early Roman to the late Roman periods, the physical focus of the site shifted, and these shifts were to a large degree dependent on the religious beliefs of the site's inhabitants. In the Byzantine period, the focus of the site shifted again, and again the shift had much to do with religious values and orientations.

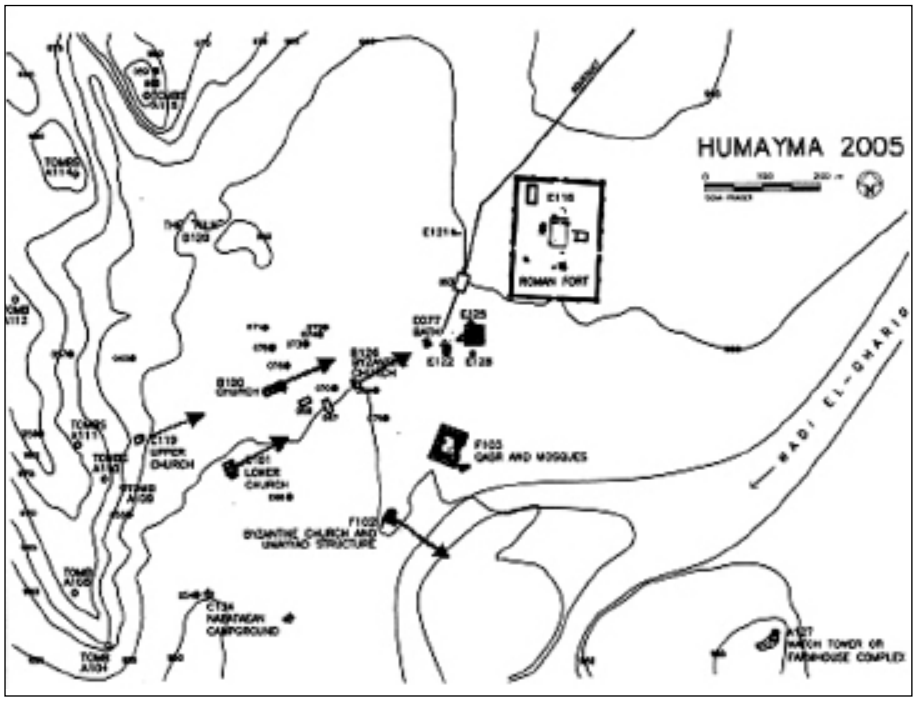
One of the most important changes, given the history of the site so far is that the civic shrine in E125 did not survive into the Byzantine period. The shrine had been abandoned in the late third century after the departure of the Roman garrison and by the time another (smaller) garrison returned in the early fourth century, the walls of E125 had collapsed and the shrine was buried. Interestingly, there was no attempt to dig out the shrine. Either the fourth century inhabitants of Ḥawāra did not know of the shrine's existence or they did not care. By this time, due to Constantine's reforms (Helgeland 1985: 814-5), Christianity was almost certainly gaining strength with the military inhabitants of the region (and in a garrisoned town probably with the civilian inhabitants as well). At al-Lajjūn, for example, where a new legionary fortress and exterior temple were built ca. 300AD, the temple was quickly abandoned even though the fort remained in use (Parker 1991: 134). Two hundred years later,

ca. 500AD, a chapel would be inserted into the fort (Parker 2007: 254). Yotvata's fort apparently received a chapel even sooner, in the first half of the fourth century (Davies and Magness 2007).

As to the Christian population at Ḥawāra in the fourth century (both military and civilian), we do not know yet how large it would have been or where they would have worshipped (Oleson 2007a: 453). As early as the fifth century, however, churches started to be constructed at Ḥawāra and, by the end of the seventh century the small town contained at least five churches (Schick 1995a-b; 2001). During this same period, the military importance of Ḥawāra had declined. In the early fifth century the fort was abandoned (Oleson *et al*. in press) so if the unit of *equites sagittarii indigenae* mentioned by the fifth century *Notitia Dignitatum* (Seeck 1876: *Oriens* 34.25.73) was still extant after the early Byzantine period, it was probably as a militia living in the town. In any case, the military insignificance of this site by the end of the Byzantine period can be surmised by Ḥawāra's omission from the records relating to the Islamic invasion (Schick 2007). The de-emphasis on the fort through the Byzantine period is also clearly shown by a shift in the civilian population away from the fort and back in and around the concentration of Nabataean cisterns on the west side of the site.

Although the population shift away from the east side of the site is in itself interesting, what is even more interesting is the orientation of Ḥawāra's churches, which very clearly indicates that the spiritual focus of this Byzantine period town was quite different than it had been at any point in its past. For the first time, all new religious structures at this site turned their back on the craggy hill and chose to face the open expanse of desert (FIG. 11).

Today it may seem relatively inconsequential that the five Byzantine churches constructed in Ḥawāra all have eastward facing apses given that the norm is for churches to be oriented to the east.[9] It must also be remembered, however, that up until the early fifth century, the eastward facing apse (and indeed the apse itself) was not yet universal. Instead early church builders sometimes oriented their churches differently in order to take in aspects of the local setting (e.g. in a practical way by reusing the foundations of earlier buildings or in a spiritual way by fostering pre-existing cult traditions, Finney 1997: 1-2; Gamber 1993: 164-5; Landsberger 1957: 197, 201; White 1990: 21-22, 111-18). Yet, by the fifth century, as a result of the growing standardization of Christian practices, it had become almost universal for churches to have apses on the east. Moreover, the reason for orienting the churches in this way itself reflected stan-



11. Orientation of Byzantine churches.

[9] The exact orientation was probably towards the rising sun on the day a church's foundation was laid (Dinsmoor 1939: 101).

dardization, this time as regards prayer practices.

Back in the early years of Christianity, most, but not all, Christians had probably faced east when praying (Lang 2004: 39-40). In response to different prayer practices, many Church leaders by the second century were arguing that all true Christians needed to face east while praying (Lang 2004: 42ff.). For example, Origin in the early third century argued, "…that the direction of the rising sun obviously indicates that we ought to pray inclining in that direction, an act which symbolizes the soul looking towards where *the true light* rises" (*De oratione* 32; translation from Lang 2004: 46). Similarly the authors of the early fourth century Syrian *Didascalia Addai* proclaimed: "The apostles therefore appointed that you should pray towards the east, because… [when Christ returns] he will appear suddenly from the east" (canon 1 extract; translation from Lang 2004: 48). These extracts seem to reflect attempts by Church leaders to standardize Christian practices and to link explicitly Christian belief with Christian conduct. In particular, as regards the direction proscribed for prayer, the Church Fathers were probably specifically interested in solidifying a common sense of Christian identity, which would be distinct from Jewish and pagan identities (Lang 2004: 40-41).

Although the Byzantine era's newly standardized Christian practices had nothing to do with Ḥawāra *per se*, the effect they must have had on ancient communities, such as Ḥawāra, would have been significant. In the fourth century Christian leaders gained control of the vast and formerly polytheistic Roman Empire. Throughout the expanse of this empire every individual community had been accustomed to worship the gods who lived in their local landscape. Thus, a major consequence of dictating a universal (not local) orientation for true Christians to pray in would have been the elimination of all of the local focal points for spirituality. Instead of praying to gods who lived in the local landscape, Christians went into sealed churches, looked through windows at the eastern sky (Lang 2004: 82-83), and focused their minds on a universal, otherworldly God. Again, in communities with pagan traditions stretching back hundreds of years, a universal, transcendental focal point for prayer probably should be seen as a way of solidifying a distinct identity for Christian inhabitants. In this regard, it should also be noted that it was in the fourth century that the Latin word *paganus* (English "pagan", meaning "someone from a rural community") was being used to classify Christianity's opponents (O'Donnell 1977).

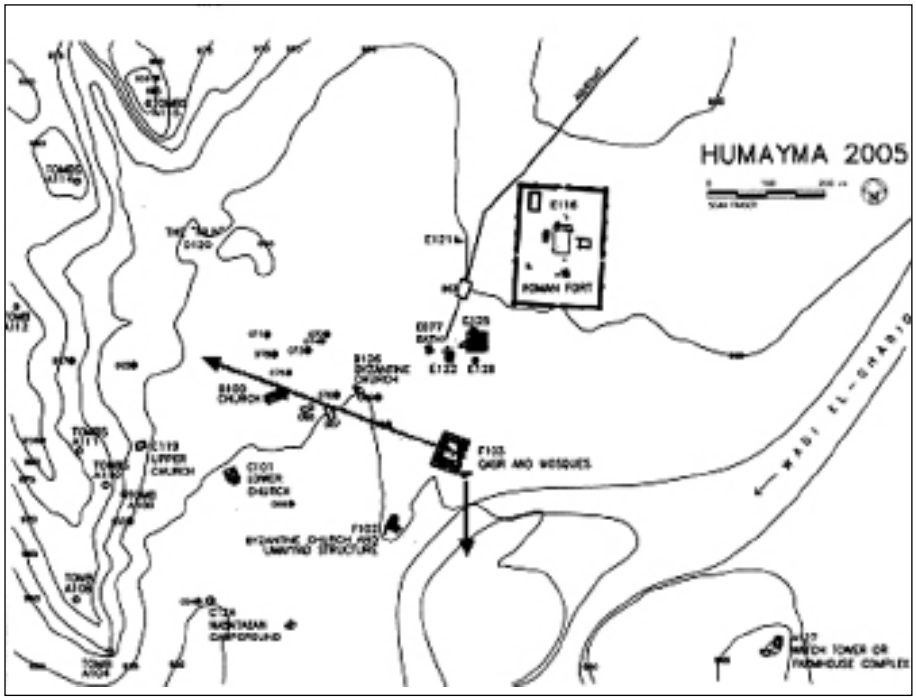
At Ḥawāra, the Byzantine inhabitants must have known the importance of the local hills in supplying runoff water because they built their churches in the midst of the ancient cisterns. They also likely knew the previous spiritual connection with the craggy hill because it was around the same time that Ḥawāra's churches were being built that Stephen of Byzantium was adding Ḥawāra's foundation myth to his encyclopedia. Hence even though Ḥawāra's Byzantine churches faced east because almost all Christian churches of that time faced east, it is likely that the local congregations knew that to please God and to achieve salvation they must put aside their ancestors' reverence of the craggy hill. The churches' orientations reinforced the official message that salvation depends not on peculiarities of local landscapes but on one's relationship with a universal, all encompassing god. Thus, Ḥawāra's enclosed churches sealed in the faithful, blocked off their view of the local environment, and focused their devotion in an universally symbolic direction.

Early Islamic al-Ḥumayma

Just as the Christian religion changed the religious orientation of Ḥawāra in not only a spiritual sense but also in a very physical sense, so to did the arrival of Muslim inhabitants. In the late seventh or early eighth century, ʻAli bn ʻAbdullāh purchased the village (now called al-Ḥumayma) and built a qaṣr ("large residence") and mosque for his extended family at its southeastern edge, just above the wadi (Foote 2007; Schick 2007). Why the family chose to build in that part of the site is not known. What is clear is that the qaṣr and mosque, although humbler than the desert estates of other Umayyad-period elites, were the most impressive structures on the site at that time. Certainly these two interrelated buildings were much larger and better constructed than other contemporary domestic structures built into the ruins of churches (e.g. B100, Schick 1995a: 337) and older houses (e.g. E122, Oleson *et al*. 1999: 426-7). It is also interesting that the site's new owners deliberately sought to isolate themselves from the other residents by placing not only their mosque (which was probably private) on the eastern side of their residence, but also the entrance to the residence as well.

Given the variations in the extant Umayyad period quṣūr, there does not seem to have been a general rule as to which side the entrance should be on. At al-Ḥumayma, the choice of an eastern entrance is particularly interesting, given our previous discussion of views, because it gave the qaṣr a hilly backdrop to the people approaching its main entrance (FIG. 12). Perhaps this was simply for beauty's sake, as the local hills were the most impressive backdrop for a building in that location. But note, too, that the mosque and the qaṣr, although built as a unit, did not share the same orientation. The mosque was oriented north-south following a religious tradition common in early Islamic mosques in the region (Foote 2007: 463). In contrast, the axis of the qaṣr seems to be deliberately turned so as to provide it with almost the same backdrop as had been selected for the Nabataean shrine centuries before (cf. FIG. 4). Again, perhaps this was for aesthetic reasons, but perhaps it was also for symbolic effect. The hills at al-Ḥumayma were typical of those in the early Islamic ash-Sharā region running from Petra south to ʻAqaba. According to the early Islamic historians, ʻAbdullāh bn al-ʻAbbās, son of the Prophet Mohammad's uncle and former patriarch of the Abbasid family, had had a vision that the first ʻAbbasid caliph would come from the ash-Sharā district of southern Jordan (Schick 2007). If this story was indeed known in the seventh century, al-ʻAbbās' descendents may have wished their visitors to be impressed by al-Ḥumayma's hills, which are so characteristic of this region of ash-Sharā.[10]

Thus, for aesthetic and perhaps symbolic reasons, the Abbasid family chose the local hills as the backdrop for their residence. The spiritual orientation of the family, however, was clearly on Mecca. The *miḥrāb* in the mosque pointed southwards to Mecca and we know that various patriarchs of the family made yearly pilgrimages to Mecca where they stayed for one or two months (Schick 2007). This reflects the piousness of the family and especially of its various leaders. This piousness is also reflected in a daily ritual said to have been carried out either by the first patriarch to live here (ʻAli bn ʻAbdullāh) or by his son (Muhammad) (Schick 2007). Apparently this head of the family carried out so many *rakʻah*(s) (prayers) that he developed calluses on his forehead, and hence was given the nickname "the possessor of calluses". The early Islamic historians tell us that these *rakʻah*(s) included two he performed each day in front of each of the 500 olive trees in his garden at al-Ḥumayma. This was an act of extreme piousness and the location he chose to perform it in is presumably one in which



12. Orientation of the Abbasid family's qaṣr and mosque.

[10] This story comes to us from authors writing in the ninth and tenth centuries; i.e. after the Abbasids' victory (Schick 2007). Neither Foote (2007) nor Schick (2007) believe that the Abbasid family had pretensions for rule when they first settled at al-Ḥumayma.

he felt close to his god. His descendents may similarly have felt a divine closeness in al-Ḥumayma's olive grove, given that they chose that location in which to hide the sacred yellow scroll prophesizing their family's political dominance (Schick 2007).

Conclusion

An olive grove in the desert is a miracle. A permanent settlement in the desert is a miracle. That the head of the Abbasid family prayed in his orchard, as well as in the mosque, showed that he recognized the miracle of al-Ḥumayma's local environment, just as the original Nabataean settlers had. Religious traditions dictated how each of al-Ḥumayma's successive population groups would react to that miracle. Some groups associated their settlement's prosperity with a local deity; other groups with a universal deity. Still, all groups probably would have agreed that nothing could grow or prosper at this site (including themselves) were it not for divine benevolence. When discussing the physical appearance and character of an ancient settlement, the divine influence is often overlooked. I started this paper by saying that a civic landscape is a product of natural, human, and divine influences. As I hope I have shown, in order to understand the nature of al-Ḥumayma's successive civic incarnations, natural, human, and divine factors must all be considered.

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A Landscape/GIS Perspective on the Thamudic Inscriptions and Rock Drawings of the Wādī Ḥafīr, Southern Jordan

Introduction

Tens of thousands of Thamudic E inscriptions and rock drawings can be found throughout the Ḥismā sandstone desert of southern Jordan. The inscriptions are typically names, genealogies, short prayers to Arabian deities, and enigmatic personal expressions of longing and desire. The contemporary Thamudic rock drawings are incredibly detailed and extremely well executed artistic compositions that focus almost exclusively on the subjects of hunting and camels.

The landscape context of these Thamudic petroglyphs has received little attention, primarily because on first glance their distribution — usually among boulder strewn wadi slopes and isolated rock outcrops — has appeared to most scholars to be either completely random or nearly incomprehensible. With the advent of Geographical Information Systems (GIS), however, we are now in a much better position to unravel the locational and content complexities inherent in Thamudic inscriptional and rock art data.

This paper explores significant patterns in the distribution of nearly 1,000 Thamudic petroglyph sites scattered across the Wādī Ḥafīr of southern Jordan, a narrow canyon that connects the Ḥismā desert with the Rās an-Naqab escarpment. These patterns were revealed through a detailed GIS analysis of site position and content relative to such factors as topography, geology, and hydrology. It will be argued that such analyses represent the best avenue for understanding the real world context in which these important but still poorly understood artifacts were carved.

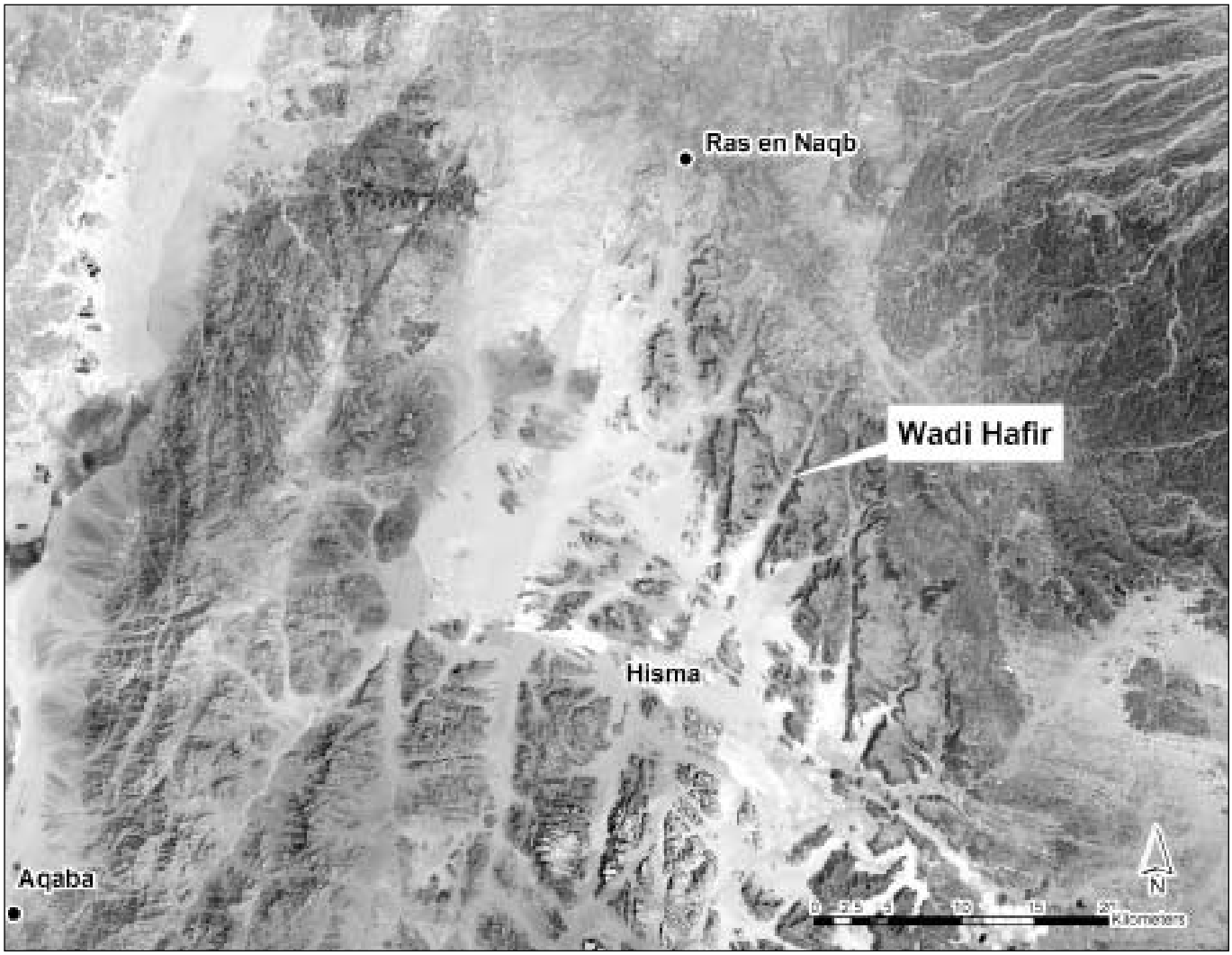
Location and History of Research

The steep-sided Wādī Ḥafīr gorge is a long and narrow canyon which stretches 15km from the Rās an-Naqab Escarpment towards the Qā‘ ad-Dīsī mudflat in the center of the Ḥismā Basin in southern Jordan (FIG. 1). The slopes of the wadi are littered with hundreds of thousands of blackened sandstone boulders that have eroded down from the walls of the canyon over the millennia. These relatively soft stones have served as ideal canvases for the inscriptions and drawings composed by the ancient and modern populations living in and passing through the Ḥismā.

The Wādī Ḥafīr was first systematically studied by the late Dr. William Jobling of the University of Sydney as part of the decade-long al-‘Aqaba-Ma‘ān Archaeological and Epigraphic Survey (AMAES), 1979-1990. The AMAES spent the better part of four field seasons in Ḥafīr, recording and photographing hundreds of examples of rock art and Thamudic inscriptions, while also locating the area's chief natural resources and archaeological sites (Jobling 1983, 1985, 1988). More recently, the Wādī Iram Archaeological and Epigraphic Survey, directed by Saba Farès-Drapeau and Fawzi Zayadine, has visited and rerecorded several important sites within the valley (Farès-Drapeau and Zayadine 1997, 2004). The informal survey work of Edwardo Borzatti von Löwenstern has revealed a number of interesting sites and features in and adjacent to the Ḥafīr (Borzatti von Löwenstern 1986, 2005; Inglis 1988). Most recently, the author's Wādī Ḥafīr Petroglyph Survey (WHPS) was aimed at revisiting and plotting with a Global Positioning System (GPS) many of the inscription and rock art sites recorded by the Jobling survey.

The Thamudic E Inscription and Rock Art Sites from the Wādī Ḥafīr

The WHPS recorded, photographed, and plotted the location of 563 Thamudic petroglyph sites,



1. Location of Wādī Ḥafīr within the Ḥismā Basin of Southern Jordan.

a "site" being defined as any individual stone or rock face that included a Thamudic inscription and/or drawing. Carved on these sites were over 1,700 Thamudic E inscriptions of various types and nearly 250 signed and highly detailed drawings. To this database of sites can be added an estimated 300 Thamudic sites that were visited and photographed by Jobling but not discovered or plotted by the WHPS. Although these sites lack locational GPS data, their relative position in the landscape can still be reconstructed through the notes and sketch maps Jobling made regarding their topographic position. Taken together, the data from both surveys provide a valuable source of information on Thamudic-period inscriptional and artistic activity within the Wādī Ḥafīr.

The vast majority of the Ḥafīr inscriptions can be classified as Thamudic E (more recently termed Hismaic) (Macdonald and King 2007) and are broadly dated to anywhere between the late sixth century BC and the late fourth century AD. Personal names, prayers, and contextual information, however, suggest a close overlap with the Nabataean kingdom and its culture (first centuries BC/AD). The inscriptions are, with few exceptions, largely short and often redundant formulae, which typically include only names, extended genealogies, references to accompanying rock art and, more rarely, simple dedicatory prayers/curses and enigmatic expressions of sadness, longing, or desire (FIG. 2). The more common authorship expressions open with the *lam auctoris* and are followed by the carver's name, his genealogy (usually to one or two generations), and then sometimes reference the name of his tribe. In texts accompanying drawings, the author often specified the name of the depicted

2. Thamudic E inscription and rock art site from the Wādī Ḥafīr.

3. "Camel and Rider" scene, composed by Zdmnt son of Rm'l.

animal and/or used the word *khṭṭ* (to inscribe/inscription, to draw/drawing) to take credit for the carving of an animal or scene. The far less common prayer texts typically ask the deity (usually Lat or Dhushara) to remember (*dhkr*) the companions or tribe of the author or to grant them well being. The even more infrequent emotive texts (which often open with the enigmatic phrase *rb sqm* or *rb sqm srr*) seem to express feelings of heartache and longing for a loved one or companion.

The rock art that can be securely associated with the Thamudic inscriptions (either through textual association, physical relationship, or stylistic grounds) is focused almost exclusively on the subjects of the camel and the hunt, although other motifs, such as horses and combat/battle, do occasionally occur (Jobling 1992). Typically, the camel (most often depicted as the young she-camel or *bkrt*) occurs as an isolated motif or with a mounted "heroic" male rider (FIG. 3). The hunt motif occurs either as an isolated depiction of a hunted animal (usually the ibex, oryx, or ostrich) or, more strikingly, as a composite narrative scene involving the animal, hunters, hunting dogs, and weapons (FIG. 4). Although both motifs must reflect the reality of ancient Bedouin life in the Ḥafīr to some extent, it is also important to note that the camel and the hunt were important ritual symbols in pre-Islamic Arabian society (Eksell 2002: 138-161; Stetkevych 1993: 27-42, 1996: 60-63).

4. Hunting scene composed by Bjlt son of Zdlh.

Applying GIS and Spatial Analysis to Epigraphic and Rock Art Data

With this background in mind, we can now turn to how a landscape perspective can provide greater insight into our understanding of these fairly enigmatic remains. As modern archaeological practice has revealed, GIS provides an important set of tools for analyzing the spatial relationships inherent in archaeological data (Wheatley and Gillings 2002). Ongoing research in the Wādī Ḥafīr suggests that such tools are equally useful to those who deal with ancient inscriptions and rock carvings.

First, given the large number of Thamudic sites now recorded for the Ḥafīr and the wadi's relatively contained and restricted topography, the Ḥafīr represents an ideal location to study patterns in the distribution of sites and their content. Ideally, such an analysis might reveal patterns that are relevant to how we interpret the meaning and function of the petroglyph sites. For example, we can ask,

"do sites cluster around certain resources?" or "do prayers to particular deities focus on only select landscape features?" These questions and many others can best be addressed through a landscape/ GIS perspective.

Second, looking at site distribution through a GIS simply provides a more visual and accessible means of understanding and ultimately interpreting our data. Not only does a simple GIS distribution map show us where recorded sites occur within the landscape, but that map can also be overlaid with topographic and geological data, aerial photos and satellite imagery, as well as information about the position of man-made features and natural resources. With all of this information brought together, it is far easier to compare and contrast significant site characteristics and, moreover, a GIS facilitates such comparisons by having a range of options for symbolizing and highlighting contrasting data. With appropriate data, a GIS also provides the ability to generate 3-D models of the landscape we are studying. Although such models can create cool "virtual worlds" that allow us to visit and "fly through" our landscapes at the touch of a button, such surface models also form the basis of powerful analysis tools, such as perception or "viewshed" modeling and hydrological modeling (Wheatley and Gillings 2002: 107-124).

The real power of GIS, however, lies in its ability to query and analyze spatial relationships between and among sites that share certain characteristics. These characteristics — defined as "attributes" — are the non-spatial data that we deem to be significant about a Thamudic site. For example, for each site we can identify the number of inscriptions present, the names of the various authors and their genealogies, the occurrence of particular artistic motifs, or the presence or absence of prayers or emotive texts. Put simply, a properly ordered GIS can identify almost any element of an inscription/rock art site that we think might be significant for our research. With this attribute data stored in a GIS, we can then search for and display all sites that meet certain criteria. For example, we can search for all sites that have hunt motifs or all sites that have a prayer to Dhushara, or better yet all sites that meet both criteria. We can also do the operation in reverse, looking at sites that are spatially correlated to see if they share any common characteristics.

When viewed against topographic or satellite imagery, we are then able to study highlighted sites relative to the position of man-made and natural features that might have been significant. In this regard, the ability of a GIS to generate new information from the merging of map layers and site characteristics is significant. For example, a "viewshed" analysis can help us understand what parts of the surrounding landscape a person could see from a particular location, while the creation of a "density surface" allows us to see what sites or group of sites have the highest concentration of Thamudic inscriptions.

A GIS/Landscape Analysis of Thamudic Sites of the Wādī Ḥafīr

Although the locational analysis of Thamudic sites in the Wādī Ḥafīr is still at a preliminary stage, certain patterns are evident in both the content and distribution of sites that allow us to draw conclusions about where and possibly why inscriptions and drawings were carved in this valley. Likewise, the absence of certain spatial patterns allows us to discount some generalized socio-cultural hypotheses about why petroglyph sites might cluster in an environment such as the Wādī Ḥafīr.

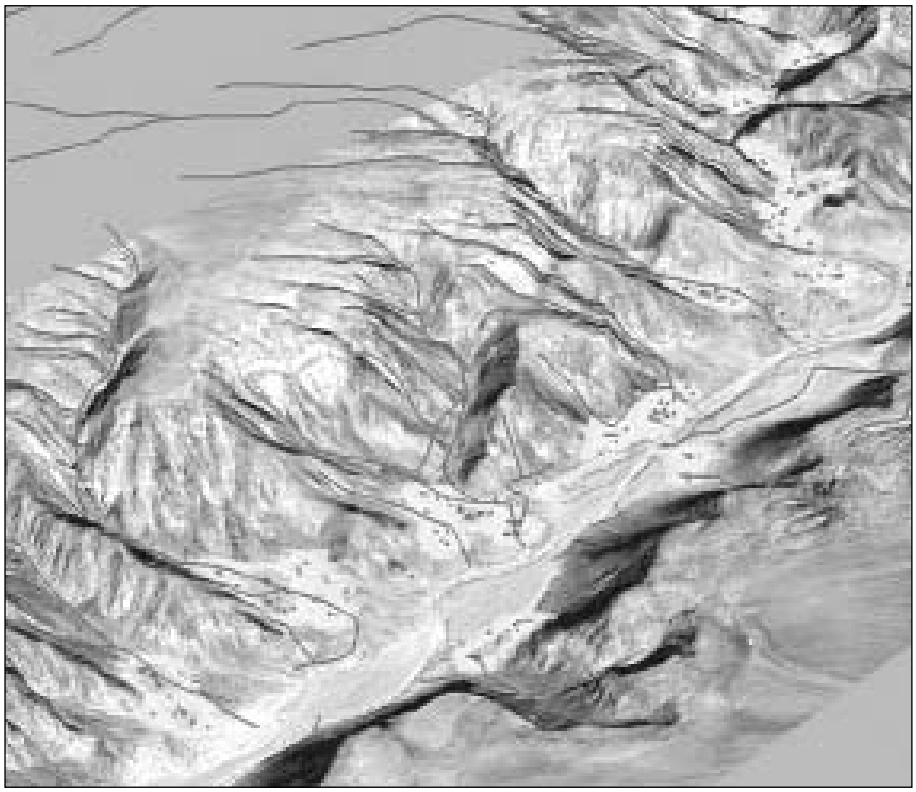
We will deal first with those hypotheses that are not born out by the spatial distribution data. First, there seems to be little evidence that the Wādī Ḥafīr was a major or even alternative international trade and transit route from the Ḥismā to the Edomite plateau as initially proposed by Jobling (Jobling 1985: 219). Nearly all of the inscriptions located within the narrow confines of the Ḥafīr are of the local Thamudic E/Hismaic variety, with only a handful of Nabataean, Thamudic B, and Thamudic D inscriptions known. Furthermore, the Thamudic E inscriptional/rock art sites are distributed fairly evenly across the entire length and breadth of the wadi, with little large-scale clustering that might suggest the existence of well-established stopping posts, camps, or way stations. However, the wadi's large number of inscriptions, its gradual and relatively easy accent north to the Edomite plateau, and the existence of a number of well-worn tracks up the escarpment suggest the Ḥafīr was an important route for the local pastoral population. Pastoralists would have utilized this natural and well-watered corridor as they moved their herds seasonally between the highlands and the desert.

There is also little spatial evidence to suggest that certain kinds of Thamudic inscriptions or rock

art were tied or linked to specific places or locations within the landscape of the Ḥafīr. Neither prayers nor emotive expressions, for example, can be associated exclusively with particular landmarks or topographic wadi features that we might deem to be significant — cairns, high places, springs, exceptional stones, natural pools, narrow clefts, etc. Rather, these evocative and obviously personal texts can be found almost anywhere there was good carving to be had, usually amidst the normal and unremarkable boulder scree covering the valley slopes. As such, it does not appear that these kinds of texts were used to ritually "mark" or "identify" sacred or culturally meaningful locations within the landscape. Similarly, there is little evidence that either the camel or hunt motif was carved at selected locations within the wadi. Again, both motifs are found throughout the entire wadi and neither can be exclusively linked to any specific locale or even tied to a general topographic situation, such as along the valley floor or high in a tributary wadi. Therefore, there is nothing to indicate that particular human activities like ibex hunting or camel herding/grazing were singularly associated with selected places within the landscape and topography of the Ḥafīr. Apparently, these images were far more symbolic than functional, more idealized than real.

A locational analysis of Thamudic sites, however, does provide some positive insights. Within the wider, seemingly random distribution of sites within the Ḥafīr, there are noticeable pockets of site clustering. In these areas, usually measuring anywhere from tens of meters to several hundred meters in diameter, carving sites are concentrated together and/or show an exceptional amount of inscriptional and drawing activity relative to the space they occupy (FIG. 5). By creating a "density surface" of Thamudic inscriptions in the Ḥafīr GIS database, it is possible to pinpoint those areas of the wadi that witnessed the most carving activity. And where were people choosing to carve their names, prayers, and drawings? Satellite imagery and ground truthing indicate that many clusters occur in the gently sloping, boulder-filled tributary wadis of the Ḥafīr, usually situated in "open" areas or clearings that offer a slight vantage point over the immediately surrounding terrain.

When the inscriptional clusters are viewed against the natural drainage networks of the Ḥafīr, however, even more information is revealed. Nearly all of the clusters are located at precisely those points in the tributary wadis where the maximum amount of runoff from torrential winter rains would have gathered and merged as it wound its way

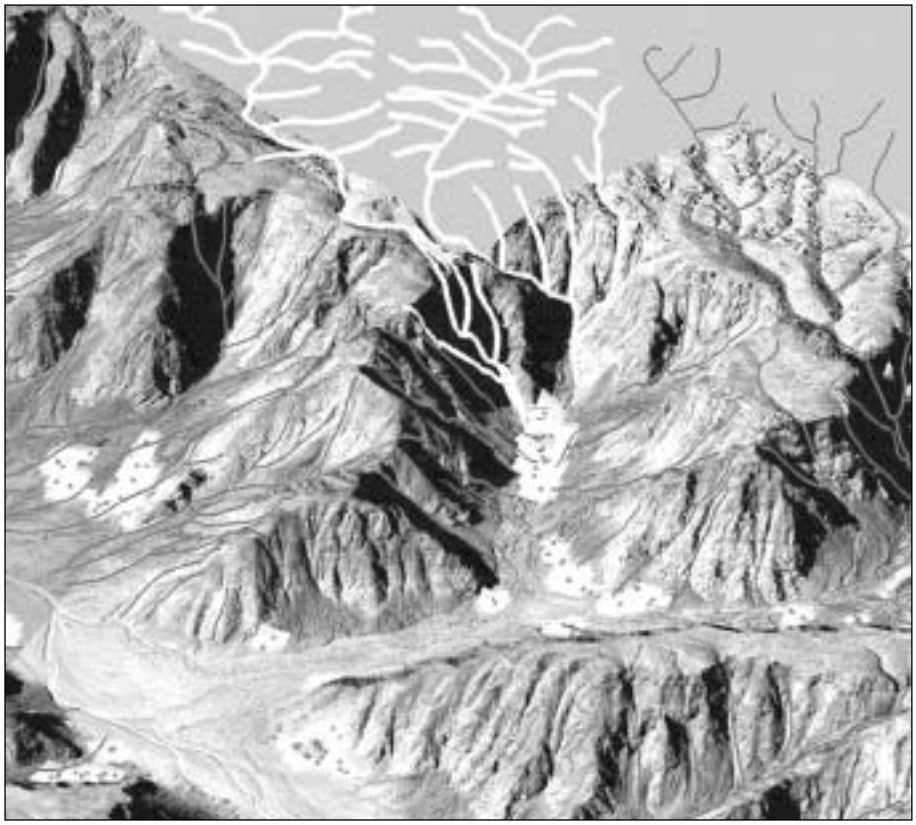


5. Density-surface map showing "clusters" of inscriptional activity.

through the natural drainage path of the Ḥafīr (FIG. 6). In these areas where water flow was maximized, standing pools of water left over from winter flood events would have provided short-term but relatively abundant water resources for pastoralists, their herds, and even wild animals sought by hunters. Even when the pools had dried up, the seasonal saturation would have provided concentrated areas of green pasture that could be exploited by local pastoralists and their herds for much longer periods. The close relationship between seasonal water availability and inscriptional activity is evident at the Mughur cascades in the northern hills above the Wādī Ḥafīr (FIG. 7). Here, a drainage network that extends across several kilometers of gradually sloping terrain collects and channels winter runoff into a series of cascading pools, the lowest and largest of which was broadened and deepened in antiquity. In and around the runoff collection pools, the WHPS recorded 52 different sites with over 100 Thamudic inscriptions and 22 rock drawings, a clear indication of this water catchment's importance.

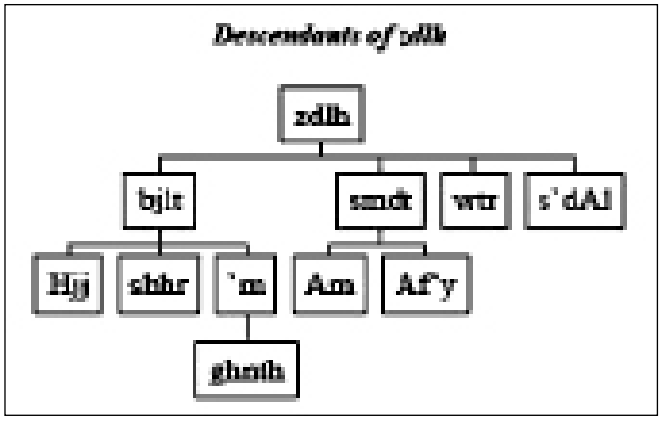
A GIS analysis of petroglyph sites also reveals much about the individual families that were exploiting the seasonal water and pasture resources of the Ḥafīr over the course of several generations. Of

7. The cascades of Mughur.



6. Terrain model showing inscriptional cluster at the terminus of a major drainage system.

the several hundred individuals who signed their names to drawings within the Ḥafīr, nearly a third can be identified as coming from either of two families, the descendents of *Zdlh* or the descendants of *Rm'l*. The activities of both families in the Ḥafīr extended over a period of at least four to five generations and, as seen in the Zdlh family tree (FIG. 8), the presence of multiple brothers/siblings can be identified within a single generation. Interestingly, the similarities in carving style and artistic themes between generations suggest the methods and techniques of rock carving were passed on from father to son. This is particularly evident for members of the Zdlh line who carved primarily hunting scenes and used similar artistic conventions to depict individual actors within the scene (hunters, dogs, ibex, weapons). Compare, for example, the style and themes of the scene composed by Bjlt (FIG. 4) with that carved by his son Ḥjj (FIG. 9). Finally, there is limited evidence that individuals would sometimes carve their names and drawings on the same rocks that bore the signatures of other members of their family (fathers, brothers, cousins). Thus far, however, there is no clear evidence that either of these families limited their activities to certain locales within the Ḥafīr or focused their artistic carving around particular topographic features; both families seem to have moved quite widely throughout the wadi and even into neighboring wadis. For example, in her survey of the nearby Wādī Judayd, Geraldine King recorded several inscriptions from members of the Zdlh family (King 1990: 752, #5).



8. The attested descendants of Zdlh in the Wādī Ḥafīr.

Conclusion

A landscape/GIS approach thus provides a better context for assessing and analyzing the content and distribution of these unique "artifacts" of human creativity that dot the Arabian Desert. Within the Ḥafīr, we have seen that petroglyph sites do not cluster in discrete zones or areas as might be expected along a major trade route, nor do they seem to mark individual locales of possible symbolic or cultural significance, such as high places, cairns or areas reserved for hunting or camel herding. Rather, Thamudic petroglyph sites can be found almost anywhere within the Ḥafīr. Within that overall distribution, however, a clear pattern emerges — Thamudic sites tend to cluster near the confluences of the expansive drainage networks found within the wadi's numerous tributaries. Such a distribution indicates that the Ḥafīr was an important source of seasonal water and pasture for the

9. Hunt scene composed by Ḥjj son of Bjlt.

pastoral-nomadic families who returned to the valley year after year and generation after generation. Hopefully, understanding the clustered distribution of petroglyph sites around these resource areas will help facilitate further epigraphic and archaeological study of these poorly known regions.

But a landscape/GIS approach to Thamudic inscriptions and rock art still leaves many of our most pressing questions unresolved. Why did these ancient people carve their seemingly simple words and images in such vast numbers across the boulder-strewn wadis and plains of the Arabian Desert? What was the function of writing and literacy in what most scholars consider to have been an oral cultural tradition? Did the ubiquitous images of the hunt and the camel within Thamudic rock art have any symbolic or practical significance for those who carved them or were they simply reflections of Bedouin existence? In order to uncover the answers to these questions, an even broader contextual approach is needed, one that examines not just the position of these artifacts in the landscape, but also the socio-cultural significance of writing, the hunt, and the camel within pre-Islamic Arabia.

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Tale of Two Sites: Pleistocene Hunter-Foragers of the Jordanian Eastern Deserts

Abstract
Archaeological research on Upper Paleolithic hunter-foragers in the Wādī al-Ḥasā has identified distinctive differences in site structure and organization. Two sites dating between 26,000 and 20,000BP, Tha'lab al-Buḥayra (EHLPP 2) and 'Ayn al-Buḥayra (WHS 618, Spring Area) provide evidence of differences in artifact assemblages, activity areas, subsistence strategies and technologies. Variability in these structural and organizational aspects are suggested to define important functional differences among small sites. This research contributes to a better understanding of variability in Upper Paleolithic settlement patterns and organization.

Introduction

Archaeological surveys and settlement pattern studies of paleolithic hunter-foragers in the Levant have focused on monolithic, theoretical site types, such as special activity sites and base camps. For the most part, archaeological surveys that deal primarily with surface sites have been unable to define paleolithic site types beyond these general, functionally different site types in spite of the fact that ethnographic studies have provided rich documentation of a variety of small site types and complexly-organized base camps used by ethnographic and modern foragers. Surveys have found few small, short-term limited activity or task sites that could be confidently identified. Settlement pattern studies using survey data have inferred site function and functional differences primarily on the basis of site size and elevation (e.g., Coinman *et al.* 1986; Clark 1992; Henry 1987). Small encampments, stone tool knapping episodes, kill sites, resource extraction and processing sites, which have been identified more frequently in North America, are rare to non-existent in Levantine paleolithic settlement studies. The few exceptions include an Early Ahmarian knapping site in the Ḥasā (WHS 623X) (Lindly *et al.* 2000). Clearly, the dearth of such site types is partially due to the more ephemeral and circumscribed nature of limited, small task activities, as well as the lack of preservation on geologically dynamic surfaces that characterize the Levantine desert landscapes and have been surveyed systematically. Nonetheless, in some better-preserved, relatively undisturbed contexts, we should expect to find paleolithic activities like these represented in the archaeological record.

Two paleolithic sites are explored in this paper. Both were located during archaeological surveys in which some 370 paleolithic sites were identified in the Ḥasā (Coinman *et al.* 1986; MacDonald 1988; Olszewski and Coinman 1998). Of these, 78 were assigned to the Upper and / or Epipaleolithic and 75% (n = 57) are located within the upper four kilometers of the Pleistocene lake / marshes of the upper eastern basin of the Ḥasā . Because all of these sites have been identified on the basis of lithic surface assemblages and because surface assemblages often do not accurately predict subsurface cultural and temporal components, it is difficult to know what site types are actually represented by surface assemblages, particularly very large, extensive assemblages. Both sites have been identified as large "base camps" on the basis of their extensive surface manifestations (Coinman *et al.* 1986; Clark 1992). This paper explores these two sites in an effort to identify more specifically functional differences in previously identified large, complex "sites" and provides information on site variability and task activities that might be representative of paleolithic settlement patterns and intra-site organization.

Modeling Settlement Organization

For the last two decades, paleolithic archaeologists have concentrated on theoretical models of foragers and collectors developed from ethnoarchaeological and ethnographic studies of hunter-gatherer settlement patterns (e.g., Binford 1979, 1980; Kelly 1983, 1995; Kent 1987; Lee and DeVore 1976; O'Connell 1987; O'Connell *et al*. 1991; Yellen 1976, 1977). Theoretical discussions about settlement organization have often focused on the contrast between foragers and collectors and their mobility strategies. Marks and Freidel (1977), following Mortensen's (1972) original research, modeled paleolithic settlement systems as a foraging-collecting dichotomy in which "circulating" and "radiating" settlement systems were respectively distinguished by different residential mobility strategies of foragers and collectors. Binford's (1980) ethnoarchaeological research established the terms of "residential" and "logistical" to refer to contrasting mobility strategies, which equate with "circulating" foragers and "radiating" collectors in the Levant. Whether viewed as a dichotomy or a continuum defined by the degree to which a group is logistically organized, with foragers relying on such organization minimally and collectors relying on it extensively (Bamforth 1990; Kelly 1983), some American archaeologists have sought to go beyond what they see as merely descriptive cultural ecology to explain variation in human behavior and the archaeological record, possibly developing behavioral models that might be unprecedented ethnographically (e.g., O'Connell 1995; O'Connell and Elston 1997; Rhode 1997).

In the Levant, however, archaeologists have typically incorporated the traditional forager-collector model into paleolithic research inferring broad comparisons between cultural periods (Middle Paleolithic vs. Upper Paleolithic), as paleolithic groups are conjectured to have responded to long-term regional climatic changes of increasing aridity during the late Pleistocene (Marks and Freidel 1977), or between different Upper Paleolithic cultural units (Kaufman 2003; Williams 2000). Henry (1987, 1994, 1995) documented a long-term strategy comprised of a mix of residential and logistical strategies related to seasonality and elevational factors. Phillips (1987) and Gladfelter (1990, 1997) emphasized that Upper Paleolithic groups in southern Sinai were constrained by local variables (topography, biomass, short-term climatic fluctuations) which influenced resource availability and abundance and therefore led to a mix of logistical and residential strategies. Kaufman (1992) added that social interaction between groups across the landscape might also result in a variety of models featuring aggregation, dispersal, and transhumance between upland and lowland locales, thereby affecting the structure of archaeological sites.

Levantine settlement pattern studies, however, have had mixed success in actually defining specifically the variability and diversity in a spectrum of sites that might have defined a paleolithic settlement system. Generalized artifact distributions have been correlated with shorter-term occupations of Upper Paleolithic sites in a circulating system (e.g., Ein Aqev East in the Negev (Marks and Freidel 1977)), while longer-term camps are often distinguished by more specialized assemblages in which segregated activities occurred, denoting longer occupation periods and more spatially organized behaviors (Henry *et al*. 1996). The latter type of encampment is illustrated in the Middle Paleolithic settlement patterns at Rosh Ein Mor where the spatial patterning of activity loci remained consistent over multiple occupations (Marks and Freidel 1977; Hietala and Stevens 1977). Similarly, Henry *et al*. (1996) identified repeated occupations at Ṭur Faraj rockshelter in Jordan as part of a logistically-oriented procurement system in which redundant intra-site floor features and artifacts suggested a seasonal (probably fall - winter) encampment and where larger base camps were predicted to have been located at lower, warmer elevations. In contrast, however, Kaufman (2003) identified a number of sites in the Jordan Valley and the Negev (e.g., Nahal Ein Gev 1, Fazael IX, Ein Aqev) as either multipurpose base camps or specialized activity stations within larger logistical settlement systems based on tool kit diversity as a means to infer intra-site activities and site function. Small sites may also reflect more restricted base camp occupations in a circulating system, as inferred for the latest occupation at Boker Tachtit (Level 1), identified as an "ephemeral" camp on the basis of generalized artifact distributions (Marks and Freidel 1977; Hietala 1983a, b). Less frequently identified are the larger, long-term base camps, logistical settlement systems, and specific functions of small "special activity" sites. Small sites that are interpreted as satellite sites in logistical systems have typically included small quarry workshops in the Negev (e.g.,

Middle Paleolithic sites D40 and D44) (Marks and Freidel 1977; Munday 1976).

Archaeological Correlates

Identifying the general archaeological correlates for spatially organized behaviors has relied on ethnoarchaeological and ethnographic settlement pattern studies. For example, Binford's (1980) generalized comparisons between Nunamuit collectors and San foragers and the different types of sites and site organization established expectations for collecting and foraging settlement strategies. Expectations for artifact distributions generated by different activities, different sized groups and task groups have been identified in a number of classic ethnoarchaeological studies (e.g., Yellen 1976, 1977; Brooks and Yellen 1987). Archaeological expectations for residential camps will vary depending on group size and duration of occupation. We can expect the internal organization to vary from small task sites, although small nuclear families might create similar organizational patterns (Yellen 1996). Long-term camp sites should reflect greater complexity and diversity of activities carried out by a larger number of people, as well as more diversity in artifact categories (Yellen 1976, 1977). General cooking and consumption activities should be more apparent and localized in residential camps (Brooks and Yellen 1987; Speth and Tchernov 2001; Yellen 1991) and centered around hearths with animal remains likely to reflect consumption activities in terms of bone fragmentation and alteration (e.g., burning) (Binford 1983; O'Connell 1987; Stevenson 1991). Skeletal element representation is expected in general to reflect higher utility elements and fewer low utility parts that might have been left at kill / butchery sites due to transport decisions.

Specific expectations for stone tool making activities and associated discard behaviors have been particularly well studied (e.g., Keeley 1991; O'Connell 1995; Stevenson 1991). We can expect that tool use and associated spatial patterning might be complicated by refuse disposal and cleanup behaviors, the length of occupation, activity timing and retooling of hafted tools (Keeley 1991). Tools manufactured, used briefly and discarded (i.e., expedient tools) are expected to be abandoned nearer the locus of their last use (Keeley 1991), but the location of discarded tools will be determined by a variety of factors, including their size, function, use-life and various nuisance factors (O'Connell 1995; Stevenson 1991). However, we can also expect that hafted artifacts, such as projectile points, will occur more frequently at residential camp sites where they were manufactured and repaired / replaced rather than where they were used. The archaeological implication of this is that proximal portions of projectile points will most likely accumulate in domestic refuse where rehafting / retooling was carried out (Keeley 1982, 1991).

TABLE 1 provides general archaeological correlates for residential base camps and small task sites in terms of site size, assemblage composition, assemblage type, spatial patterning and the level

TABLE 1. Archaeological correlates of small site organization.

Modeling Settlement Organization Archaeological Correlates of Site Organization			
Site Type	**Residential Base Camp**		**Special Task Site**
Site Size	**Large**	**Small**	**Small**
Assemblage Composition	Diverse	Diverse	Restricted
Assemblage Type	Generalized	Generalized	Specialized
Spatial Patterning	Spatially segregated, relatively discrete use and activity areas	Spatially mixed, redundant use and activity areas	Relatively discrete use and activity areas
Resolution	Potentially fine- grained	Coarse-grained	Fine-grained

of archaeological resolution. Using these expectations, two late Pleistocene sites in the Wādī al-Ḥasā were evaluated to see how well they fit the general characteristics of large or small residential base camps or small task sites.

Comparative Settlement Patterns

Two late Upper Paleolithic sites, Tha'lab al-Buḥayra (EHLPP 2) and 'Ayn al-Buḥayra (WHS 618), are compared in terms of site location, geomorphology and intra-site organization (FIG. 1). The latter includes a comparative analysis of artifact and faunal assemblages in regard to composition and spatial distributions. The presence / absence and spatial distributions of specific categories of artifacts, fauna, features and potential activity areas are described and compared.

Site Location and Geomorphology

Initial comparisons of these two sites are made in terms of site location and geomorphology because these physical characteristics often suggest similar settlement site types to archaeologists carrying out surface surveys. However, these physical characteristics can be misleading and subsequent excavations might reveal a far more complex settlement type in terms of site size, site function and occupational duration.

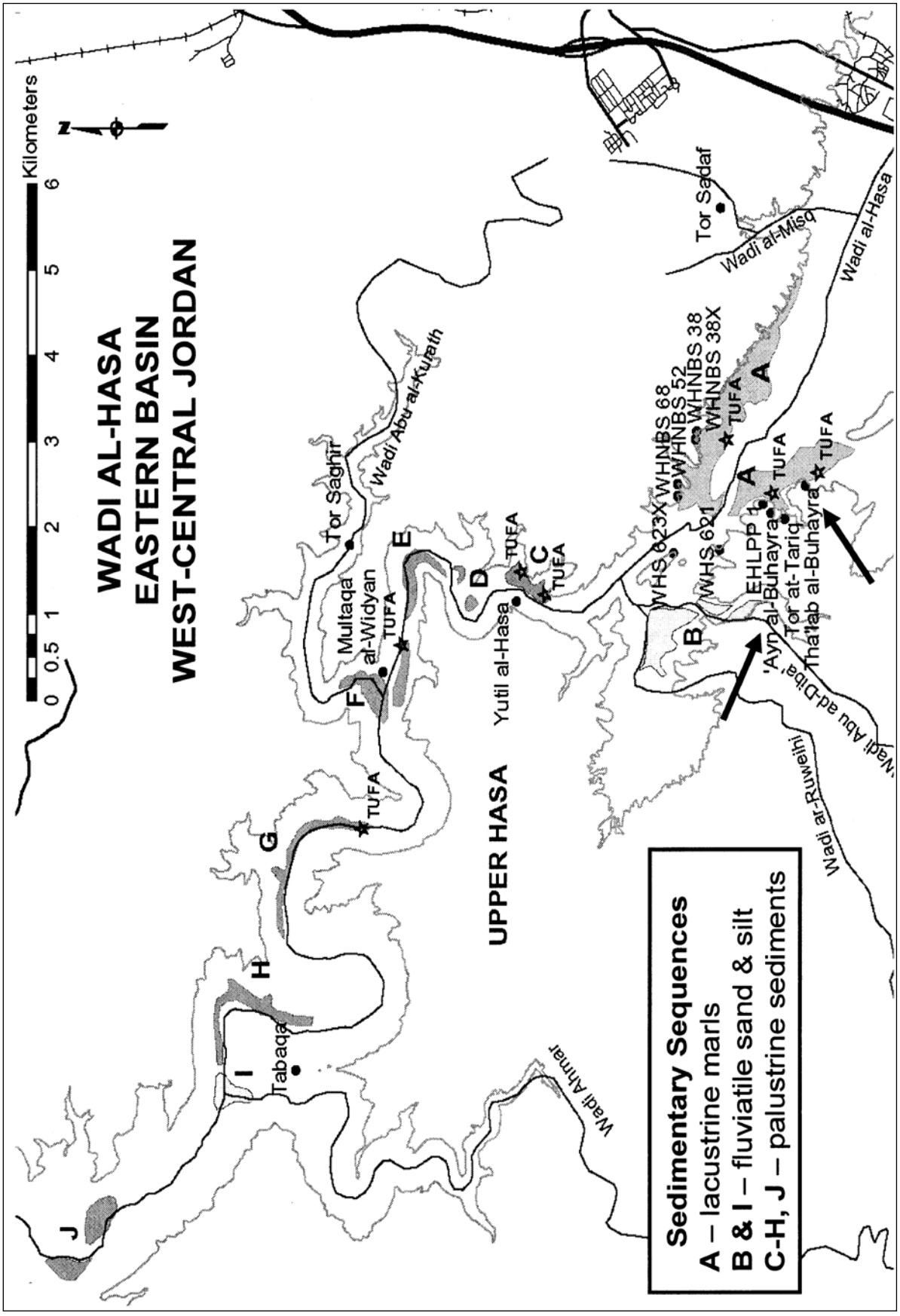
Locationally, Ayn al-Buḥayra is similar to a number of documented paleolithic sites in the Ḥasā in being located strategically on the changing margins of shallow playas and marshlands where springs would have provided fresh water for hunter-foragers as well as an array of targeted prey species (FIG. 2). At Ayn al-Buḥayra, the most intact area of this very extensive site is the remnant Spring Area of the site, while other known areas of the site have exhibited limited to no intact subsurface assemblages (Coinman 2000, 2003) (FIG. 3). The Spring Area and Tha'lab al-Buḥayra are positioned similarly in intermittent marls, spring deposits, and pond and marsh organic lenses. The latest exposed and eroded surfaces, representing these hydrological and depositional processes, occur at ~ 824 m asl at both sites. The geological and cultural sequences have been exposed through excavation to depths of 1-1.5m, while other exposures by various archaeologists and geologists have exposed the paleohydrological depositions at 'Ayn al-Buḥayra to depths of 2-3m. At Tha'lab al-Buḥayra, the area around the site of is characterized by exceptionally well-preserved and stratified lacustrine sediments with a number of crusty tufa outcrops denoting fossil springs (FIG. 4). Three of the four strata identified to date are natural, sterile strata: Stratum I, II and IV. Stratum III occurs between II and IV and is comprised of cultural deposits occurring at different elevations within the surrounding natural stratigraphy at Loci C and E. The cultural deposits comprise discrete stratigraphic units or cultural zones, separated vertically above and below from sterile sediments but lacking discernable internal stratigraphy or microstratigraphy. The cultural occupations at the two sites are partially correlated (and potentially overlapping) through depositional similarities and through radiocarbon dates ranging from at least 26,000 to approximately 19,000BP, after which this paleohydrological series in the eastern basin and Upper Paleolithic occupations at 'Ayn al-Buḥayra terminate (see TABLE 2).

Artifact Assemblages

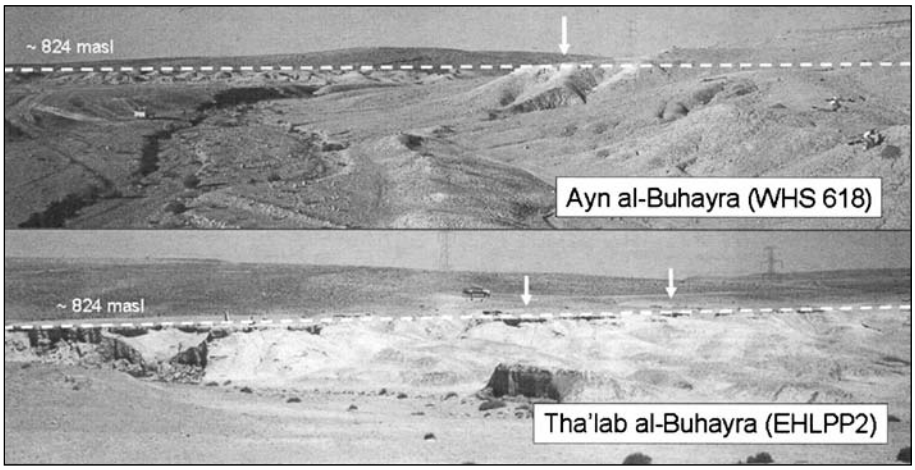
Artifact assemblages recovered from the two sites provide strong contrasts when assemblages and spatial distributions are compared (TABLE 3). Comparisons of debitage assemblages provide a means of identifying on-site reduction activities that inform on site function. Primary core reduction carried out on-site can be inferred by proportions of the total debitage assemblage and frequencies per square meter. Primary reduction is measured using cores, core trimming elements and primary debitage, the latter defined as debitage with more than 50% cortex (TABLE 4). Percentages of these reduction categories suggest similar levels of on-site core reduction occurred at 'Ayn al-Buḥayra and Locus C at Tha'lab al-Buḥayra, but significantly less primary reduction is indicated by the much lower percentages at Locus E at Tha'lab al-Buḥayra. FIG. 5. illustrates the comparative proportions at the two sites and highlights the dissimi-

TABLE 2. Comparative site depositions.

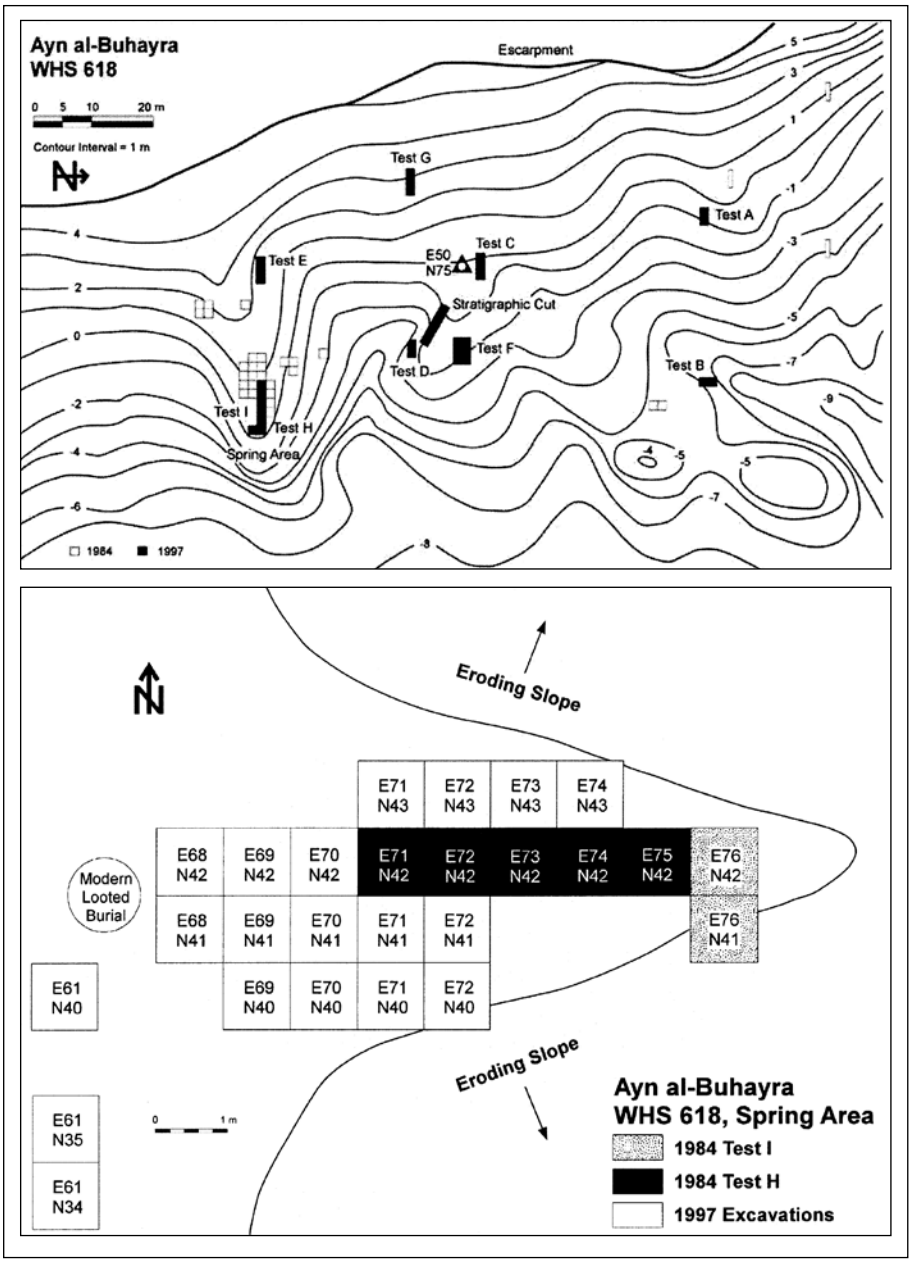
Tha'lab al-Buḥayra	**'Ayn** al-Buḥayra
Sterile	Late Occupation -20,000BP
Sterile	Hiatus
Locus E ~24-25,000BP	Earlier Occupation
Locus C ~25-26,000BP	?



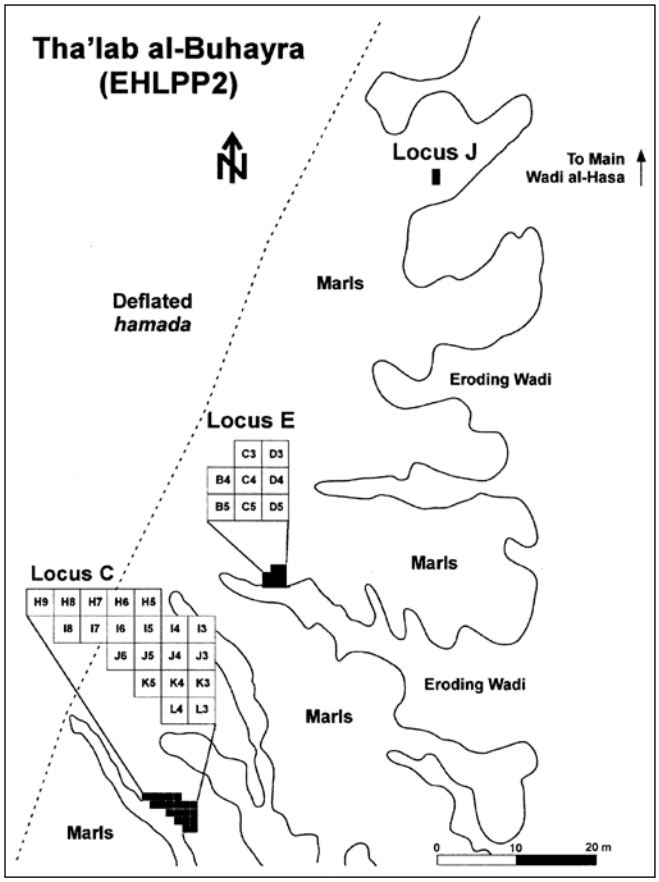
1. Map of paleolithic sites in the eastern Ḥasā basin showing the locations of Tha'lab al-Buḥayra and 'Ayn al-Buḥayra.



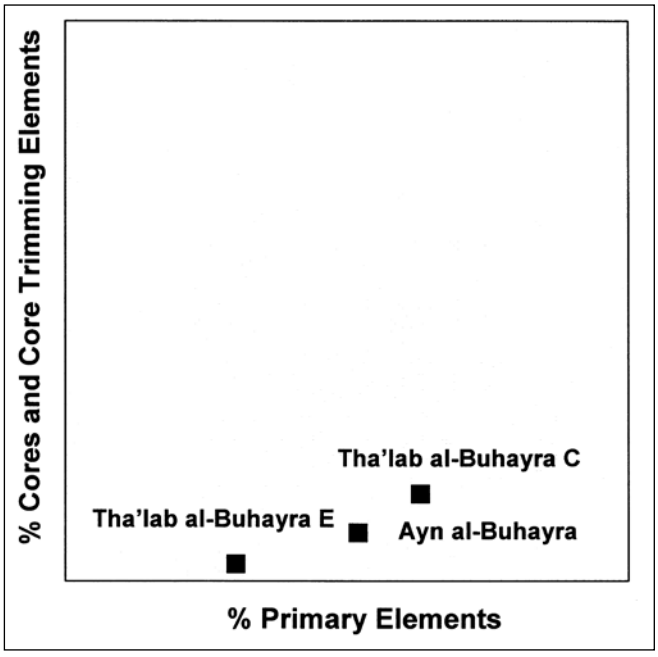
2. Site locations of ʻAyn al-Buḥayra (looking southeast) and Thaʻlab al-Buḥayra (looking northwest) at ~ 824 masl in late Pleistocene lake/marsh sediments in the Eastern Ḥasā basin.



3. Site maps of ʻAyn al-Buḥayra (WHS 618): a: locations of excavations during 1984 and 1997; b: Spring Area excavation units during 1984 and 1997.



4. Site map of Tha'lab al-Buḥayra (EHLPP 2) showing the 1998 and 2000 excavation units.



5. Plot of primary reduction at Tha'lab al-Buḥayra (Locus C and E) and 'Ayn al-Buḥayra, Spring Area. (Primary = >50% cortex; CTEs = core trimming elements).

larity of the Locus E assemblage in terms of overall relative proportions of primary reduction elements. However, when densities of primary reduction elements (cores, core trimming elements and primary elements combined) per excavated square meter within comparable levels are compared (TABLE 5), the densest accumulations were recovered at Locus E at Tha'lab al-Buḥayra, followed by 'Ayn al-Buḥayra and Locus C at Tha'lab al-Buḥayra, suggesting a far greater intensity of reduction activities occurred at Locus E. In summary, primary core reduction was carried out at both sites, but the intensity of such activities varied between and within the two sites.

Secondary reduction activity includes the production of debitage for the purpose of producing blanks for tools, which may or may not have been recovered from the site. Comparisons of secondary debitage includes such classes as flakes, blades and bladelets, as well as trimming flakes which

TABLE 3. Assemblage composition.

Composition	**Tha'lab** al-Buḥayra	**'Ayn** al-Buḥayra
Lithic Reduction	Primary with limited secondary	Primary & secondary
Lithic Tool Kits	Limited, specialized tool kits	Diverse tool kit
Organic Tools	Absent	Present
Processing Equipment	Present	Present, but limited
Pigments	Present, abundant	Present, less abundant
Fauna	Diversity of genera; low utility elements; marrow processing	Limited genera; high utility elements; limited marrow processing

TABLE 4. Core reduction and debitage.

% of Total Debitage	Tha'lab al-Buḥayra				'Ayn al-Buḥayra	
	Locus C		Locus E		Spring Area	
	n	%	n	%	n	%
Cores	111	1.8%	56	.4%	121	1.0%
Core trimming elements	92	1.5%	58	.5%	140	1.1%
Primary debitage	755	12.4%	744	6.1%	1367	10.3%

TABLE 5. Density of reduction activity.

Density per square meter	Tha'lab al-Buḥayra		'Ayn al-Buḥayra
	Locus C n=958	Locus E n=958	Spring Area n=1628
Primary Reduction Elements*	53.2	107.3	70.8

*Cores, core trimming elements and primary elements combined.

TABLE 6. Secondary debitage production.

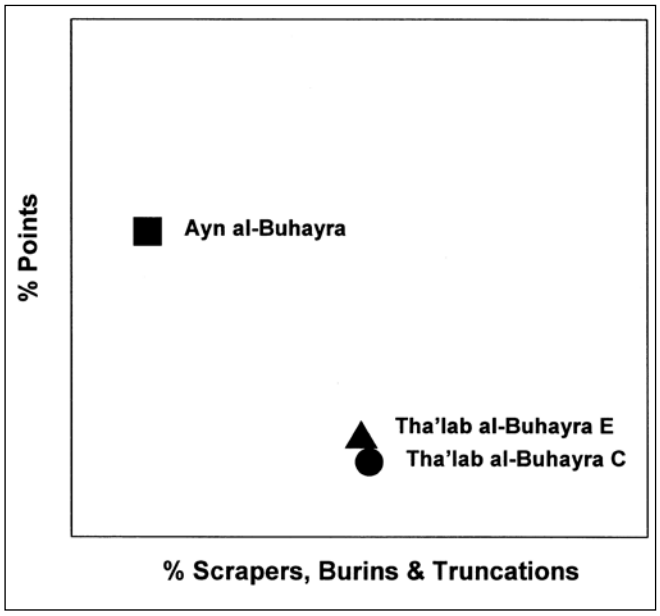
% Secondary Debitage	'Ayn al-Buḥayra		Tha'lab al-Buḥayra
	Locus C	Locus E	Spring Area
	n=5846	n=12,221	n=12,919
Flakes	36.7	26.7	32.7
Blades	17.0	10.6	7.9
Bladelets*	16.3	19.2	19.5
Blades + Bladelets	33.3	29.8	27.4
Trimming Flakes†	26.5	42.5	37.6

* <12 mm width
† flakes smaller than 20mm

are included here since they are general products of core reduction and blank production (TABLE 6). Specific classes of debitage vary between the sites, with the highest proportions of flakes recovered from Locus C at Tha'lab al-Buḥayra and 'Ayn al-Buḥayra, whereas the highest production of of blades / bladelets and trimming flakes were found at Locus E. A plot of the multiple dimensions of secondary debitage production, FIG. 6, illustrates that, overall, the sites vary in the production of debitage with each being characterized by slightly different emphases on secondary debitage products.

Tool Kits

Comparisons of assemblages include examinations of artifact class diversity. There are striking differences in composition at the two sites although, overall, the same classes make up approximately



6. Plot of secondary debitage Tha'lab al-Buḥayra (Locus C and E) and 'Ayn al-Buḥayra, Spring Area.

75% of each retouched tool assemblage (TABLE 7 and FIG. 7). The diversity of artifacts is much lower at Tha'lab al-Buḥayra, suggesting more restricted site functions at the known areas of this site (Coinman 2005). The restricted and clearly specialized set of formal tools is comprised of a variety of scrapers (including varieties of Ksar Akil scrapers with micro-serrated edges), standardized truncations, and limited numbers of el-Wad point fragments (Coinman 2002). In contrast, the artifact assemblage at the Spring Area of 'Ayn al-Buḥayra is more diverse, including a more generalized variety of lithic and organic tools with and an emphasis on the production of small Ouchtata points (Coinman 1997, 2003). (FIG. 8) illustrates the dissimilarity in lithic tool kits between the two sites, highlighting the more restricted nature of the tool kits recovered from both loci at Tha'lab al-Buḥayra, in which scrapers and truncations dominate each assemblage. At 'Ayn al-Buḥayra, a wider variety of retouched tools is dominated by small Ouchtata points.

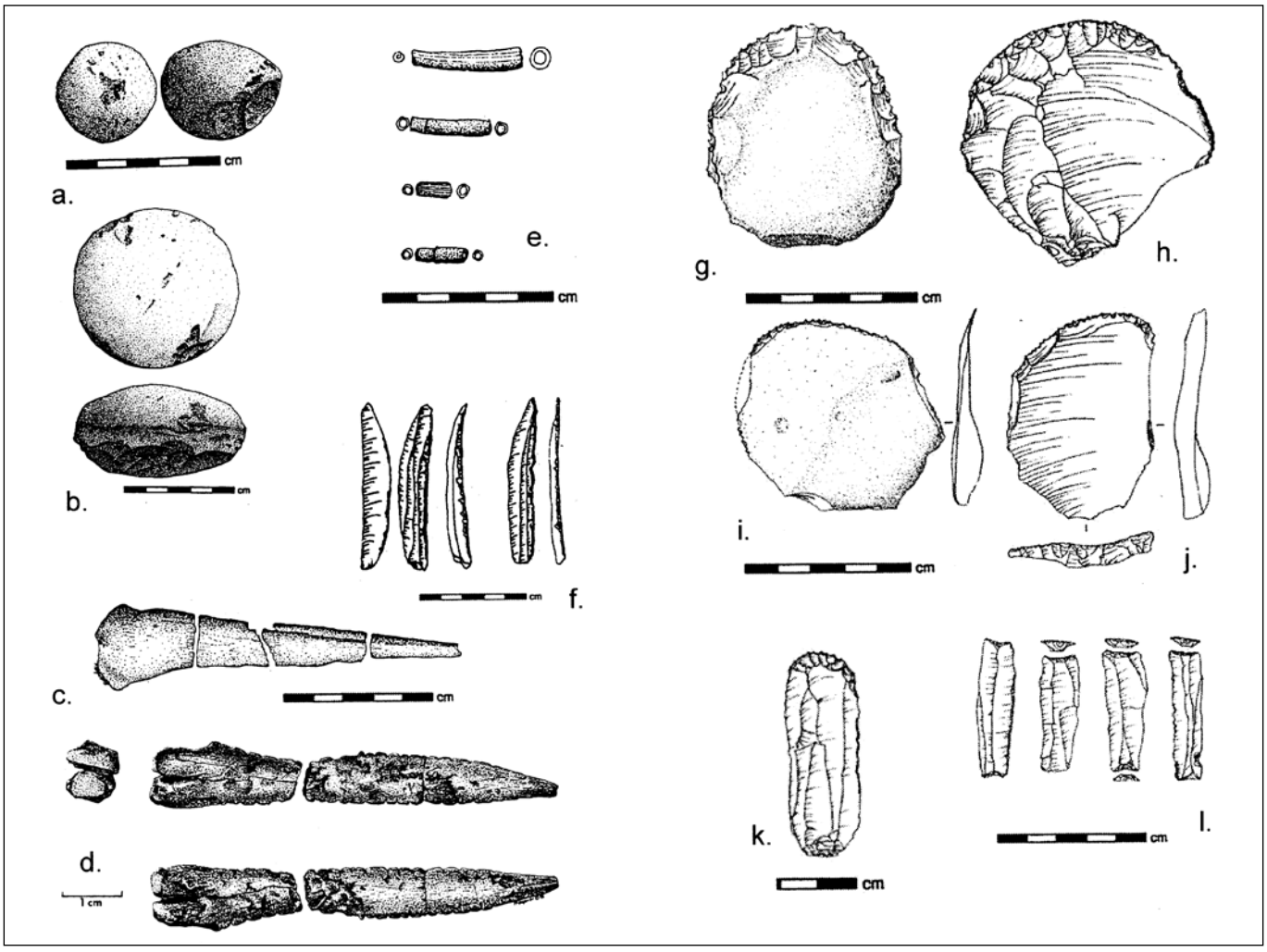
Organic tools and other artifacts are differentially represented at the two sites. Worked bone tools in the form of awls, points and a possible antler pressure flaker have been recovered from the Spring Area of 'Ayn al-Buḥayra (Coinman 1997), as well as worked dentalium shell beads and unworked ostrich eggshells. No worked bone or organic artifacts have been recovered from Tha'lab al-Buḥayra to date in spite of the fact that the preservation of faunal remains is excellent, emphasizing the differences in assemblage composition.

Faunal Assemblages

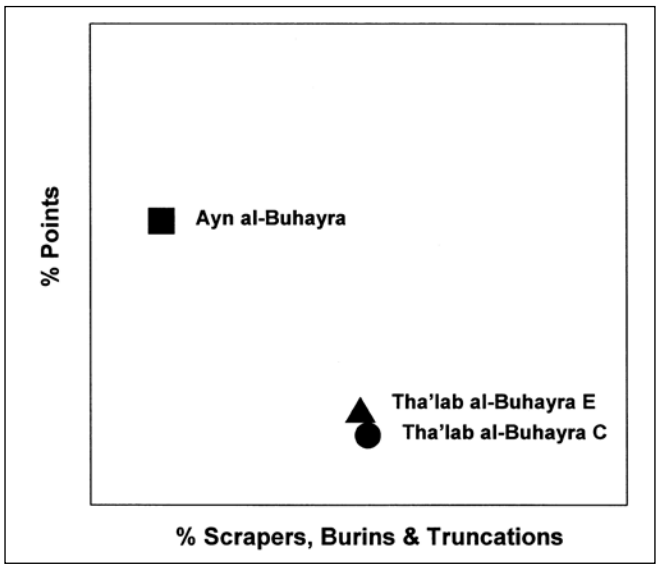
The composition of the faunal assemblages varies between sites as well. When the faunal remains from both sites are compared (bearing in mind that both assemblages were recovered from similar depositional contexts in consolidated marl sediments), the contrasts are even more compelling (FIG. 9). At 'Ayn al-Buḥayra, appendicular elements of equids, bovids and gazelle outnumber axial elements and, in contrast to Tha'lab al-Buḥayra, cranial and mandibular elements occur in much lower frequencies. From 'Ayn al-Buḥayra far fewer complete teeth have been recovered from an excavated area very comparable in size and volume to Locus C at Tha'lab al-Buḥayra. Appendicular elements at 'Ayn al-Buḥayra include decidedly more high utility upper hind and forelimbs, suggesting more

TABLE 7. Percentages of tools comprising tool kits.

% Total Retouched Tools	**'Ayn** al-Buḥayra		**Tha'lab** al-Buḥayra
	Locus C	**Locus E**	**Spring Area**
	n=272	n=307	n=633
Scrapers	38.2	30.9	10.4
Truncations	19.1	24.6	1.6
Burins	1.1	1.3	3.9
Points	16.9	20.6	60.8
Totol % of Tool Assemblage	75.3	77.4	76.7



7. Artifacts from ʻAyn al-Buḥayra (a-f) and Thaʻlab al-Buḥayra (g-l): a, b – hammerstones; c – awl; d – serrated bone point; e – dentalium shell beads; f – Ouchtata points; g-j – microserrated scrapers; k – microserrated endscraper; l – truncations.



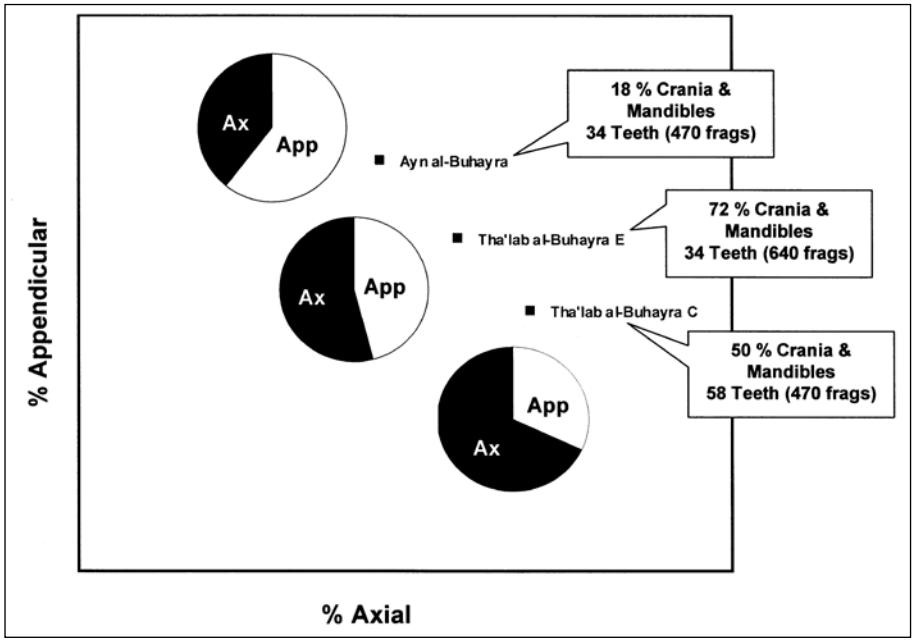
8. Plot of tool kits at Thaʻlab al-Buḥayra (Locus C and E) and ʻAyn al-Buḥayra, Spring Area.

selective transport of appendages to the site of ʻAyn al-Buḥayra from a task site (or, indeed, from another area of the same site), while low utility elements are more frequent at both loci of Thaʻlab al-Buḥayra (Thompson 2001: 93,111).

Genera recovered from Thaʻlab al-Buḥayra include *Bos, Equus, Sus, Camelus, Gazelle* and *Testudo*. Equids are the most prevalent at both sites. While the faunal assemblage from ʻAyn al-Buḥayra includes ostrich eggshell, wild boar and camel have not been recovered from this site.

Processing Equipment and Materials

Manuports that might have functioned as anvils have been identified at both sites in association with faunal material and lithic debitage, although in low numbers and with less than definitive surface alterations to clearly identify their function(s). Two large



9. Comparisons of faunal assemblages at Tha'lab al-Buḥayra (Locus C and E) and 'Ayn al-Buḥayra.

flat stones identified at Tha'lab al-Buḥayra (Locus C) might have been grinding slabs for mineral pigments but, because of the pervasive soil staining at this locus, it is unclear whether the mineral staining on the surfaces is associated with grinding pigments or has been absorbed by contact with the surrounding matrix. At 'Ayn al-Buḥayra, at least six non-flaked flat stones might have functioned as anvils and were associated with splintered bone as well as debitage. One of two hammerstones recovered from this site was found in association with a potential anvil; the hammerstone is large, flat, and exhibits both battering and striations, suggesting it might have had multiple functions (FIG. 7b)

Pigments and soil staining from ochres and red sandstones have been recovered at both sites. Hematite has not been positively identified at either site. Evidence of pigments is far more ubiquitous at Tha'lab al-Buḥayra, especially Locus C, than at 'Ayn al-Buḥayra. Two large cores of a soft, pale yellow mineral were found in association with two possible grinding slabs at Locus C at Tha'lab al-Buḥayra, while diffuse soil staining at this locus includes a spectrum of colors ranging from pale yellow-brown to brilliant reds and pinks. Some stains are from granular red sandstone, typical of the area to the south of the Ḥasā. At 'Ayn al-Buḥayra, soil staining from red ochres is limited, but small, thin intact pieces of worked red ochre have been recovered from this site. In summary, potential manuports in the form of anvils and grinding slabs have been recovered from both sites along with pigments such as ochres and red sandstone.

Features

Features include hearths and artifact or faunal concentrations that might be inferred to be activity areas (TABLE 8). Hearths and potential hearths occur at both sites and vary in depth and the degree to which they are formally constructed and configured with hearth stones. A series of four hearths have been confidently identified at the Spring Area of 'Ayn al-Buḥayra, with three of the hearths dated radiometrically to between approximately 23,500 and 20,300BP (uncalibrated). They are distributed along a sloping east-west line that could be correlated with a series of occupations associated with the changing margins of the wetlands or ponds. An additional hearth was identified in the south profile, while another area within the line of hearths might represent a remnant hearth. Three of the known hearths at the Spring Area of 'Ayn al-Buḥayra were constructed using perimeter stones. One of the three hearths at Tha'lab al-Buḥayra, Locus E is constructed with stones and has been dated by AMS to ~ 24,000BP (uncalibrated), while the other two are well-defined but shallow. One of the shallow hearths produced a date of ~ 25,000BP (uncalibrated). At Locus C, high concentrations of fine charcoal and ash in conjunction with pink to bright red burned sediments demarcate burning or hearth areas, but none are delineated by perimeter stones.

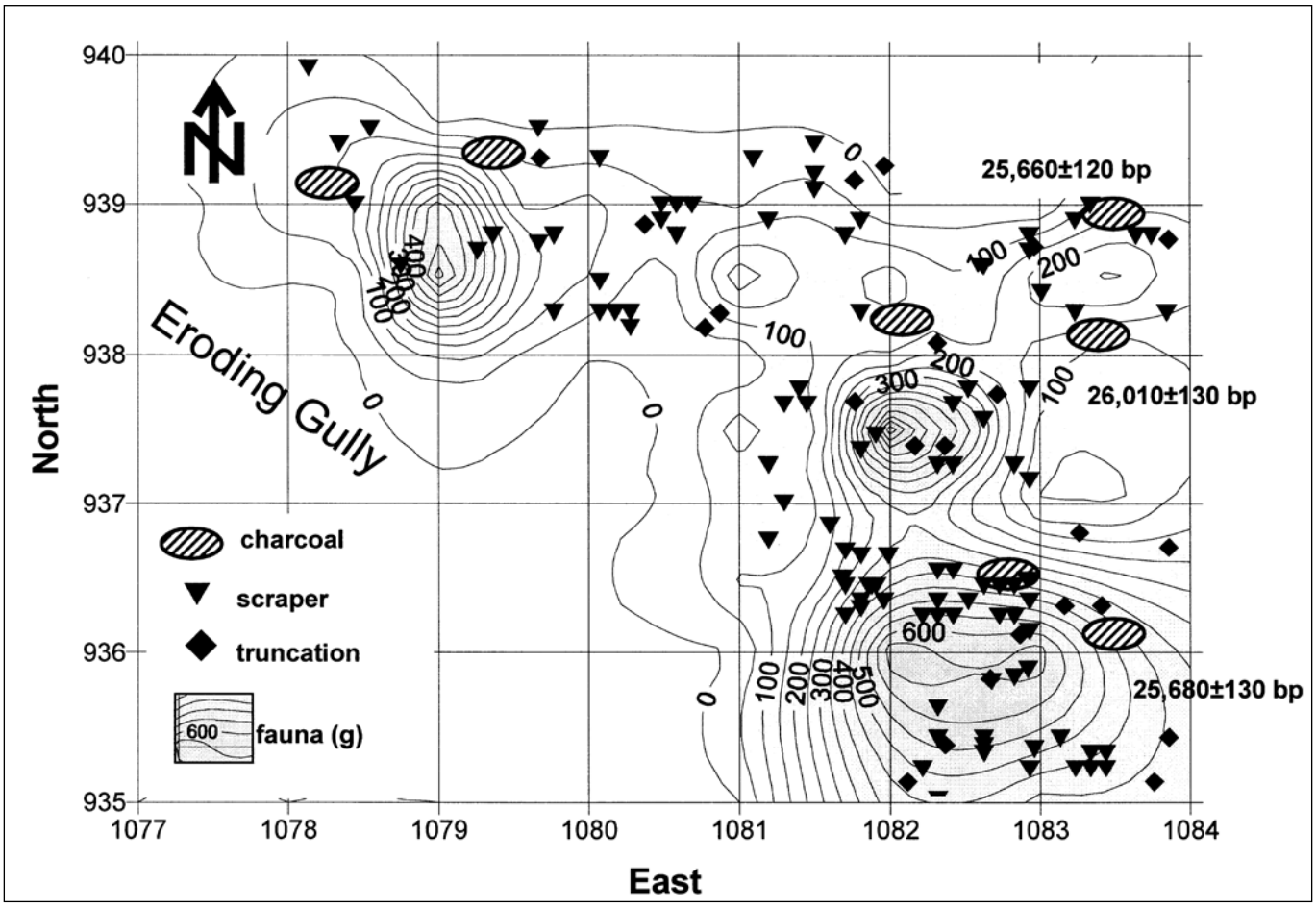
TABLE 8. Site features.

Features	**Tha'lab** al-Buḥayra	**'Ayn** al-Buḥayra
Hearths	Multiple, formal & informal	Multiple, formal
Artifact Clusters	Spatially discrete, redundant	Spatially discrete, diverse
Activity Areas	Present, redundant	Present, diverse

Three hearth areas have been dated by AMS to the period ~ 26-25,000BP (uncalibrated). Hearths, therefore, occur at both sites but vary in their construction, with the most formalized hearths found at 'Ayn al-Buḥayra and at Locus E, Tha'lab al-Buḥayra.

Artifact Concentrations

Spatial patterning is reflected in both the more diverse set of artifacts recovered from the Spring Area of 'Ayn al-Buḥayra and the more specialized tool kits at Tha'lab al-Buḥayra, suggesting discrete and localized activity areas. The area excavated at Locus E at Tha'lab al-Buḥayra is spatially too small to define patterning, but at Locus C the spatial distributions of scrapers and truncations appear to be co-occur with or surround dense faunal remains in rather redundant clusters (FIG. 10). The densities of artifacts and faunal remains, as well as the lack of definable cultural strata within the cultural deposits, imply that a series of similar activities occurred in this area. In contrast, lithic and organic artifacts at the Spring Area of 'Ayn al-Buḥayra are more differentially distributed. Artifact concentrations vary in composition and show potential associations with hearths when they are plotted against the contour densities of Ouchtata points (FIG. 11). Dentalium shell beads and red ochre are clearly distributed

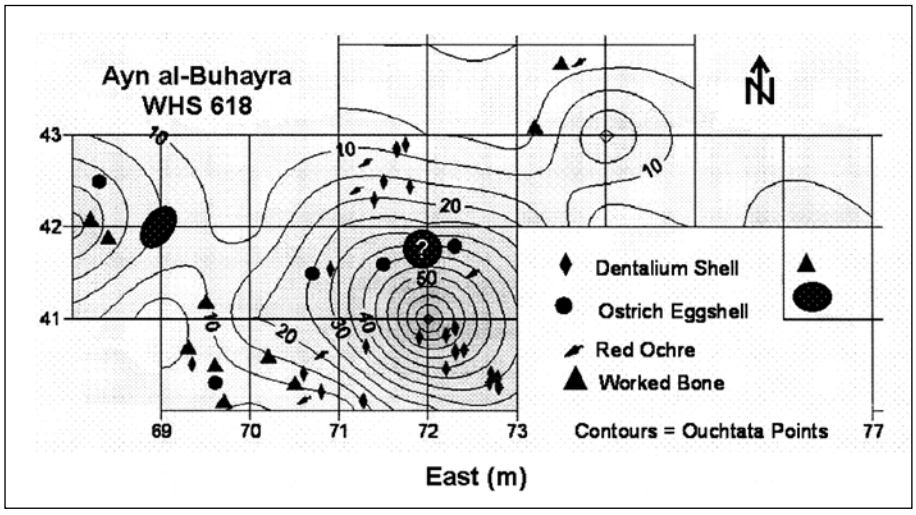


10. Spatial distributions of artifacts against the contour distributions of fauna at Locus C, Tha'lab al-Buḥayra.

more discretely and are associated with the highest densities of Ouchtata points, while worked bone artifacts appear in three peripheral areas. Ouchtata bladelet and point manufacture and re-tooling is suggested to be concentrated in at least two areas uncovered so far, both of which might be associated with hearths. Hearth-centered activities such as tool manufacture and retooling are supported by the co-occurrences of dense debitage, primary reduction and an overall tool assemblage dominated by high proportions of proximal Ouchtata point fragments. Overall, most of the lithic and organic artifacts are associated with an undated but potential hearth in the central excavated area, while only two worked bone artifacts and a single ostrich eggshell fragment were recovered from the more formal hearth to the west, which is surrounded by high frequencies of primary debitage and Ouchtata points. Thus, the artifact concentrations might represent activities associated with hearths at ‘Ayn al-Buḥayra and are clearly diverse in composition.

Conclusions

Comparisons at the Upper Paleolithic site of Tha‘lab al-Buḥayra and the Spring Area of ‘Ayn al-Buḥayra reveal strong similarities as well as important differences. The known areas of the two sites occur in similar but successive stratigraphic units of lacustrine / marsh sediments and were most likely occupied at different times, although it is possible that a lower, earlier occupation underlying the late occupation at the Spring Area of ‘Ayn al-Buḥayra is situated in a similar depositional unit to the cultural zone at Tha‘lab al-Buḥayra and could thus overlap with it in time. At present, however, the series of radiocarbon dates, as well as the morphological differences in the earlier el-Wad points at Tha‘lab al-Buḥayra and the later Ouchtata points at the Spring Area of ‘Ayn al-Buḥayra, suggest the sites were occupied at different times. The composition of artifacts, fauna and more formally constructed hearths at ‘Ayn al-Buḥayra imply a wide spectrum of activities and may have included a range of tool making tasks along with meat consumption within the context of relatively short-term encampments. In contrast, Tha‘lab al-Buḥayra, with a more restricted set of tools focused primarily on scrapers in conjunction with extensive use of pigments, exhibits characteristics of a limited activity or task site. Primary butchering and carcass processing activities, including marrow extraction and possibly brain-tanning and skin processing, are inferred from the differential frequencies of lower limb, low utility skeletal elements and the high number of splintered and smashed long bones and cranial elements. Additional support for short term butchering at this site comes from the high frequency of utilized edges on flakes and blades which has been identified in a pilot use-wear study of debitage from Locus C. Approximately 12% of a sample of debitage (n = 412, Unit I5, Levels 1 - 10) exhibits modified edges attributed to cutting or scraping, suggesting that a good proportion of the ‘debitage’ actually represents expedient, discarded tools (Voss n.d.). Together, these aspects of the Tha‘lab al-Buḥayra faunal and artifact assemblages suggest a relatively homogeneous composition with redundant spatial distributions that are more typical of small, repeated task episodes through time. Alternatively, we might only have so far exposed spa-



11. Spatial distributions of artifacts and red ochre against contour distributions of Ouchtata points and fragments at the Spring Area, ‘Ayn al-Buḥayra.

tially segregated work areas of a larger residential base camp at Tha'lab al-Buḥayra.

The Spring Area of 'Ayn al-Buḥayra exhibits diversity in the use of space as well as diversity in the types of artifact assemblages and the types of activities inferred. As such, the Spring Area of 'Ayn al-Buḥayra appears to suggest a small encampment where a variety of different activities were carried out and where the consumption of meat and limited butchering / skin processing occurred. This is suggested by a lack of evidence for carcass processing in the faunal assemblage, as well as in the nature of the tool kits and in the differential representation of higher meat utility skeletal elements. The number of hearths at 'Ayn al-Buḥayra and their linear distribution might also be interpreted to mean that the encampments were small and repeatedly occupied through time, but functionally different from the limited task activities identified at Tha'lab al-Buḥayra.

At both sites, expanded excavations are needed to further define these suggested patterns since density distributions indicate the directional extension of similar artifact concentrations in the direction of unexcavated areas. Currently, we have uncovered segments of two very extensive sites. At Tha'lab al-Buḥayra the subsurface depositional units are still intact and, together with its extensive surface assemblages, this site holds the most potential for exploring the nature of Upper Paleolithic settlement organization. The question remains to be investigated as to whether the unexplored areas will reflect similar and redundant site activities and use of space and organization, or whether they will reflect a larger residential base camp with spatially segregated but different activity areas occurring repeatedly over time. Perhaps, we have uncovered only one segment of a much larger settlement's different activity areas at Tha'lab al-Buḥayra.

At 'Ayn al-Buḥayra, the archaeological record at the Spring Area is deep and still intact but fragile. The edges of the preserved spur of consolidated marls and cultural deposits are eroding and the exposed paleohydrological record has been subject to indiscriminate and unauthorized sampling with deep column samples and broad cutbacks. Yet, the unexcavated portions of the Spring Area remnant have the potential to link the two sites in an overlapping temporal sequence. Further investigations might define more clearly the similarities and differences of these sites, similarly situated along the margins of late Pleistocene ponds and wetlands in the Wādī al-Ḥasā. Any future research, however, can only contribute substantively to a more informed and complex picture of Upper Paleolithic settlement patterns and organizational differences during the late Pleistocene.

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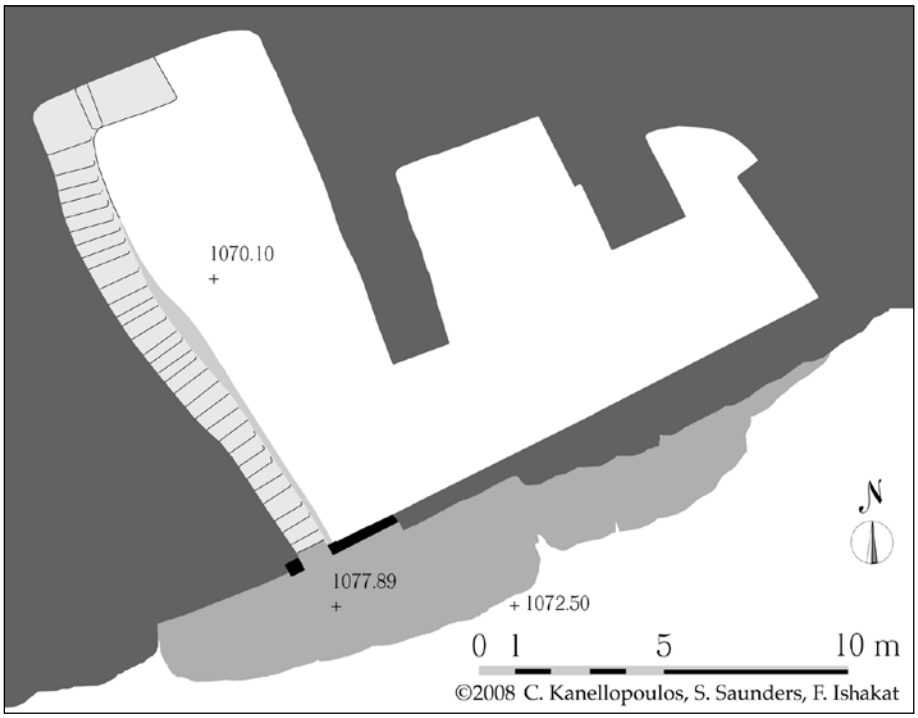
Bayḍā Documentation Project

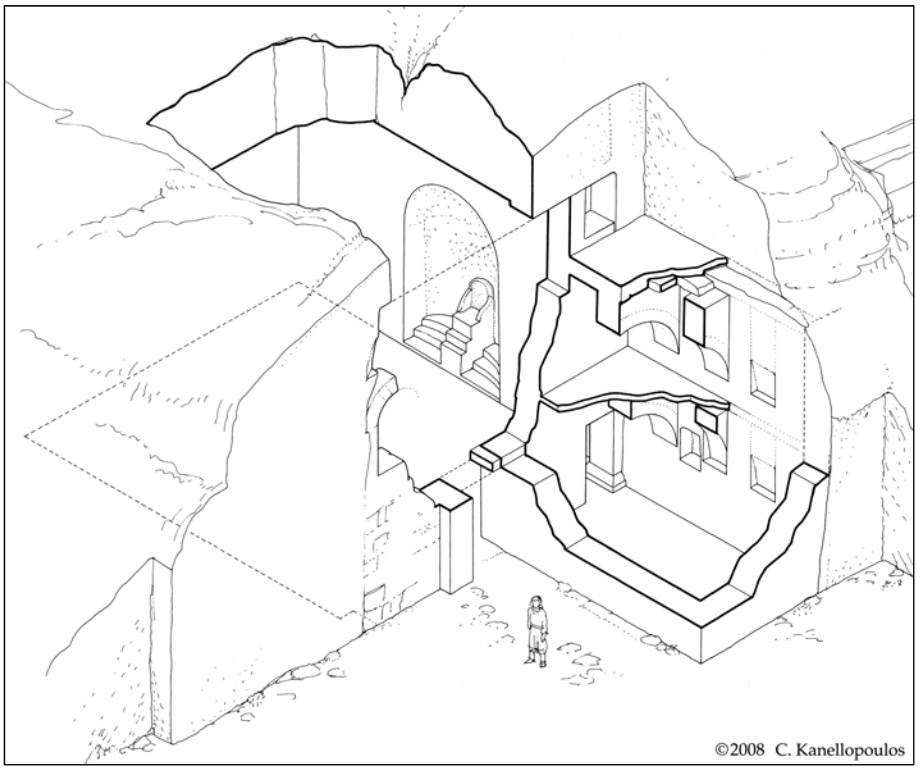
Introduction

The objectives of the Bayḍā Documentation Project are to detail all features in a specific area of Bayḍā (see map in Bikai, Kanellopoulos and Saunders 2007: 370, Fig. 1), to contribute to tourism development; and to create employment. Work began in 2003 in the northern canyon, Sīq al-Imṭī, where a large unroofed enclosure approached by elaborate walkways was excavated. The multiple wine presses nearby indicate that vineyards had surrounded the enclosure. The building may therefore have had some function, perhaps a ritual one, related to wine. Just east of Sīq al-Imṭī , a rock-cut cistern was documented in a later season. This cistern (FIG. 1) is known locally as Bīr al-'Arāyis (Cistern of the Brides) and has a capacity of over one million cubic litres. It is the largest covered cistern in the region and we can now say that it probably supplied water to the monument that is the main focus of this paper.

In the spring of 2004, work concentrated on an area featuring a large open-air cistern with a capacity of 1.4 million cubic litres. In the fall of 2004, a Nabataean hall cut into bedrock was cleared and it was found to have been reconfigured as a church (FIG. 2) in the Byzantine period and reused again by the Crusaders. The interior dimensions are 10 x 10 x 10 metres. The modifications in the Byzantine period included the cutting of an apse, which featured a bishop's chair, into the eastern wall of the chamber. A set of holes in the cave's walls must have been used for a large chandelier. A two-storey



1. Plan of Bīr al-'Arāyis. Drawing by C. Kanellopoulos, S. Saunders and F. Ishakat.



2. Church. Drawing by C. Kanellopoulos.

structure with arched ceilings was added in the area of the cave's entrance. To the west of that hall were numerous walls indicating habitation. Some of the habitation area was tested and found to be from late antiquity. The structures are poorly built but are so regularly laid out that they may have all been constructed at one time, probably by the Crusaders, perhaps to accommodate agricultural workers. We would later discover two mosques nearby.

A Royal Complex

In May 2005, the fifth season, the focus was on a high bedrock formation in the east of the study area. At its top, this formation had a large rectangular platform into which a long feature had been cut. The debris in that cut yielded a plethora of classical-era material, including many capitals and stone heads. In time, it became clear that the heads were the bosses on the capitals and that the cut into bedrock was the basement or *cryptoporticus* of a large room that once existed on the rectangular platform above; nothing remained *in situ* of that room. Excavations continued in September 2005 with the result that it is now known that the *cryptoporticus* and the room above it were one part of a large complex that covered almost all of the bedrock formation (Bikai, Kanellopoulos and Saunders, in press).

The complex begins at the west with a paved walkway leading to a gate. There would have been about 50 steps leading to the top of the knoll where all that remains today is the compound's infrastructure: the basement including, of course, the *cryptoporticus* at the eastern end. There is a square area directly west of the *cryptoporticus*. From its location, it is reasonable to hypothesize that a square, possibly colonnaded, *atrium* existed above that square. The Ionic capitals recovered can be restored conveniently into the *atrium*'s colonnade or to an *exedra*. These canonical, two-faced Ionic capitals (FIG. 3) are unique to Petra and suggest a date in the first century BC (McKenzie 2001: 100-

3. Ionic Capital. Photo by P. Bikai.

101; Fiema *et al*. 2001: 171, Fig. 38). The pseudo-Ionic capital with elephant heads could have been combined with the larger Ionic order, perhaps as windows. Elephant-headed capitals are well known from the 130 columns in the Lower Temenos of the Great Temple at Petra (Blagg 1990; Joukowsky 1998).

Dining Hall

Moving east to the main hall, it appears that the colonnade material found collapsed in the *cryptoporticus* originally stood on top of the rectangular mass of bedrock. That rectangle was the starting point for the reconstruction. The floor of the elevated, colonnaded hall on the rectangle would originally have been at least 5.5 metres above the floor of the vaulted *cryptoporticus*. The heart-shaped piers recovered are suggestive of an interior colonnade in the hall. The width of the flattened bedrock can accommodate the exterior walls, two columns and two heart-shaped piers, for a total of four piers width-wise. Taking the average distance between those columns into account, the length of the building would accommodate a total of six columns and two heart-shaped piers. So, the capitals with heads can be restored to the hall. It is reasonable to restore two columns and two heart-shaped piers with Medusae and palmette capitals to the west part of the colonnade, directly across from the entrance. The apotropaïc role of the Medusa heads further corroborates their restoration in the area of the entrance.

The pilaster capitals recovered are much larger in height and width than the corresponding dimensions of the column capitals and therefore cannot be combined with the colonnade. These can be attributed to a feature such as the door frame of the colonnaded hall (FIG. 4). Plain door jambs with fully executed Corinthian capitals and a complete entablature occur elsewhere in Petra. Such are the door frames in the Khazna (McKenzie 1987: 297, Fig. 3c). Additionally, Corinthian *antae* frame the central *adyton* of Qaṣr al-Bint (Zayadine, Larché and Dentzer-Feydy 2003: 149, Fig. 15).

The smaller capitals with lion heads instead of volutes and small human heads instead of bosses are about half the size of the hall's capitals. These can reasonably be attributed to an upper level in the same architectural composition (FIG. 5). However, the exact arrangement remains unknown owing to lack of evidence. Nevertheless, the evidence for an upper storey with smaller supports of the same style indicates a possible elevated clerestory above the nave. The hypothetical clerestory is canonical to such basilican interiors. If this is accepted, the basilican plan with an elevated clerestory recalls the Egyptian-type banqueting / dining hall described in Vitruvius' architectural manual (6. 3. 9):

"*…Above their architraves and ornaments are decorated ceilings, and the upper columns have windows set in between them. Thus the Egyptian are not like Corinthian dining rooms, but obviously resemble basilicas*."

To put this building in a geographical and a chronological context, the setting at the edge of a cliff greatly resembles the contemporaneous palatial complexes at Machaerus and Masada (ca. 25BC), each of which has a number of palatial facilities (Netzer 2001: 92-95). Multi-storied compounds with luxurious reception areas and colonnaded courtyards gazing over dramatic views are common to these Herodian / Hashmonean complexes and to the one at Bayḍā. Egyptian *oeci* occur in the area, e.g., in the first palace at Jericho (ca. 32BC), in Herod's third palace at Jericho and in the Governor's Palace at Ptolemais (Nielsen 1994: 147, Fig. 78; 149, Fig. 80; 197; Netzer 2001: 40).

It seems that the main staircase led up from the

4. Pilaster capital with head of Pan and grapes. Photo by P. Bikai.

5. Photorealistic view to the west of the dining hall. Created by C. Kanellopoulos.

entrance to the south side or south-west corner of the elevated complex, as described above. Indeed, in a number of prominent residences with peristyles, the entrance is from the side, e.g. the Governor's Palace at Ptolemais (Nielsen 1994: 147, Fig. 78). There is also a lateral entrance to the house of the consul Attalos in Pergamon and in Herod's Promontory Palace (Schmid 2001: Fig. 7).

Decoration

The capitals from the Bayḍā complex have two main components: a lower half decorated with acanthus leaves and an upper half decorated with volutes, vines, poppies and grapes. The upper sections of the Bayḍā capitals are of the floral type. Between the volutes, the sculptors cultivated a verdant garden of intertwined vines and three different types of poppy. The workmanship of the capital decoration is of the same calibre as found at the Khazna, Qaṣr al-Bint, the Temple of the Winged Lions and Petra's Great Temple. The capitals belong to McKenzie's Group 1 of the Nabataean Floral Type capital, which she dates to before 20AD (McKenzie 1990: 40-41). Unique to the Bayḍā hall, however, are the pilaster capitals that graced the entrance. Here, the sculptors added grapes and grape leaves, almost as an introduction to the room.

Another rather extraordinary feature of the Bayḍā capitals was the addition of sculpted heads, although the use of heads as decorative bosses to embellish the centre point of the abacus is not unique to Bayḍā. (Webb 1996: 18; Kolb, Gorgerat and Grawehr 1999: 269 and Figs. 5-6). A total of 31 heads were recovered. Differences in the portrayal of the heads show that multiple sculptors were at work on the Bayḍā capitals and each head is quite individualistic.

The most identifiable figure in the Bayḍā assemblage is Dionysos, who is singled out by the vine wreath that crowns his head and the ribbon that crosses his brow. It should be recalled that the worship of Dionysos involved much revelry and often took place outside the city limits. The group of Dionysian worshippers and their religious procession are both called a *thiasos* in Greek. *Thiasoi* are portrayed often and in many different art forms in Greco-Roman art. The procession that includes elephants, panthers and perhaps giraffes

is a depiction of the god's victorious return from the East where he defeated Indians who refused to worship him (Nonnos, *Dionysiaca* 36). The cast of characters in a Dionysian *thiasos* is changeable, but many of the main characters join the god himself on the headed capitals of Bayḍā. Bearing in mind that we only have about half the original number of heads, these include Ampelos, Dionysos, Pais, Heracles, Pan and Silenos, in addition to satyrs and bacchantes. The two veiled females could be drawn from the main female characters in Dionysian mythology: Ariadne, Nysa or Ino. The presence of Isis can perhaps be explained by her popularity in Petra (Zayadine 1991). The other female figures may be Muses, bacchantes or nymphs. The cast of characters for the capital decoration of the Bayḍā structure was purposefully selected and implies a Dionysian function as a grand dining hall, whether ritualised or not. According to Strabo (16.4.26):

"*The Nabataeans prepare common meals together in groups of thirteen persons; and they have two girl-singers for each banquet. The king holds many drinking-bouts in magnificent style, but no one drinks more than eleven cupfuls, each time using a different golden cup.*"

The imposing and magnificent character of the basilican plan and the architectural decoration of the Bayḍā complex point to a wealthy, probably regal, owner.

Dating and Interpretation

Finally we may ask: who and when? The major conclusions of the preliminary study of the ceramics are:

1) The area under the courtyard was used for food-preparation.
2) Ceramics found in the food-preparation area date to the period just before the abandonment.
3) A study of these indicates that the use of the building ended more or less at the end of Stefan Schmid's Phase 2a, that is ca. 30/20BC (Schmid 2000: 38, see also 25 and Abb. 97).
4) Painted pottery of any type that is restricted to Schmid's Phase 1 (Schmid 2000, Fig. 97 and 2003, Figs. 52–53) seems not to occur at the site, so the building most likely was constructed after 50BC.

Dating to after 50BC but before ca. 30/20BC would make it likely that the complex was built during the reign of King Malichos (59/58-30BC) and abandoned at about the time of his death. It stood derelict, perhaps until the reign of Rabbel II (70-106AD), when the building was dismantled. At that time, most of its materials were taken away, but the capitals were abandoned at the site, indicating that they could not, for whatever reason, be re-used.

Dionysos was much favored by the kings as a role model and ancestor for several reasons: he was the conqueror and ruler of the East, a man who had become a god and the master of luxurious living (Smith 1991: 127). It may be that the Nabataean royal family associated itself with Dionysos, as did Alexander the Great and his mother (Plut. *Alex.* 2.5). Following in Alexander's footsteps was Ptolemy II Philadelphus of Egypt, Cleopatra's father Ptolemy XII, who called himself "Neos Dionysos", and Cleopatra's lover Mark Antony, who similarly portrayed himself as the new Dionysos (Fraser 1972: Vol. 1, 202-205).

On this high rocky promontory, overlooking many dunums of vineyards, there was a magnificent residence that included a hall with splendid decorations. The hall marked King Malichos' claim for association with Dionysos.

Acknowledgments

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Claudia Bührig

The 'Eastern City Area' of Gadara (Umm Qays): Preliminary Results on the Urban and Functional Structures Between the Hellenistic and Byzantine Periods

As a result of research work conducted at Gadara (Umm Qays) over approximately three decades, the transformation of the Hellenistic hilltop settlement into a Roman urban centre is comparatively well understood. In contrast, our understanding of urban development during the transition to Late Antiquity is relatively incomplete. It is only with recent excavations, conducted over the past decade, that the state of archaeological knowledge has markedly improved.

This contribution attempts to reconstruct Gadara's development from Hellenistic-Roman times up to the Byzantine period. The account is based upon the results of research projects conducted by the Jordanian Department of Antiquities, a Danish team and several German teams.

The forthcoming paper is based on the results of the German research project "Gadara - on the urban and cultural development of the ancient city". This project is being conducted by the Oriental Department of the German Archaeological Institute and the State Museums in Berlin, directed by Günther Schauerte and the author.[1] All ancient ruins are marked on our Topographical Map of the archaeological site of Gadara (Umm Qays) (FIG. 1).

The main objective of the above-mentioned project is to carry out a comprehensive analysis of settlement development in the eastern part of the ancient city of Gadara. These include the buildings in the area of the city's main sanctuary complex and the North Theatre, hereafter referred to as the 'Eastern City Area' (FIG. 3).

Urban Development in the Hellenistic and Roman Period

The nucleus of Gadara consists of the fortified Hellenistic settlement which dates from the early second century BC (Hoffmann 2000: 180-210; FIG. 1 no. 3). The settlement is situated on a hilltop at the edge of a fertile plain, bordering the eastern Jordan Valley. Owing to its prominent, strategically advantageous location and its bountiful environment the hilltop was a favoured place for settlement.

The phases of urban development, especially those of the 'Eastern City Area', can be subdivided into five phases. The aim is to present an overview of the phases of urban development within the 'Eastern City Area', and to introduce and analyse continuity and discontinuity within the urban structure of this area, which lies to the north-east of the Hellenistic settlement on Acropolis Hill.

The First Phase of Urban Development

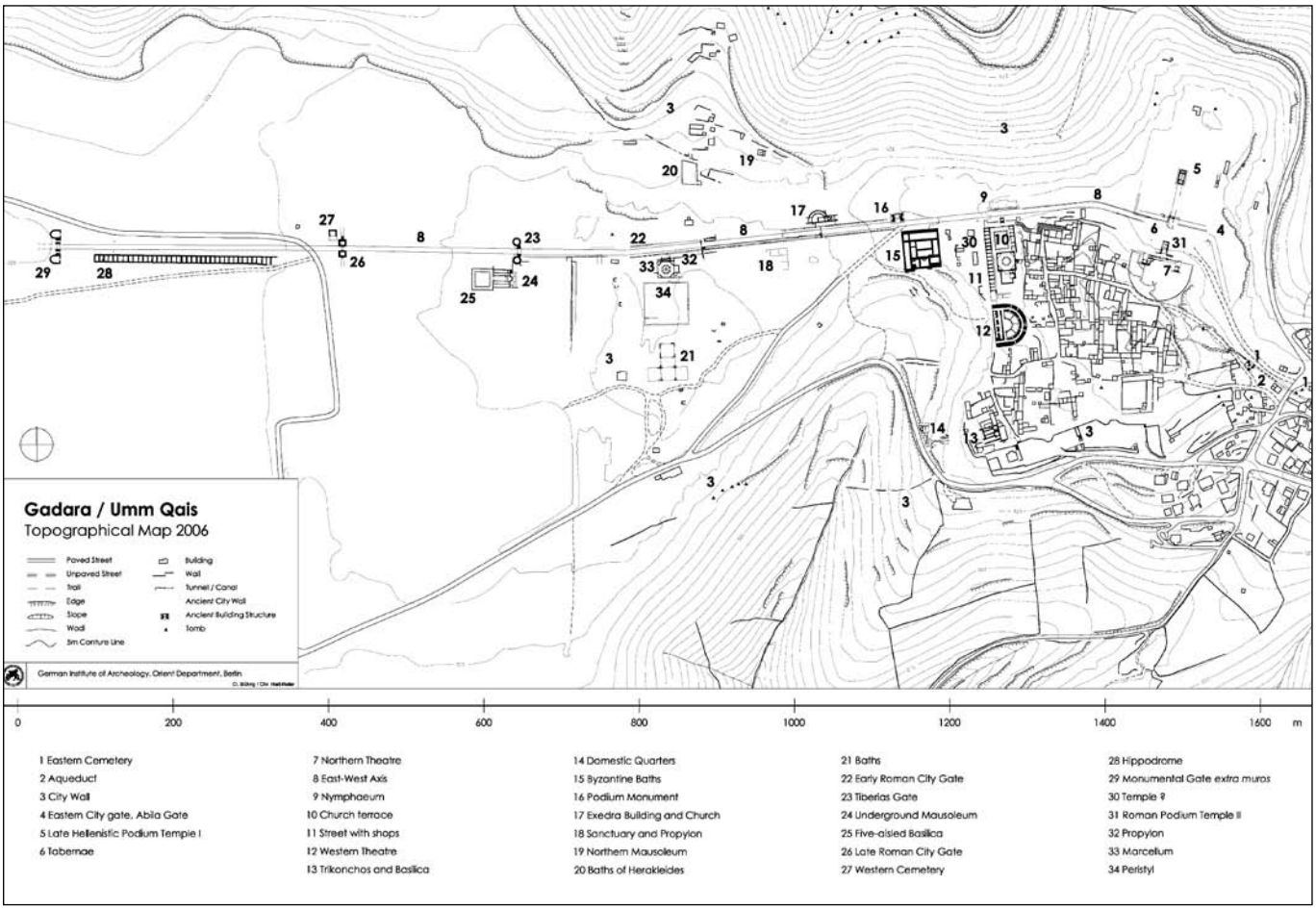
The initial enlargement of the Hellenistic hilltop community included a terrace that extended to the north-east of Acropolis Hill. There, at the 'eastern entrance' to the city of Gadara, a temple district with the city's main sanctuary was constructed on a spacious, artificially levelled area (Hoffmann 1999: 795-831; FIG. 1 no. 5; FIG. 2).

The 92m to 106m wide temple district dates from the first half of the second century to the beginning of the first century BC. The associated Podium Temple I was probably dedicated to Zeus Olympios (Riedl 2005: 102-112). The entrances to the Podium Temple I faced south from the main road through the Propylon I (FIG. 1 no. 6). Propylon and Temple I are situated on one centre-line.

The Second Phase of Urban Development

At the beginning of the first century AD, the North

[1] We are especially grateful to the Director General of the Department of Antiquities of Jordan Dr Fawwaz al Khraysheh and our colleagues from the DoA in *Umm Qays*, particularly Eimad Obydat and Aly Owaisi, for their support.

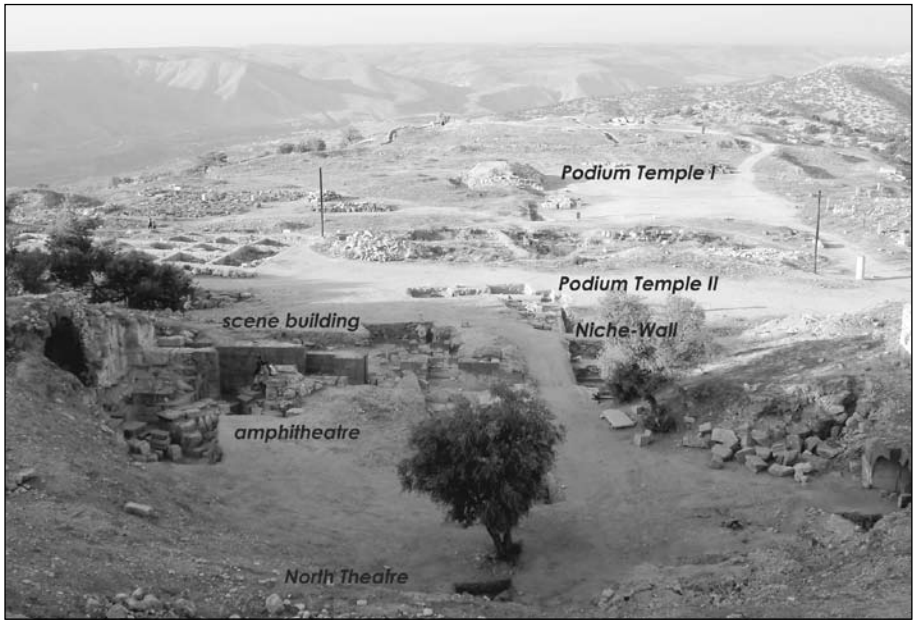


1. Topographical map (2006) of Gadara (Umm Qays) (C. Bührig and Chr. Hartl-Reiter).

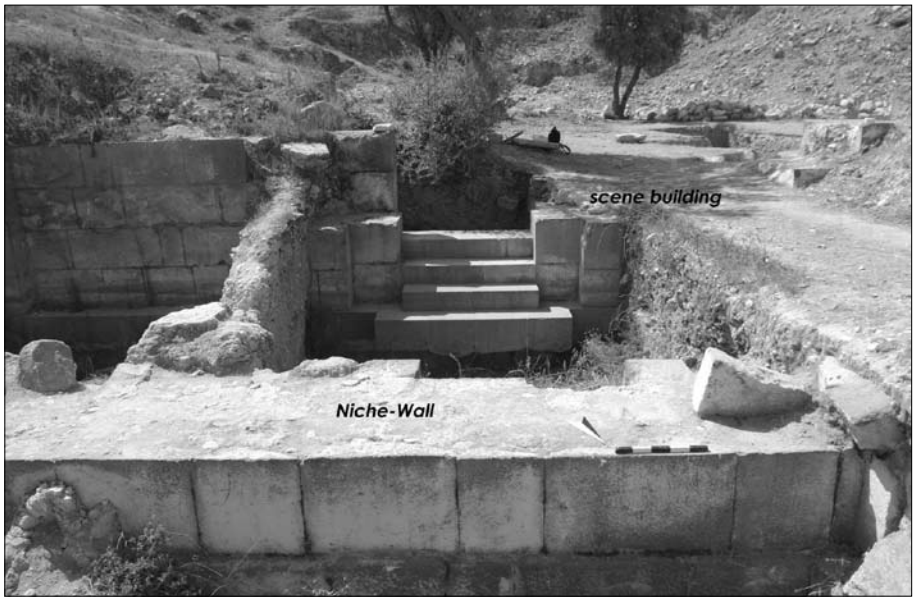
2. View from north of the 'Eastern City Area', showing the main sanctuary in the foreground and the North Theatre at the settlement hill in the background (C. Bührig).

Theatre was erected on the south side of the temple district (FIG. 1 no. 7; FIG. 2). On this side, the North Theatre nestles against the slope of the settlement hill, bounded by the Hellenistic-Roman city wall to the east. The North Theatre is orientated to the Late Hellenistic Podium Temple I (FIG. 1 nos. 5, 7).

The ornate north façade of the scene building forms the external right side and main façade of the North Theatre, giving way to a public square in front which is located between the public complex in the north and city wall in the east. Two passageways in the middle lead up to the scene building and two external passageways lead off to the tower gallery of the *cavea* (FIG. 4).



3. View from south of the 'Eastern City Area', showing the North Theatre in the foreground and the main sanctuary in the background (C. Bührig).



4. View from the north to one of the passageways in the main façade of the North Theatre scene building, showing the niche-wall in the foreground (C. Bührig).

The large open space between the North Theatre and the district of Podium Temple I was transected from the main street by an axis running in an east-west direction, the so-called east-west axis (FIG. 1 no. 8). The space borders the Late Hellenistic city wall and the Abila Gate in the east (FIG. 1 no. 4). The exact course of the main street and the details of how these spaces were designed at the beginning of the first century AD is still unknown. In sum, topographical and geomorphological conditions only allowed for an expansion of the city to the west.

Whilst the Hellenistic settlement was restricted to the Acropolis, the main street-axis ran in an east-west direction and formed the city's 'backbone' during the Roman Imperial period (Bührig 2008, 2003: 5-62).

In the early Imperial period, some time after the middle of the first century AD, the city expanded to the west and was enclosed by a fortification. The total area of the city was now about 30 hectares, five times larger than the Hellenistic hilltop settlement.[2]

[2] For the early Imperial city fortifications see Hoffmann 2000: 175-233, in particular 211-224 and 228-233.

The Third Phase of Urban Development

The location of the 'Eastern City Area' changed after the destruction of the Late Hellenistic Podium Temple I during the First Jewish War, between 66 and 70/74AD).

So far there is no archaeological evidence for the rebuilding of this major monument. There are only references to the preservation of the podium, with the foundations underneath. One exception is the construction activity on the south side of the temenos wall during Flavian times (end of the first century AD). Here the architectural remains have been built over, slightly further to the north, with chamber structures lying parallel to the east-west axis and orientated with the new Propylon II (Hoffmann 1999: 795-831; FIG. 1 no. 6).

The central axis of this new Propylon II was relocated approximately two metres to the west of the old Hellenistic axis, but was now precisely centred on the North Theatre. Furthermore, the open space in front of the North Theatre was 'framed' in architectural terms. At the end of the first century AD, a niche-wall was erected 4m from and parallel to the scene building, thereby delineating the square to the south (FIGS. 3 and 4). Between the scene building and niche-wall, a side alley was created to channel the streams of visitors coming to the North Theatre from the east, from the direction of the Abila Gate.

Details of access and the road network outside the cavea have yet to be clarified. On the east side, between the North Theatre and city wall, we can demonstrate a direct entrance to the *cavea*[3] (FIG. 5).

Along the main east-west axis, the tabernae structure with a passageway to the old district of Podium Temple I was established, thereby delineating the square to the north. This arrangement orientated the North Theatre, square and Propylon II on the same axis. A new functional urban space and mercantile centre was built.

It is remarkable that this urban expansion during the second half of the first century AD was contemporaneous with other building work within Gadara and elsewhere, e.g. the erection of the Tiberias Gate (Weber 2002: 106-108, 326-330; FIG. 1 no. 23) and the completion of parts of the colonnaded street, both located in the western part of the city.

Since the second half of the second century AD, Rome had promoted intensive urbanisation in the eastern provinces. Like Gerasa, Philadelphia and Scythopolis, Gadara benefited from this policy and consequently experienced an economic boom. This was manifested by several public buildings along the colonnaded main street which accentuate individual urban sections, such as the market basilica on the north-western terrace, the West Theatre and the Nymphaeum (Bührig 2008; FIG. 1 nos. 9-11).

The colonnades were constructed gradually and, like Roman fora, constituted the lifeblood of the

5. Entrance to the *cavea* in the outer wall of the North Theatre; view from the East (C. Bührig).

[3] This entrance, known as T5, was blocked in Early Byzantine times when the North Theatre was converted into an amphitheatre.

city. They flanked and enclosed the main street, and pedestals for statues and honorary monuments were erected between the columns and on the wide estrade in front of the colonnade.

The Fourth Phase of Urban Development

In the second century AD, a new phase of development can be defined in the 'Eastern City Area'. A new Podium Temple II, measuring 8.30m by 16m, was erected in front of the scene building, interlocking with and adjoining the niche-wall (FIG. 1 no. 31; FIG. 6). The surrounding square in the 'Eastern City Area' was enclosed by tabernae in the north and the niche-wall in the south.

The new Podium Temple II is located precisely on the central axis with the North Theatre and Propylon II. Temple II was orientated towards the old district of Temple I (FIG. 1 no. 5-7, 31). It can be assumed that the old podium of Temple I was also part of the cultic district and was probably used as an altar for Podium Temple II. The open space connecting these two building complexes was bisected by the east-west street axis. The 'Eastern City Area' had developed again and now included the city's main cultic and public centres.

6. View from the North, showing the more recent Podium Temple II (C. Bührig).

During the Roman Imperial period, Gadara expanded continuously to the west along the east-west axis, in the direction of the fertile plain known as Arḍ al-'Alā (FIG. 7). In the early third century AD, the city reached its maximum extent with the main street attaining a length of approximately 1.7km. Its westernmost point is marked by the Monumental Gate extra muros (Bührig 2008; FIG. 1 no. 29).

Situated at the city's western boundary, the Monumental Gate extra muros served not only as a link between the city and its hinterland, but also as an impressive and representative marker of the city's entrance and exit. At the same time, a commercial area was established around the Monumental Gate and hippodrome (FIG. 1 no. 28, 29).

Urban Development During Late Antiquity (Byzantine Period)

The establishment of the Byzantine Empire in the fourth century AD marked the beginning of a long-lasting period of peace, growth and economic prosperity in the region (Walmsley 1996: 130-131; MacAdam 2003: 49-93, in particular 53-68 and 76-77). As early as the fourth century AD, Gadara became a diocese within the Holy Land.

Like Pella, Scythopolis and Gerasa, during the following three centuries the city experienced a new period of prosperity to which various building projects along the east-west axis bear witness. According to available evidence, the Byzantine expansion of Gadara seems to have taken place in two stages. During the initial stage, at the beginning of the fourth century AD, various building projects were undertaken. Apparently this represented some kind of transitional period in the formation of the settlement structure. It was probably at this time, that the main sanctuary in the north-east of the city lost its function in the urban context of Gadara.

During this first, i.e. fourth century, stage in the development of the Byzantine city, the cityscape was characterised by the following building projects: a large bath complex (Nielsen *et al.* 1993, in particular 147; Holm-Nielsen *et al.* 1986: 219-232; FIG. 1 no. 15) and a church complex with a five-aisled basilica (Al-Daire 2001: 87-95, 103-104; Weber 2000: 81, 129-131, 359-373; FIG. 1 no. 25).

7. Aerial view along the east-west axis, looking west towards the Arḍ al-ʻAlā (G. Schauerte).

The Fifth Phase of Urban Development

By the end of the third century or beginning of the fourth century AD, the North Theatre was converted into an amphitheatre (Bührig and Liesen 2006: 524-527; Bührig 2005: 246-247; FIG. 1 no. 7).

In this context, the *scaenae frons* was completely dismantled down to its foundations, upon which the northern enclosure wall of the newly developed arena was constructed using reused building stones from the *scaenae*. In this way, the orchestra was extended to the north in the direction of the dismantled stage and *scaenae frons*.

In the western part of the amphitheatre enclosure wall, three locks have been identified (FIG. 8) which allow direct access to the orchestra. Similar openings are assumed to have existed on the east side. In contrast, the *cavea* was integrated into this new complex without major modification. The direct entrance to the *cavea* on the east side, between the North Theatre and city wall, was blocked in the early Byzantine period.

Structural and functional modifications of Roman theatres were common during the Byzantine period (Claude 1969: 74-76). Such rebuilding emphasises the importance and wealth of the city of Gadara at the beginning of the fourth century. On the basis of our recent work, the area under consideration lost its significance as Gadara's urban centre by the end of the sixth century or during the first half of the seventh century.[4]

The second stage in the Byzantine city's expansion had begun by the middle of the fifth century AD, following destruction caused by one of the earthquakes attested in the forth and fifth centuries. This second stage can be viewed as an exercise in rebuilding and reflects the increasing influence of the Christian faith upon urban planning. Whether the rebuilding of the North Theatre was carried out before the earthquake or whether it was part of the subsequent reconstructions cannot yet be verified. Additional churches were constructed within the city, including a centralised monument with an atrium and three-aisled basilica at the south-western corner of the ancient settlement hill (Vriezen *et al.* 2001: 537-545; Wagner - Lux and Vriezen no date: 139-153, in particular 140-144, FIG. 1 no. 10). It is likely that further buildings were still in use or newly-constructed during the Byzantine period.

Apart from religious buildings, which can be seen as an expression of Byzantine urban build-

[4] The earthquakes are listed in Amiran, Arieh and Turcotte 1994: 265; Russell 1985: 42 Tab. 1.

8. View from the south-west to the amphitheatre enclosure wall with locks and the *scaenae frons* (C. Bührig).

ing policy, there is also evidence for modification of secular monuments in the city. For example, there is evidence for the rebuilding of structures along the main street, along with the rows of shops that flanked the street (Tawalbeh 2002: 622-623). Nevertheless, it can be stated that the significance of the east-west axis as a 'linear forum' or 'urban backbone' was maintained during Late Antiquity (Walmsley 1996: 144-145; Claude 1969: 224-229).

Secular as well as religious buildings continued to be oriented towards the street and were accentuated by elaborate entrance façades. The east-west axis with its flanking rows of shops played a major role in the social and economical life of the city.

The defeat of the Byzantine army by the Umayyads at the River Yarmouk in 636AD marked the end of the Byzantine period. However, there was no major building work or damage to the city in the aftermath of this event.

A devastating earthquake some time in the middle of the eighth century destroyed large parts of the city and interrupted the settlement's further development.[5] Henceforth, urban life went into decline and the population of Gadara became sparse.

Summary and Outlook

Our research has shed light on the chronological order of functional and structural changes in the urban development of Gadara, particularly in the 'Eastern City Area'. As early as the end of the second century BC, the 'Eastern City Area' with its main sanctuary dedicated to Zeus Olympios was one of Gadara's main cultic and urban spaces, a state of affairs that continued until the end of the third century AD.

Because of the continuous use of the North Theatre and Podium Temples I and II, the sanctuary as a whole and the 'Eastern City Area' would have had a close formal and functional relationship. Details of their use and the question of typological inspiration have yet to be determined. A gradual and continuous expansion of the city to include public, cultic and economic areas can be observed in the 'Eastern City Area' of Gadara. This arrangement was the architectonical expression of the highly developed self-image of the citizens of Gadara.

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[5] The destruction layers at Gadara are probably not attributable to the Muslim conquest but to a subsequent series of earthquakes during the 8th century, cf. Russell 1985: 49 pl. 1. For Gadara in the Islamic period see Weber 2000: 83-87.

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The Druze Experience at Umm al-Jimāl: Remarks on the History and Archaeology of the Early 20th Century Settlement

The ancient town of Umm al-Jimāl, on the edge of the southern Ḥawrān plain, is notable among Jordan's premier archaeological sites for its wealth of Late Antique ruins. During the early decades of the 20th century, many of these ruins were transformed as the site was rebuilt and reoccupied first by Syrian Druzes and later by Lebanese Druzes, the former as refugees and the latter as deportees. This study introduces the social and political events that encouraged renewed settlement in northern Transjordan, the practical challenges the Druzes faced at Umm al-Jimāl, the material remains of their community, and the international dispute over the territorial jurisdiction of Umm al-Jimāl during the Mandate era that followed World War One.

Umm al-Jimāl – From Late Antiquity to Abandonment

Throughout Late Antiquity there were numerous basalt villages on the ναwran plains[1] and an even greater density of settlements in the adjacent hills of al-Jabal (also Jabal Ḥawrān, Jabal ad-Drūz, Jabal al-'Arab)[2] to the east and southeast. Bostra, once the capital of *Provincia Arabia* and later a chief entrepot of *Palestina Tertia*, was the predominant urban center within this agricultural district. Having reached their height of prosperity in the sixth century AD, most of these villages were subsequently abandoned, but in many cases the Late Antique architecture remained remarkably well-preserved through the 19th and into the 20th century owing to the exceptional strength of basalt as a construction material (see Schumacher 1897; Butler 1913; 1914; 1915). Umm al-Jimāl, situated south of what is now the town of Buṣrā (Buṣrā ash-Shām, Buṣrā aski-Shām), was one of many sites in the southern Ḥawrān where multi-storied structures continued to stand for centuries after their abandonment.[3] Having been a relatively large town in Late Antiquity, the site has over 150 structures built of laboriously chiseled black basalt ashlars and long beams.

The most significant studies of Umm al-Jimāl are Howard Crosby Butler's architectural survey (*The Princeton University Archaeological Expeditions to Syria*), conducted in January 1905 and presented in a landmark publication (Butler 1913; see also Stoever and Norris 1930: 34-35; Butler 1930: 91), and Bert de Vries' extensive architectural and archaeological investigation (The Umm al-Jimāl Project), which began in 1972 and continues to the present day (de Vries 1979, 1981, 1982, 1985, 1993, 1995, 1998). These projects documented the standing remains and archaeological deposits of a 4th - 8th century settlement that was supported by grain production and livestock husbandry. As a fortified post along the Roman *limes*, Umm al-Jimāl grew haphazardly from a 4th - 5th century village into a flourishing 6th century town. The ruins with-

[1] During his 1812 travels, Burckhardt described the Ḥawrān as follows: "*Belad Haouran*. To the south of Djebel Kessoue and Djebel Khiara begins the country of Haouran. It is bordered on the east by the rocky district El Ledja, and by the Djebel Haouran, both of which are sometimes comprised within the Haouran; and in this case the Djebel el Drouz, or mountain of the Druses, whose chief resides at Soueida, may be considered another subdivision of the Haouran. To the S.E. where Boszra and El Remtha are the farthest inhabited villages, the Haouran borders upon the desert. Its western limits are the chain of villages on the Hadj road, from Ghebarib as far south as Remtha... (t)he Haouran comprises therefore part of *Trachonitis* and *Ituræa*, the whole of *Auranitis*, and the northern districts of *Batanæa*. *Edrei*, now Draa, was situated in Batanæa" (1822: 285-86).

[2] For *Ard al-Bathanyeh* see Porter (1855: 57); for *Jabal ar-Rayyān* see Pascual (1991: 101).

[3] Studies of basalt architecture in the Ḥawrān and Jabal ad-Drūz include Aalund (2001), Bopp (2006), Dufourg (1951), Glück (1916) and Thoumin (1932); see also Ball (2002: 238-43).

in the town walls include a *praetorium*, a *castellum*, barracks, over a dozen churches, scores of domestic structures, several reservoirs, and a number of other features. Umm al-Jimāl's prosperity is also reflected in the sophistication of its architecture, as 128 of the town's structures once stood three stories in height (de Vries 1985: 252).

Umm al-Jimāl, whose Late Antique name remains undetermined (de Vries 1994, 1998: 36-37), was abandoned either by the end of the 8th century or during the 9th century, as were its neighbouring black basalt villages, including Umm al-Quṭṭayn and Khirbat as-Samrā' (see Kennedy *et al*. 1986: 148; Bauzou *et al*. 1998: 14). With the end of sedentary occupation, the Late Antique structures at Umm al-Jimāl became a resource for pastoral nomads. Bedouin tribes crossing northern Transjordan routinely used the site as a campground, constructing livestock corrals and taking advantage of shelter and whatever rainwater had collected in the reservoirs. This centuries-old, seasonal pattern of land use was altered during the first decades of the 20th century when the site attracted new attention as a strategic resource for Syrian Druze families coming into Transjordan as refugees.

Druze Settlement in Jabal Ḥawrān, Southern Syria

The arrival of Druze settlers[4] at Umm al-Jimāl in 1910 was linked to dramatic events that engulfed Lebanon and Syria during the second half of the 19th century and first decades of the 20th century. During this period, the region experienced economic shifts, political reforms, social upheavals, new forms of government and large-scale dislocation of ethnic populations. The circumstances behind these transitions were international in both scope and impact.

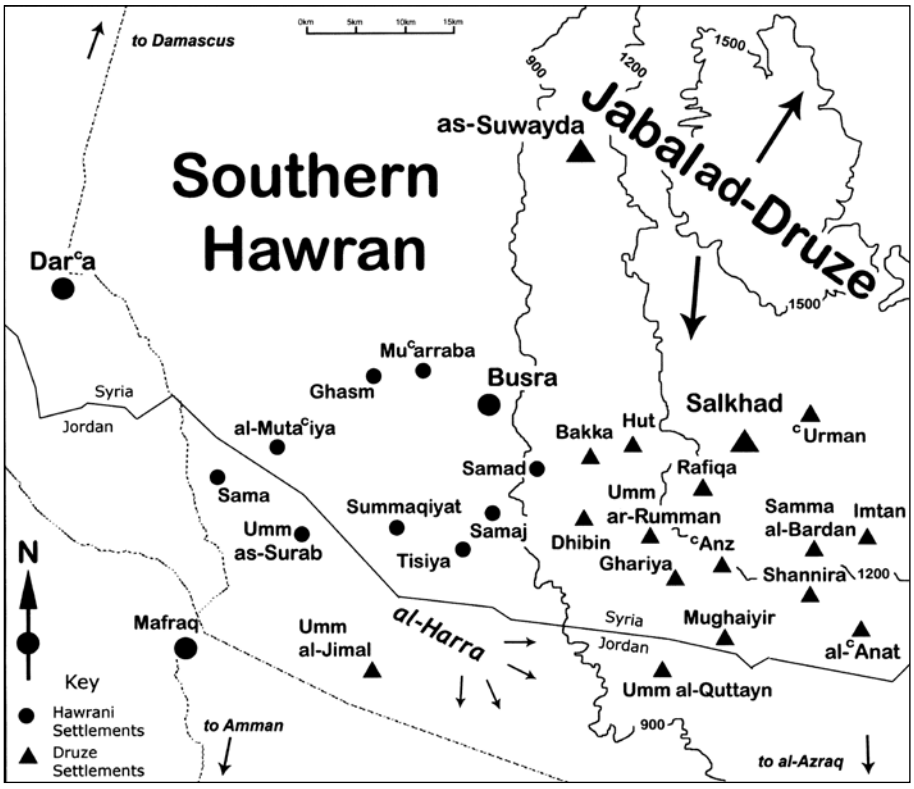
During the later Ottoman centuries, Druze farming villages were widespread in parts of Mount Lebanon, including the Shuf and Wādī at-Taym; additional communities were situated in the Syrian Jabal Ḥawrān, an isolated, rural, hill-country south of Damascus and on the edge of Transjordan. With the inception of the tandhīmāt era of reforms (1839-1876), non-Muslim groups experienced greater equality as citizens yet social and economic tensions flared (Fawaz 1994: 22, 27ff). European states, seeking to profit from trade, patronised specific religious communities, thereby drawing all of Lebanon's major confessional groups, including the Druzes, into fierce competition as the distribution of wealth and debtor-creditor relations became increasingly sectarian. In 1860, Mount Lebanon was ravaged by civil conflicts that destroyed 200 villages and caused the dislocation of much of the population. During the summer of 1860, further conflicts arose in Damascus where the wealthy Christian community, which included prominent businessmen and money-lenders, was destroyed (Fawaz 1994: 100, 164).

Faced with the devastation of Lebanon's rural economy and the threat of Ottoman tribunals and punishments in the aftermath of the conflicts, thousands of Druzes, including prominent clan leaders, fled from Mount Lebanon and the Damascus basin to take up residence in the remote Jabal Ḥawrān, which lay beyond the immediate reach of the Ottoman administration and already hosted a Druze population (see Gentelle 1985: 27-30; Pascual 1991: 101-103). In the years after 1860, recurring tensions on Mount Lebanon and the desire to escape Ottoman demands of taxation, registration and conscription, as well as the allure of cultivable land, continued to draw new Druze immigrants into Jabal Ḥawrān, which by 1861 appeared in official records as Jabal ad-Drūz (Firro 1992: 138, n. 35).

Jabal ad-Drūz and the Growth of 19th Century Village Settlements

The Jabal ad-Drūz (presently Jabal al-'Arab) is a series of dormant volcanic hills whose cones once deposited a mantle of basalt over a limestone plateau (Huguet 1985: 5-7; see also Allison *et al*. 2000). These hills stand between the Ḥawrān plain to the west, which is well-suited to wheat and barley cultivation, and the dry, basaltic *al-ḥarra* lands of the Syrian Desert to the east and south (FIG. 1). The al-Jabal hills contain fertile soil and the relatively moist west slopes receive over 300mm of

[4] The Druze faith was established in Cairo under the Fatimid caliph al-Ḥākim (A.H. 400 / A.D. 1009-10); by the end of his reign, pockets of Druze followers were established in south Lebanon, the Wādī at-Taym, and Jabal al-A'lā to the west of Aleppo. By the Crusader era, Druzes were well established in these areas and on the Ghūṭa plain of Damascus (Betts 1988: 7-9; 70). Despite major defeats while facing the Mamluks in 1305 at Kisrawan and the Ottomans in 1585 at 'Ayn Sāfūr (see Kheirallah 1952: 161), Druze settlements in the Levant continued to grow.



1. Map of the southern Ḥawrān plains and southern Jabal ad-Drūz with 19th and early 20th century Druze and Ḥawrāni settlements.

annual rainfall, which is sufficient for grain crops and some vegetables. Precipitation decreases to the south and east, leaving these flanks of al-Jabal on the agricultural margins as they are less productive and more likely to experience drought and crop failure.

During the early Ottoman period, agricultural communities flourished on the southern Ḥawrān plain and west slopes of al-Jabal, as documented in the 1596-97 tax register (*daftar al-mufaṣṣal*) for *Qaḍā' Ḥawrān*. This lists a large number of wheat and barley-producing villages extending east as far as Ṣalkhad and south to Dhibīn, Ghāriya, and Mughāyr (Hütteroth and Abdulfattah 1977: 211-20).[5] By the beginning of the 19th century, however, many of these villages and their agricultural fields had been abandoned owing to the failure of Ottoman governance in southern Syria, which enabled bedouin tribes to exert authority over peasant populations and the lands they cultivated (Lewis 1987: 19, 2000: 35).[6]

The pastoral tribes that frequented southern Syria often competed with one another for access to resources, particularly water and pasturage. During the first half of the 19th century, the al-Jabal hills were dominated by the *Ahl al-Jabal* (also '*Arab al-Jabal, Jabaliyya*), a local confederation of bedouin shepherd tribes. In summer and winter, these pastoralists herded flocks of sheep (as well as some camels and goats) belonging to the villagers of the Ḥawrān plain in exchange for a share in the butter and newborn animals produced (Burckhardt 1822: 307-308). With the sharp increase in the population of Druze farmers in al-Jabal during the mid-19th century, the Ahl al-Jabal soon became the keepers of Druze livestock (Provence 2005: 32).[7] The shepherd tribes and Druze cultivators also formed a firm and enduring alliance of lasting mutual ben-

[5] Umm al-Jimāl, some 20-25km. to the west and southwest of these outlying villages, lay beyond the scope of Ottoman fiscal administration, no doubt because it did not support a sedentary population during this period (see de Vries 1998: 21).

[6] Lewis (1987: 19) noted that the land between Dar'ā and Buṣrā was the driest and least productive part of the Ḥawrān plain and that the rival tribes of Wuld 'Alī, Ruwala, as-Sardiya and Banī Ṣakhr fought for its control during the 18th and 19th centuries. In this district and further to the south and southeast, farming communities abandoned their villages.

[7] In describing her 1905 journey to Umm al-Jimāl, Gertrude Bell stated "(t)he Arabs who live at the foot of the Hauran mountains are called the Jebeliyyah, the Arabs of the Hills, and they are of no consideration, being but servants and shepherds to the Druzes. In the winter they herd the flocks that are sent down into the plain, and in the summer they are allowed to occupy the uncultivated slopes with their own cattle" (1987: 75). See also Lees (1895: 23).

efit.[8] Among the Ahl al-Jabal tribes, the al-Masā'īd, al-'Adhamāt and ash-Shurufāt grazed their sheep across the southern margins of al-Jabal, spending the summer months around Ṣalkhad and the winter months either to the east in the ḥarrat ar-Rājil or to the south around Tall al-Aṣfar or al-Azraq (Oppenheim 1939: 345-48). In so doing, they frequently encamped at Umm al-Jimāl.

Bordering the hills of al-Jabal, the Ḥawrān plain hosted bedouin tribes whose dīra(s) were dispersed from al-Balqā' northwards. Amongst them, the as-Sardiya, Sirḥān and Banī Ṣakhr often pressed the Ḥawrāni villages for *khuwwa* (*khāwa*) protection payments (Burckhardt 1822: 307). During the summer months, camel-herders of the north Arabian steppe, including the 'Anaza confederation tribes of Wuld 'Alī and Ruwala, passed through the Wādī Sirḥān and into the Ḥawrān. There they claimed traditional rights to pasture and water supplies for their livestock, which included tens of thousands of camels. Whilst in the Ḥawrān, the Wuld 'Alī and Ruwala would obtain grain stores for the winter and collect *khuwwa* from the Ḥawrāni villagers (Burckhardt 1822: 308; Lewis 1987: 8-10, 12, 2000: 34-35). In years when relations between the 'Anaza tribes and the Damascene authorities were hostile, the former remained on the remote fringes of the Ḥawrān, south of Buṣrā, in the area of Umm al-Jimāl or farther to the south around az-Zarqā' (Burckhardt 1822: 309). The Druze population in al-Jabal was largely successful in defending its property and fields from these *khuwwa*-seeking tribes.[9]

By 1860, villages had been established on the west, north, and north-east slopes of al-Jabal, whereas only a few settlements lay south of the principal town of as-Suwayda'. Seeking farm land, the newly-arriving Druze refugees from Lebanon and the Damascus basin turned to the less-populated southern part of al-Jabal where they planted wheat and barley, adapting their traditional agricultural practices to local conditions. The southern al-Jabal also offered numerous abandoned villages with standing architecture, which often needed little more than cleaning out or partial reconstruction to provide homes (Porter 1855: 38; Graham 1858: 234, 244; see also Dufourg 1951: 412; Firro 1992: 149-51; Lewis 1987: 84, 87-88). Ṣalkhad became the principal southern settlement after it was established in 1861, and 14 "daughter" villages soon sprang up around it (Lewis 1987: 87). As Druzes continued to move into al-Jabal throughout the second half of the 19th century, additional villages were established along the southern slopes (Firro 1992: 150; Lewis 1987 80-81; 2000: 40). Christian and Muslim villagers also resided in al-Jabal but the more numerous Druzes exercised authority throughout the hill-country (Provence 2005: 31-32, 34). In contrast, the village population on the Ḥawrān plain was predominately Christian and Muslim.

From their villages in the hills, the Druzes viewed the rich grain lands of the Ḥawrān with intense interest. As early as 1861, their attempts to extend influence over the population of the plain led to armed clashes with Ottoman troops sent from Damascus to force a Druze withdrawal (Schilcher 1981: 165-66). Notwithstanding this initial setback, Druze efforts to exert control over the resources of the Ḥawrān remained a significant aspect of the social and economic fabric of the region. With increasing regional and international demands for grain during the second half of the 19th century, Druze and Ḥawrāni farmers found ready markets for their produce and were eager to cultivate as much land as possible (Lewis 2000: 39). As the pressure on land resources intensified, unclaimed agricultural fields became scarce in al-Jabal and on the Ḥawrān plain, and conflicts became frequent. Druze villagers clashed with one another in the al-Jabal hills and al-Lajā (the largely desolate lava-country to the north), expropriated land from non-Druze villages and moved out on to the plain to seize Ḥawrāni villages (Lewis 1987: 90-91).

At this time, there were also attempts to expand the zone of cultivation to the south. Although the plains south of Buṣrā were on the agricultural margins, where rainfall was sparse and bedouin tribes exercised authority over grazing lands and water resources, Ḥawrāni settlements were established in the 1880s and 1890s at Summāqiyāt and al-Muta'iya[10] as well as at Umm as-Surab and Samā

[8] Personal communication: Hayl as-Surūr, shaykh of al-Masā'īd. The author interviewed Shaykh as-Surūr (now deceased) in his home at Umm al-Jimāl in 1981.

[9] Even as early as 1853, the Druzes claimed to have drawn tribute from the pastoral tribes in exchange for access to Druze-controlled water supplies (Porter 1855: 191).

[10] Al-Muta'iya was also known locally as "Lesser Umm al-Jimāl" and "Umm al-Jimāl West" (after *umm ed-dschimāl eṣ-ṣaghīre* and *umm ed-dschimāl el-gharbīje* in Schumacher 1897:140-41; see also Stoever and Norris 1930: 32).

near the Wādī al-Buṭum. These satellite communities of Buṣrā met with limited success; Umm as-Surab was soon abandoned and Samā was occupied only periodically (Lewis 2000: 40-41).[11] Similarly, the Druzes had moved into a dozen villages south of Ṣalkhad by the early 1880s (Firro 1992: 150). When Butler visited the region in 1904-1905, the southern-most villages of Buṣrā were Summāqiyāt and Tisiya, while the southern-most villages of Ṣalkhad were Mughāyr, al-'Anāt, and Khirbat 'Awād (Stoever and Norris 1930: Southern Hauran map). In this belt on the edge of Transjordan, villagers not only faced rainfall shortages and marginal harvest returns, but also pressure from the 'Anaza and Banī Ṣakhr tribes.[12] The Ḥawrāni villagers in this marginal zone were additionally challenged by their Druze neighbours to the east. Further south, Umm al-Jimāl[13] remained beyond this expanding network of Ḥawrāni and Druze settlement until the first decade of the 20th century when the Druzes asserted a claim (Stoever and Norris 1930: 33-34), thereby expanding their sphere of settlement and influence south of Buṣrā and into Transjordan.

Umm al-Jimāl on the Fringes of the Southern Ḥawrān and Jabal ad-Drūz

Umm al-Jimāl is situated in semi-desertic steppe, 25km south of Buṣrā and 40km southwest of Ṣalkhad, at the point where the southern Ḥawrān plain meets al-ḥarra, the formidable basalt plateau of north-eastern Transjordan. This remote lava-country is interspersed with pockets of soil and vegetation, and today hosts a few villages, including Ṣabḥa and Umm al-Quṭṭayn, which built-up around Late Antique ruins as local bedouin settled, and a scattering of Druze families.

The environs of Umm al-Jimāl now average a scant 150 to 200mm. of annual rainfall. However, from the late Nabataean period to the early centuries of the Islamic era (ca. 1000 years), this area[14] hosted quite a few villages and an even larger number of small farms that were engaged in a mixed economy of herding and wadi-bottom grain agriculture, as indicated by co-occurrences of wadi terraces and animal corrals (Kennedy 1998: 70-72, 84, 1982: 331-41).[15] These ancient farming communities were skilled at creating and maintaining water management systems, particularly the construction of cross-wadi walls to harness seasonal water flows and create basins of moist, silt-rich soil where grain crops could thrive to maturity.[16] Such grain cultivation is indicated at Umm al-Jimāl by extensive wadi terracing in the immediate vicinity of the site. Animal husbandry was also an important part of the local economy, as indicated by substantial animal pens outside the town walls (see Kennedy 1982: 338; 1998: 58-59; Glueck 1951: 4) and a scattering of purpose-built stables within the settlement (see de Vries 1998: 109). The Late Antique water catchment and distribution system at Umm al-Jimāl included numerous cisterns, which captured seasonal rainwater runoff, in and around the town. The wadi bed running west of the site (a seasonal tributary of the Wādī az-Za'tarī) held a dam and a connecting aqueduct extended around the town walls and into the settlement in order to fill the main reservoir and subsidiary basins (Butler 1913: 159-60; see also de Vries 1993: 437, 443).

The ancient rainwater reservoirs at Umm al-Jimāl were attractive to the Transjordanian Banī Ṣakhr during their seasonal movements, as well as to the Ruwala and Wuld 'Alī who would visit the site whilst traveling west towards the Ḥawrān (e.g. see Buckingham 1825: 203). Similarly, the al-Masā'īd and other shepherd tribes of the southern al-Jabal frequented Umm al-Jimāl while herding livestock, including flocks belonging to Druze farmers of al-Jabal, as observed by Butler's team (Stoever and

[11] Both settlements were later occupied by Druzes.

[12] The tenuous relationship between the southern villagers and the seasonally migrating, camel-herding tribes is reflected in Butler's description of Summāqiyāt in 1909. "We found the people of is-Summāḳâyat in a pitiful state of mind. This village is situated on the border of the desert, at the southern end of the cultivated plain of the Ḥaurân: it is the southernmost of the inhabited villages, and the inhabitants cultivate the fields that lie to the north of them, irrigating them from the Wâdī Buṭm when melting snows on the mountains fill the wadi with water. Now the 'Anazeh had come and gone, leaving not a trace of green in the fields, for the hungry camels had eaten every blade and spear down to the ground. The Bedawin had not attacked the village, so that the poor people still had the remains of the winter's straw in their barns and a little seed for replanting against the late harvest; but they would have to suffer bitterly meanwhile" (Butler 1930: 91).

[13] Also known locally as "Greater Umm al-Jimāl" (after *umm ed-dschimāl el-kebīre* in Schumacher 1897: 77).

[14] As delimited by the K737 1:50,000 map series, Sheet 3254 I, Khirbat Um el Jim¨l.

[15] It is yet to be determined whether rainfall in this region was greater during the 4th to 8th centuries than it is today. However, the *Water, Life and Civilisation* project at the University of Reading may shed new light on this question in the near future.

[16] Survey data show that the relative proportion of cross-wadi walls is particularly high in the Umm al-Jimāl region, in comparison with the Umm al-Quṭṭayn and Dayr al-Kahf regions to the east (Kennedy 1997: 80-82, 1998: 67-68).

Norris 1930: 34-35) and later by Horsfield (1937: 457), amongst others.[17] These tribes made good use of the ruins, where domestic courtyards provided corrals and additional walled pens could easily be created from the scatter of stones that littered the site.[18] In drought years, Umm al-Jimāl was the scene of inter-tribal conflicts over access to pasture and water (see Hill 1896: 26).

The Establishment of a Druze Settlement at Umm al-Jimāl in 1910

By 1875, the long-standing Late Antique architectural features at Umm al-Jimāl had attracted new attention. As observed by Merrill (1883: 85), Ḥawrāni(s) quarried the site extensively for building stone, being particularly avid in the gathering up of long basalt roof slabs, even to the extent of knocking over supporting walls to bring down the ceiling beams. In this instance, the beams were transported from the site by a caravan of 30 to 40 camels. This anecdote indicates that, at the time that the Ḥawrāni(s) were expanding their settlements around Buṣrā in the 1870s, Umm al-Jimāl was valued as a source of raw materials rather than as a potential site for re-settlement.

Thirty years later, when Howard Crosby Butler of Princeton University arrived at Umm al-Jimāl to survey the ruins (in January 1905), he found bedouin shepherds of the al-Jabal hills camped in some 20 tents and tending Druze flocks. One of his companions observed with trepidation "... the Druses are creeping nearer... already the(y)... claim Umm idj-Djimâl as a part of Dhībîn, 12 miles to the northeast, and soon they will need the cut stone, and one by one the ancient buildings will be demolished" (Stoever and Norris 1930: 34). During their two-week survey, approximately 30 Druzes arrived on horseback and settled down with their bedouin shepherds to observe Butler's camp (Stoever and Norris 1930: 34-35).

Returning to Umm al-Jimāl in the spring of 1909, Butler remarked "... the Druses of the Djebel have been active recently in the ruins, having scratched their names on the portals of many of the large buildings" (1930: 91). The handful of bedouin tending camels on the site informed Butler that, a few months earlier, Druzes had attempted to clear an ancient branch conduit linking the main aqueduct with the large reservoir (Butler 1913: 159). In light of this unsuccessful and apparently half-hearted effort to create a functioning water channel, Butler asserted that renewed settlement at Umm al-Jimāl would be possible only if water could be directed to the site. Furthermore, he concluded that the tributary of the Wādī az-Za'tarī along the west side of the site was now perennially dry and that any new settlers would have to build an aqueduct from the Wādī al-Buṭum, several kilometers to the north, in order to survive at Umm al-Jimāl (Butler 1913: 159-60).

Several circumstances may have given the Druzes of Dhibīn village cause to view Umm al-Jimāl as a desirable resource during the first decade of the 20th century. As the Ḥawrāni(s) around Buṣrā and the Druzes in the region of Ṣalkhad enlarged their respective areas of cultivation, fierce and bloody competitions for agricultural land ensued (Lewis 1987: 91). By laying claim to the ruins at Umm al-Jimāl, the Druzes expanded their territory whilst curtailing any potential Ḥawrāni ambitions regarding the site and its environs.[19] At this time, established Druze villages in al-Jabal were facing population pressures, resource shortages and internal divisions between landowners and peasants, all factors that encouraged some villagers to establish new settlements. However, the immediate catalyst for the first Druze settlement at Umm al-Jimāl was the need to house refugees.

In 1910, a protracted dispute over rights to agricultural land culminated in a violent Druze assault on Buṣrā and its villages in an effort to seize land occupied by Ḥawrāni(s). The harsh Ottoman reprisals that followed led to the deaths of thousands of Druzes and included imprisonment of Druze

[17] Horsfield observed, "(a)round the buildings the ground is divided into a crazy pattern of enclosures; some ancient, others made by the Rowallah Bedouin who pass this way each spring on their migration northwards with their herds of breeding camels, and use the whole ruin as a khan, camping alongside whilst water and fodder last" (1937: 457).

[18] Presently there is no indication that the locally transhumant al-Masā'īd, or other pastoralists utilising Umm al-Jimāl, attempted to sow grain in the nearby wadi beds, despite this being feasible in years of plentiful rainfall. In 1884, Schumacher (1889: 21) observed "(t)he soil of basaltic regions is, as a rule, very fertile, and the Fellahîn and Bedawin of Haurân have therefore but little trouble in raising magnificent crops, if rain only falls in sufficient abundance...". More recently, Kennedy observed tent-dwellers a few miles southwest of Umm al-Jimāl threshing a crop of dry-farmed grain (1982: 335).

[19] By 1895, the area between Dar'ā and Buṣrā was wholly under cultivation and villages that had been reoccupied during the mid-19th century had grown quite large and become surrounded by outlying farms and hamlets (Lewis 2000: 40).

leaders and state-imposed census, registration and conscription throughout the hills of al-Jabal. In this respect, the Druzes were dealt the full force of the Young Turk policy of direct, centralised and uniform application of the law, which had been established in 1908-09 (Firro 1992: 242; see Rogan 1999: 192, 1994: 53). As state policies and authority penetrated al-Jabal during this crisis, the more remote locale of Umm al-Jimāl represented much-needed haven.

Druze tradition, as related by Shaykh Mazyad al-Aṭrash,[20] refers to the first settlers as a party of mostly women and children, who arrived at Umm al-Jimāl in 1910 as a result of the Ottoman reprisals in Jabal ad-Drūz. The Druze occupation is said to have continued intermittently until 1927 (when the Syrian revolt against French rule ended). The practice of creating safe havens for the protection of women and children during times of social stress was common in the Druze community, while the men formed armed bands or retreated into the lava-lands of al-Lajā or the eastern wilderness.[21] However, as a Druze refuge, Umm al-Jimāl was problematic as it lay deep within bedouin territory and offered no reliable water supply. Under such circumstances, both agriculture and the rearing of household livestock would have been problematic. Nevertheless, although there were no water management facilities at the site during this period, other than the ancient basins fed with rainwater, the Druzes invested substantial efforts in the rebuilding of dozens of Late Antique structures, including the laborious replacement of roofs (see de Vries 1998: 99-109). Furthermore, Umm al-Jimāl was not the only settlement rebuilt by the Druzes at this time. Other ruined villages in northern Transjordan received Druze populations in the early decades of the 20th century as well, most notably Umm al-Quṭṭayn and al-Azraq. Other examples include brief Druze occupations at Umm as-Surab and Samā, which were no longer occupied by Ḥawrāni(s) at this time.

Archaeological Remains of the Druze Settlement at Umm al-Jimāl

The Druzes of Dhibīn (a village of the al-Aṭrash clan, situated 18km southwest of Ṣalkhad) divided Umm al-Jimāl amongst themselves in 1909, allocating houses to specific families as indicated by names carved on doorways (reported by Butler, 1930: 91). The reconstruction of roofs and insertion of doors, amongst other structural modifications, was undoubtedly underway when the site was settled in 1910. Over the next 20 years, the Druze community at Umm al-Jimāl fluctuated as a result of volatile social and political conditions in the southern Jabal ad-Drūz and, probably, as a result of variable annual rainfall and episodic drought. Given the ebb and flow of Druze residents at Umm al-Jimāl, it is unlikely that all of the Druze-reconstructed dwellings were occupied simultaneously. Druze claims to the site and individual family claims to specific houses within the ancient town did not necessarily imply residency, but were nevertheless maintained as tradition long after the site was abandoned by the Druzes, settled by the al-Masā'īd and then turned over to Jordan's Department of Antiquities.[22]

Although the *Umm* al-Jimāl *Archaeological Project* focused primarily on the Nabataean to Early Islamic occupations, the excavations also revealed traces of early 20th century occupation in the upper layers. The relatively sparse remains in this debris are consistent with domestic activities and include sherds of "Late Ottoman" pottery, traces of fires and hearths, modest stone features built of reused blocks and one instance of a child burial. Not surprisingly, the Druze presence at Umm al-Jimāl is most clearly evident in the architectural reconstruction of many Late Antique buildings. Some of these reconstructions have already been studied (de Vries 1998: 99-109), whilst others are presently being documented as part of de Vries' recently initiated, comprehensive campaign to record all of the 20th century reconstructions at the site (the results are forthcoming). This ongoing investigation will be

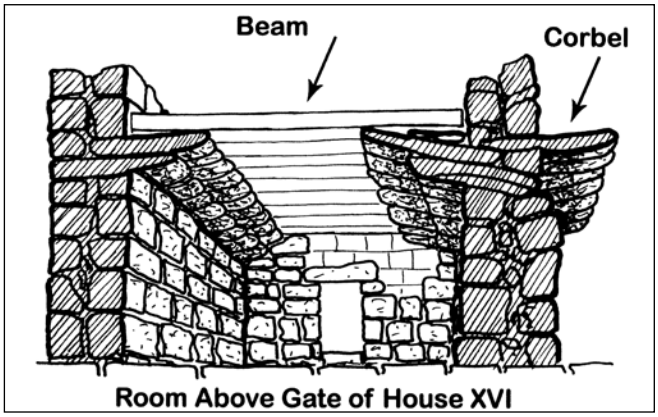
[20] Personal communication: the author consulted Shaykh Mazyad al-Aṭrash in his home in 'Ammān in 1981.

[21] Bouron described this practice; "(t)he Druze's first concern is to safeguard his women-folk against harm and molestation. It is, therefore, their custom to remove their women and children to the hills and other inaccessible places and get them beyond the possible research of their enemy when trouble brews. The fighters then abandon their villages and normal habitations and retire to the rugged terrain and prepare for engagement" (1952: 60-61). Referring to conflicts during Ibrahim Pasha's occupation of Syria (1832-1840), Bouron noted "(t)he Druze fighters put their women away beyond all hazards and went into their stronghold, al-Laja" (1952: 113). With the Syrian revolt of 1925-27, a large number of families were sent to al-Azraq (Provence 2005: 142).

[22] These notions were conveyed by members of the Druze community in 'Ammān during informal conversations.

particularly important for Late Ottoman and post-Ottoman village architectural studies in Jordan, as the Druze reconstructions occurred after Butler's detailed architectural study of the site in 1905.

The Druze builders at Umm al-Jimāl went to considerable efforts to replicate the original masonry techniques, which were highly suited to the properties of basalt as a constructional medium. The reconstructions demonstrate capable and sometimes highly-skilled workmanship, clearly derived from extensive experience in rebuilding the abandoned basalt villages of al-Jabal. In converting the ruins into habitations, the raising of roofs was a major challenge, particularly as most of the original long slabs of cut basalt used for roofing beams had been robbed from the site in previous decades. Shorter stone slabs had to be substituted and to accommodate them the Druzes applied the same arch-and-corbel construction techniques perfected in Late Antiquity (FIG. 2) (see de Vries 1998: 99ff). By inserting a corbel-bearing arch through the centre of a large room, the short beams could be laid to rest on top of the corbels, perpendicular to the arch. The result was a ceiling with two or three sets of short slabs, depending on the number of interior arches. The roofs were finished with chinking stones, then paved with a layer of earth. Once reconstructed, these rooms provided the settlers with living and storage space, as well as with winter shelters for livestock. In some instances the Druze work is irregular, particularly in the fitting of voussoirs and the assembling of springers. Druze constructions also tend to display recent cut-marks in the stone, corbels, beams of various sizes and irregular masonry at the tops of walls (de Vries 1998: 99). However, some Druze builders achieved such fluency in replicating Byzantine construction techniques that their work is difficult to distinguish from Late



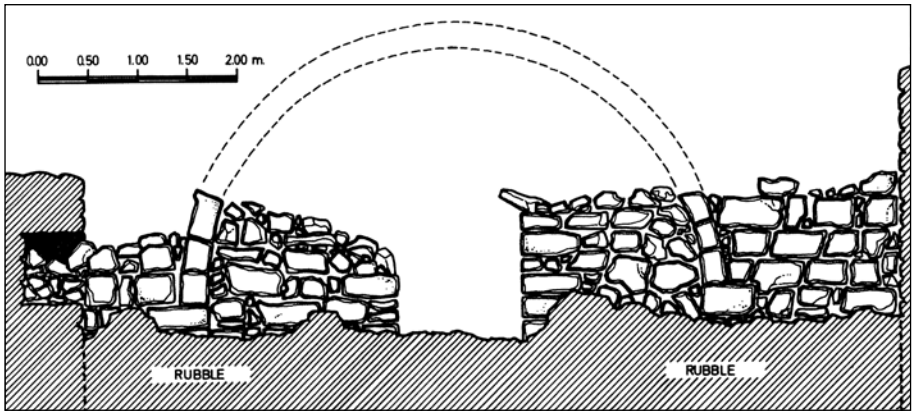
2. An example of corbel and beam roof construction from House XVI at Umm al-Jimāl (adapted from de Vries 1998: fig. 65).

Antique masonry (de Vries 1998; for the same observation at Umm al-Quṭṭayn, see Kennedy *et al.* 1986: 148).

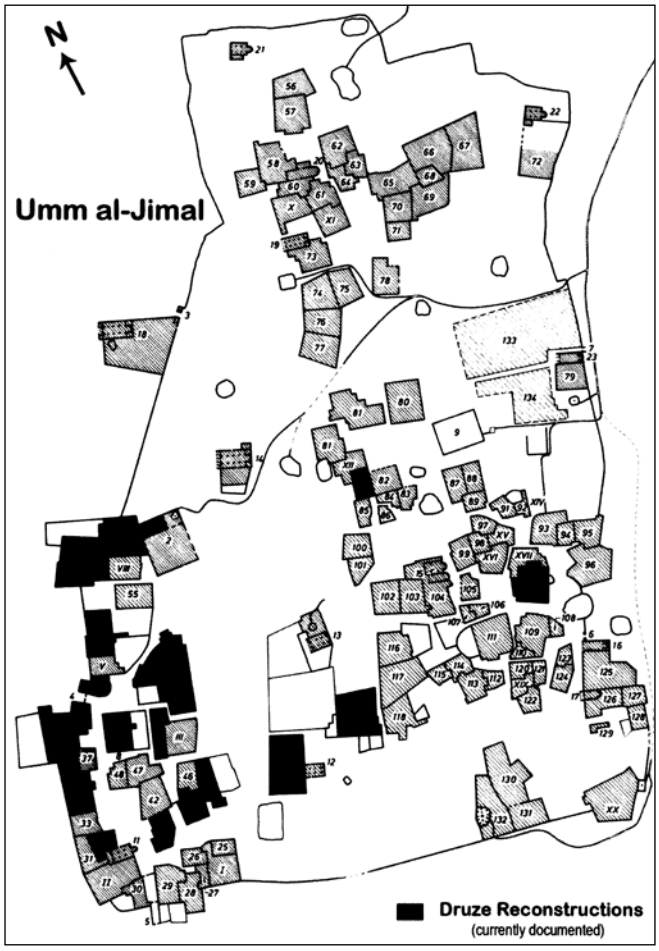
The Druze reconstructions at Umm al-Jimāl appear to span two decades, for a few half-finished transverse arches (FIG. 3) indicate that renovations were still in progress when the site was permanently abandoned by the Druzes, probably between 1928 and 1932. Druze reconstructions and / or occupation layers have previously been described for several houses (XIII, 35, 49, and 119), the later *castellum* and the *praetorium* (de Vries 1998: 99-109; de Veaux and Parker 1998: 158-60; Parker 1998a: 141-42; Brown 1998: 184-88). De Vries' current documentation project has, to date, identified Druze reconstructions in at least 15 additional houses within the town site (FIG. 4).

Colonial Rivalries over Umm al-Jimāl and the End of the Druze Settlement

World War One brought an end to Turkish rule in 1918, followed by the creation of the French Man-



3. An unfinished transverse arch from the Druze occupation of House 119 at Umm al-Jimāl (adapted from de Vries 1998: fig. 58).



4. Plan of the Late Antique town of Umm al-Jimāl with Druze reconstructions and occupations, as recorded to date (adapted from de Vries 1998: fig. 6).

date of Syria and the British Mandate of Transjordan in 1920. While Britain recognized Abdullah as the *amīr* of Transjordan in 1922, it continued to represent its own interests through civilian and military advisors to the Hashemite government. In the absence of an officially demarcated border between Syria and Transjordan, the French and British agreed to a temporary *Frontière de Fait* that approximated the boundary described in the notoriously secret Sykes-Picot agreement (Amadouny 1995: 533-34). Initially the two entities performed joint military operations along the *Frontière de Fait*, including an exercise at Umm al-Jimāl in March 1923 (see Priestland 1996a: 121), at which time there were apparently no Druzes at the site. Yet this interim border (also "*de jour* frontier" in British correspondence), which existed more in principle than in reality, soon became a point of contention.

During the summer of 1925, the grain-producing Druze villagers of al-Jabal sparked a revolt against French rule in Syria that quickly spread to Damascus and other parts of the country. When the revolt ended in 1927, thousands of destitute, civilian Druze refugees from al-Jabal had fled to Transjordan, most of whom eventually arrived at al-Azraq oasis, which was also an organisational base for Druze resistance fighters. The presence of Druze leaders and militias at al-Azraq, in addition to the refugee families, was a matter of grave concern within both Transjordan and French-administered Syria (Khoury 1987: 204). Druze movements in northern Transjordan were closely monitored by British officials, yet their detailed intelligence reports make no mention of Druzes at Umm al-Jimāl or Umm al-Quṭṭayn (farther to the east), and one 1927 dispatch asserts that there were no occupied villages in this part of northern Transjordan (see Priestland 1996a: 738-39, 1996b: 82 ff).[23] Given Umm al-Jimāl's history as a refugee haven, it may have been occupied periodically through the war years of 1925-27. However, if that were the case, the resident population would have had difficulty sustaining itself. During the summer of 1925, the Ḥawrān harvest failed and whole villages were abandoned when their wells and springs dried-up (see Destani 2006a: 358). Furthermore, as severe episodic drought persisted until 1936, settlement at Umm al-Jimāl and other villages along the southern margins of the Ḥawrān would have been precarious.

After the revolt, colonial attentions were drawn to issues of authority and jurisdiction that had arisen in the absence of an officially demarcated boundary between Syria and Transjordan. The French quickly claimed Syrian authority over all Druze-inhabited territories, including the landscape south of al-Jabal and into Transjordan as far as al-Azraq oasis, situated at the head of the strategically significant Wādī Sirḥān (Wilson 1990: 100-101). In 1927, French troops moved into Transjordan and established military posts at Umm al-Jimāl and Samā, a site 20km to the northwest and close to the Ḥijāz railway line.[24] These actions, in what were considered the Transjordanian villages of Jabal ad-Drūz, caused consternation within the Transjordan

[23] In May 1927, the 200 armed Druzes occupying Umm as-Surab were expelled (Priestland 1996b: 97).

[24] For archaeological remains of the French post at Umm al-Jimāl, see Parker (1998a: 142).

government (see Priestland 1996b: 189-90, 199). The French further extended their *de facto* administration by placing new colonies of Druze settlers at Umm al-Jimāl and Samā. According to British intelligence, the settlers claimed to have been removed from their villages in Lebanon and installed in these frontier communities in 1927. There they had been instructed by the French to assert claims of land ownership dating from the Ottoman era (Amadouny 1995: 537-38). In addition, there were clashes between French troops and the Transjordanian Banī Ṣakhr tribe; the latter was also the object of multiple raids carried out by the Ahl al-Jabal (see Priestland 1996b: 96, 105, 194-96). In 1928, the French penetrated further into Transjordan in an unsuccessful attempt to collect taxes from a Banī Ṣakhr encampment southeast of Umm al-Jimāl (Amadouny 1995: 537-38). In 1929, British intelligence again reported a French military presence at Umm al-Jimāl. When F. G. Peake investigated the situation on behalf of British Transjordan, he was captured and threatened by the al-Masā'īd, who controlled the land north of the Baghdad road, and subsequently rescued by a French officer stationed at Umm al-Jimāl (see Destani 2006b: 77-79).

These incidents reflect the French determination to define the scope of Syrian authority and jurisdiction on the basis of the distribution of Druzes residing in Transjordan (including refugees and recently transplanted settlers), thereby encompassing Umm al-Jimāl, the lands to the southeast and their tribal population. This policy was well in excess of the tacit Anglo-French understanding and spirit of the *Frontière de Fait*, under which French authority was allowed in Transjordan "... up to the limits of the southernmost lands cultivated by the Druzes" of al-Jabal (see Priestland 1996b: 337), a reference to Syrian border villages whose traditional agricultural fields extended into Transjordan. While the French ultimately realized that a Syrian claim to al-Azraq was unrealistic, the contention over Umm al-Jimāl and Samā persisted. Amir Abdullah opposed land concessions and the British were anxious to secure this area in order to protect their plans to build a railway and oil pipeline extending from Iraq, across northern Transjordan and on to Haifa (Amadouny 1995: 538-39).

In the final Franco-British Protocol of October 1931, the French relinquished claims to Umm al-Jimāl and Samā (Amadouny 1995: 548; see Priestland 1996b: 642) and in 1932 the boundary between Syria and Transjordan was demarcated by a bilateral commission (Kirkbride 1956: 82-91). By this time, most of the Druzes in Transjordan had returned to Syria. However, the social and economic repercussions of the border demarcation were profound, as the long-established patterns of land use that sustained the region's villagers and bedouin tribes were disrupted by new restrictions on movement and access to resources. The southernmost Druze villages of al-Jabal were now severed from their traditional agricultural fields and grazing lands in Transjordan. The Ahl al-Jabal, close allies of the Druzes, were divided on either side of the new border (Longrigg 1972: 208-209). The 1932 demarcation also put an end to Druze proprietary rights to Umm al-Jimāl, where they had resided intermittently for two decades. Similarly, the Druze population at Umm al-Quṭṭayn appears to have returned to Syria at about this time, in this case taking "... much of the town with them..." as they dismantled Late Antique buildings and carted the finest masonry to the village of Mughāyr, just north of the Syrian border (Kennedy *et al*. 1986: 147).

In the following years, population movements continued all along the northern border of Transjordan. By the 1940s, the al-Masā'īd, led by the as-Surūr family and still the largest of the Ahl al-Jabal bedouin tribes, began to settle in and around Umm al-Jimāl, on the fringe of the black basalt desert where they had herded Druze livestock since the mid-19th century. Despite the intrusion of an international boundary and its impact on traditional patterns of social and economic relations in the southern al-Jabal, the Druzes and the al-Masā'īd retain a closely shared history and have continued to acknowledge an enduring alliance, whilst at the same time viewing Umm al-Jimāl both as an asset and as an integral part of their histories and traditions.

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Double-Crossing Jordan: Strabo's Portrait of Syllaeus and the Imagining of Nabataea

Syllaeus, the Nabataean administrator, emerges from ancient historical accounts as a true villain, masterminding myriad intrigues during his engagements with the house of Herod the Great and Caesar Augustus. According to the principle literary sources that document his career, he was responsible for two poisonings, four attempted coups, a revolt, embezzlement, harboring brigands and the betrayal of several thousand Roman soldiers. A man of few apparent scruples, he was an equal-opportunity scoundrel, contriving plots not only against the Judeans and Romans, but also his own people.

Surviving texts are universal in their disdain for Syllaeus. He is mentioned in the *Geography* of Strabo and both the *Antiquities* and *Jewish War* of Josephus.[1] Both brand him as 'invidious' and 'base' on numerous occasions. Indeed, Strabo seems to take such delight in lambasting Syllaeus that he employs the full arsenal of his vocabulary in the course of his invective, using no fewer than seven synonyms for 'treacherous' to describe him.[2] Strabo's outrage is centered on Syllaeus' intentional misleading of a Roman expedition to Arabia headed by Gaius Aelius Gallus, the prefect of Egypt and Strabo's personal patron. To be sure, the vilification of Syllaeus is in no small part a reflection of Gallus' proximity to Strabo, for by painting him in such harsh terms, he is able to exculpate Gallus from responsibility for the heavy loss of life sustained on the expedition.

Strabo's bias against Syllaeus and his probable exaggeration of events has long been noted, but to date it has been understood simply in terms of the patron-client relationship (Bowersock 1983: 47; Lawlor 1974: 94-96). While there is certainly merit to this reading, I contend that there is a second factor that contributes to Strabo's treatment of Syllaeus. When considered in the context of the *Geography* as a whole, it is clear that Syllaeus fulfills an important literary function for Strabo. Syllaeus' actions fit a little *too* neatly within the metatextual organization of the work, suggesting that he has been carefully shaped as an intentional moral caricature, a cautionary counter to Strabo's otherwise positive picture of Arabia. I suggest that Syllaeus represents the dark underbelly of Arabia, a land at the edge of the *oikoumene* and a fitting opposition to Rome.

Syllaeus

Owing either to noble standing or sheer political acumen, Syllaeus had risen to a prominent position in Nabataea by about 30BC. According to Josephus, he held the reins of power in the later years of Obodas III's reign, for Obodas was seen as a weak and infirm king.[3] During the following two decades, Syllaeus was the major agent of Nabataea's foreign policy, acting as mediator with Herod's court and Rome herself. It is impossible to generate any sort of balanced account of his reign, for our only sources (beyond a few dedicatory inscriptions he left behind on his way to Rome) are the invective-laden accounts of authors writing within the Roman tradition.[4] The reports of his activities generally center around his involvement with the Romans and Judeans, and are marked by a burning

[1] The latter borrows heavily from the now fragmentary history of Nicolaus of Damascus, a contemporary of Syllaeus. For discussion, see Wacholder (1962).

[2] His actions are described as *ex epiboulos* (by treachery), twice as *dolos* 'cunning, contrivance, and treachery', once as *prodosia* (treason) and once as *mochtheros* (villainous). His guiding is also called *phaulos*, worthless, and *kakos,* base. Overall, his actions paint him as *poneros*wicked.

[3] *Antiq.* 16.293-300 See discussion in Starcky (1955: 94).

[4] On the inscriptions, see Clermont-Ganneau (1906: 310-2, 28); Clermont-Ganneau (1924): pl. 6, *CIS* II.351; Meshorer (1975): 62; Cantineau (1932): 8-9. A Safaitic inscription commemorating Syllaeus' return from Rome is published by Abbadi (2001).

desire for personal advancement.

Repeated intrigues with Herod the Great ultimately led to a hostile relationship between the two, spurred by Herod's refusal to allow Syllaeus to wed his sister unless he converted to Judaism. The passing of Obodas III (r. 30-9BC) after twenty-one years of rule left the succession of Nabataea's kingship in dispute, as Aretas IV and Syllaeus vied for control. According to Josephus, Aretas assumed the throne without first acquiring the consent of the Roman emperor Augustus, who was severely displeased that his presumed authority in the kingdom's affairs had been usurped.[5] (While the kingdom of Nabataea was not officially a subject of the Roman Empire, Rome's presence and influence was nevertheless clearly felt in the region). Syllaeus, seizing upon Augustus' displeasure, attempted through bribes and embassies to have Aretas removed and himself installed, but was unsuccessful in convincing Rome to take his side. Aretas likewise sought to find favor in Rome, sending a lengthy epistle and costly gifts in an attempt to mollify the emperor. However, Augustus' anger was apparently too great, with the result that he turned his back on the entire situation and left the parties to settle amongst themselves. Syllaeus continued in intrigues for a few years, but his enmity with Herod the Great caused him to be sent to Rome for trial (on numerous charges), and he is reported to have been executed in 6BC.

The Roman Expedition

The instance under investigation here took place early in Syllaeus' public career, well before his conflicts with Aretas and Herod. In 25BC the Roman army, under the leadership of Gallus, launched an ill-fated campaign into Arabia. Strabo notes that Augustus sent Gallus to Arabia in order to reconnoitre it, to determine whether it would be better to conquer or ally with the local tribes. The riches Arabia acquired via the lucrative incense trade were legendary in Rome, and Augustus expected either to "deal with wealthy friends or master wealthy enemies." (16.4.22) A large force was ferried over from Egypt (eighty boats were used) and, having been promised assistance from the Nabataeans, Gallus must have felt confident about the expedition. The Arabians were not regarded as great warriors, and their scattered tribes would be no match for the overwhelming force of a disciplined Roman detachment. However, things quickly went awry. The campaign is described at some length in the *Geography*:

> "Gallus set out on the expedition; but he was deceived by the Nabataean administrator, Syllaeus, who, although he had promised to be guide on the march and to supply all the needs and to co-operate with him, acted treacherously in all things, and pointed out neither a safe voyage along the coast nor a safe journey by land, misguiding him through places that had no roads and by circuitous routes and through regions destitute of everything… After many experiences and hardships Gallus arrived in fourteen days at Leuce Come in the land of the Nabataeans, a large emporium, although he had lost many of his boats, some of these being lost, crews and all, on account of difficult sailing, but not on account of any enemy. This was caused by the treachery of Syllaeus, who said that there was no way for an army to go to Leuce Come by land; and yet camel-traders travel back and forth from Petra to this place in safety and ease, and in such numbers of men and camels that they differ in no respect from an army… Gallus moved his army from Leuce Come and marched through regions of such a kind that water had to be carried by camels, because of the baseness of the guides; and therefore it took many days to arrive at the land of Aretas, a kinsman of Obodas. Now Aretas received him in a friendly way and offered him gifts, but the treason of Syllaeus made difficult the journey through that country too; at any rate, it took thirty days to traverse the country, which afforded only zeia, a few palm trees, and butter instead of oil, because they passed through parts that had no roads. The next country which he traversed belonged to nomads and most of it was truly desert… [At Negrana] the barbarians joined battle with the Romans, and about ten thousand of them fell, but only two Romans; for they used their weapons in an inexperienced manner, being utterly unfit for war… Thence he carried his army across the Myus Harbour within eleven days, and marched by land over to Coptus, and, with all who had

[5] Josephus, *Antiq*. 16.293-299.

> been fortunate enough to survive, landed at Alexandria. The rest he had lost, not in wars, but from sickness and fatigue and hunger and bad roads; for only seven men perished in war. For these reasons, also this expedition did not profit us to a great extent in our knowledge of those regions, but still it made a slight contribution. But the man who was responsible for this failure, I mean Syllaeus, paid the penalty at Rome, since, although he pretend friendship, he was convicted, in addition to his rascality in this matter, of other offences too, and was beheaded."[6]

The description of the campaign is undoubtedly Gallus' firsthand account, and the dichotomy of heroic (if unlucky) Gallus and duplicitous Syllaeus has often been observed as exaggeration. Eager to please his benefactor, Strabo takes great pains to portray Syllaeus in the worst possible light, repeatedly referring to his treachery and wickedness. He explicitly refers to Syllaeus as 'the man who was responsible for the failure of the expedition'. The arid landscape had ravaged the Roman army (indeed only seven men were lost in battles), but in Strabo's version this was an eminently avoidable problem. Syllaeus intentionally misled the Roman troops into roadless and waterless places, using the landscape as a very effective weapon. In doing so, he had much to gain; Strabo explains to the reader that if the Romans weakened the local tribes but were then themselves destroyed, Syllaeus would be able to swoop into the vacuum as 'lord of all'.

The same expedition is briefly recounted in Dio Cassius' *Roman History*, but in a decidedly different tone:

> "At first [Gallus] encountered no one, yet he did not proceed without difficulty; for the desert, the sun, and the water (which had some peculiar nature), all caused his men great distress, so that the larger part of the army perished. The malady proved to be unlike any of the common complaints, but attacked the head and caused it to become parched, killing forthwith most of those who were attacked, but in the case of those who survived this stage it descended to the legs, skipping all the intervening parts of the body, and caused dire injury to them.… In the midst of this trouble the barbarians also fell upon them. For hitherto they had been defeated whenever they joined battle, and had even been losing some places; but now, with the disease as their ally, they not only won back their own possessions, but also drove the survivors of the expedition out of the country."[7]

Syllaeus is conspicuously absent. The failure of the expedition is attributed first to the environment, and second to a concerted nomad attack. There is no hint of intrigue, no treachery. Dio, writing sometime after 229AD, is far removed from the events, and has no particular allegiance to Gallus. His primary source is doubtless Strabo, whose works were then well known. But Dio clearly had other materials at hand as well, for his account of the waterborne disease and its treatment has details lacking in Strabo. In the introduction to his history, Dio states that he compiles his sources in an attempt to present the "essential facts", telling the reader that he includes only those details he views as "fit to select" (1.1.1-2) Clearly Dio does not validate Strabo's account of Syllaeus; unsafe water is admitted as essential and fit, but a treacherous and invidious guide is not.

Josephus also had access to Strabo's testimony.[8] Like Dio, he mentions Gallus' expedition but not Syllaeus' involvement.[9] This is remarkable in context, for Josephus took great pleasure in lambasting Syllaeus. It is in the *Antiquities* and *Jewish War* that we learn the rest of the details of Syllaeus' career, and Josephus has nothing positive to report about him. He undertakes no praiseworthy or even neutral deed-everything is shameful, treacherous and underhanded. He is loyal neither to his emperor, his king, or his people, but seeks in every instance to advance himself and destroy his opponents.[10] The fact that Josephus includes so many of Syllaeus' other intrigues (poisonings, affairs, larceny, etc.) makes his silence here all the more noteworthy, and casts serious doubts on the veracity of Strabo's account.[11] Josephus would not pass up a chance to turn on one of his favorite targets without good reason, and in this case it seems that

6 *Geog*. 16.4.23-24, (tr. H.L. Jones, Loeb Classical Library).
7 *Hist. Rom.* 53.29.3 (tr. E. Carey, H. Foster, Loeb Classical Library).
8 For discussion, see Shahar (2005).
9 *Antiq*. 15.317.
10 See e.g., *Antiq*. 16.220-228, 282-299, 320-355, 17.10, 54-57, 61-63, etc.
11 Josephus delighted in lambasting Syllaeus, and indeed nearly all of our information on the rest of Syllaeus' career is found in the *Antiquities* and *Jewish War.* For a similar argument about the silence of the sources on the death of Caligula's sister Drusilla, see Wood (1995: 459 n.16).

he too found Strabo's invective to be exaggerated beyond his comfort level.

Finally, the Romans did not punish Nabataea following the campaign, as might have been expected in a case of such high treason against the Roman army (Bowersock 1983: 49) Indeed, Syllaeus re-emerges in the following decade as a powerful and popular figure in Rome, with considerable influence over Augustus. Despite Strabo's claim that Syllaeus' execution was in part the result of his treachery during Gallus' campaign, the cause reported by Josephus (following Nicolaus of Damascus' personal account) was Syllaeus' refusal to repay a debt of five hundred talents to Herod and his harboring of brigands who had been raiding Judea and Syria. As Augustus, who passed judgment upon him, was outraged that he had betrayed and undermined Herod, would he not have taken a direct affront to Rome even more seriously?

It seems to be the case, therefore, that Strabo's account is highly suspect and closely linked to his desire to please his patron. There is no corroborating evidence from any other ancient source, not even in cases where we would expect it. It seems safe to assume that Strabo is exaggerating Syllaeus' role. But we short-change Strabo's vision if we read it only as panegyric in praise of Gallus. There is a second level at work, one that corresponds with the nature of the text itself. If we interpret Syllaeus as a representation of Nabataea (or, more widely, Arabia), the parallels with Strabo's broader approach to the geography of the *oikoumene* are clear. There is a structural intentionality to this portrayal, one that illustrates the complex character of Nabataea as a landscape full of contradictions.

Strabo on Nabataea

Oddly, Strabo's damning account of Syllaeus follows hard on the heels of his praise of Nabataea's excellent government. In the previous section of the *Geography*, he notes that Nabataea is 'exceedingly well-governed' (*sphodra d' eunometai*) and that his source Athenodoros of Tarsus had marveled at the Nabataeans' restraint from litigiousness and their generally peaceful demeanor.[12] Athenodorus visited Petra sometime between 85-63BC. (Graf, this volume) His account is therefore a generation out of date by the time of the campaign, but Strabo nevertheless passes it on to us in the present tense, as if describing the contemporary setting. Following a brief aside, Strabo returns to Nabataea a few sections later, calling the Nabataeans a 'sensible people' (*sophronoi*), even if plagued by avarice.[13] They respect their neighbors, hold lavish parties and live quite comfortably. The king is hailed as democratic, giving public account of his rule and allowing for audits of his lifestyle.

How then, do we reconcile the dark and troublesome figure of Syllaeus with the generally positive portrayal of Nabataea? On the surface, it seems that he is simply a black sheep, a rogue and a scoundrel who is an exception to the good government and positive conduct otherwise observed in Nabataea. Straightforward as such a reading may be, it is unsatisfactory. Careful analysis of the structure of the chapter shows that Strabo's treatment of Nabataea is in fact much more ambivalent than it first appears, and that there is a definite dark underbelly to the desert kingdom. TABLE 1 serves as a reference for the description that follows.

TABLE 1. Organization of Strabo's Account.

Section	Subject
16.4.18-20	Arabia
16.4.21	Nabataea
16.4.22-24	Gallus' Campaign
16.4.25	Arabia
16.4.26	Nabataea

Strabo's account of Arabia follows his characterization of the Troglodytes of the Egyptian Red Sea coast. The Troglodytes are nomadic, and employ many of the strange customs characteristic of nomads: they eat flesh, drink milk mixed with blood, share wives and children, and generally behave as primitives.[14] Using Artemidorus' account as a framework, Strabo then moves across the Red Sea into Arabia. His initial description (16.4.18-20) is a rushed overview of the entire region, from Palestine to Yemen. He offers brief remarks on most of the groups encountered, and in general these

[12] *Geog*. 4.16.21.
[13] *Geog*. 4.161.26.
[14] For discussion of classical biases against nomads, see Shaw (1983).

fall into the usual nomadic stereotypes. Finally he reaches Nabataea (16.4.21), where he offers the first comments on its excellent rule and peaceful inhabitants. But his commentary on them is interrupted rather haphazardly by the campaign of Gallus, which is presented as a device meant to "reveal the special characteristics" of Arabia (16.4.22-24). As the passage excerpted above illustrates, the heartland of Arabia is savage and wild, occupied by nomads whom he terms *barbaroi*.[15] Like the Gauls, another favorite target of Strabo, they fight with reckless abandon: ten thousand fell, but only two Romans.

Once the campaign narrative is over, Strabo does not return immediately to Petra. Rather, he stays in Arabia, offering a second broad overview. In this section he summarizes general observations about the lifestyle of its inhabitants (16.4.25). The aromatics trade is discussed, as well as the division of Arabia into five interrelated and unnamed kingdoms, and finally the bizarre and incestuous intermarriage practiced by its inhabitants. "One woman is wife for all, and he who first enters the house before any other has sex with her… All children are brothers. They also have sex with their mothers, and the penalty for adultery is death…". The salacious details would certainly resonate in Rome, which was in Strabo's day in the midst of moral and sexual reform, initiated by the legislation of Augustus.[16] The Arabians, in comparison with the Romans, were clearly uncivilized and barbaric, failing to observe even the basic tenets of marriage and legitimate family which lay at the heart of Augustus' dynastic propaganda (Zanker 1988: 156-166).

Immediately after this passage, and without skipping a beat, Strabo returns to the Nabataeans and offers the rest of his comments on their way of life, as described above. Safrai (2005) understands this in terms of Strabo's somewhat haphazard conflation of numerous sources, with the first Nabataean account reflecting the contemporary setting and the second drawing from an older report of their pre-sedentary activities.[17] One such account, that of Hieronymus of Cardia, is preserved in Diodorus Siculus 19.94-100. While there are marked differences between Strabo and Diodorus, Safrai's temporal division offers a plausible explanation for why Chapter 26 appears so jumbled. However, his line of thinking deprives Strabo of any greater vision, for it reduces him to a simple (and rather sloppy) compiler.

While Strabo's sources may indeed come from a range of periods, I contend that there is a definite logic behind the structure of his treatment of Nabataea. By inserting the Gallus campaign and the account of Arabia Felix into the midst of his narrative of Nabataea, he has effectively bracketed the worst of Arabia within it. He blurs the boundary of what is specifically Nabataean with the behavior of the Arabians as a whole, creating a relationship between the sedentary inhabitants of Petra and their nomadic relatives to the south and east. It is surely significant that whilst on his disastrous campaign, Gallus and his men meet Aretas, a kinsman (*suggenos*) of the Nabatean king who held sway somewhere in the vicinity of Leuce Come.

This casual blending of Nabataean and Arabian is critical to the understanding of Chapter 25. Having previously stated that the Nabataeans dwell in Arabia Felix (16.4.21) and derive from nomadic stock, the description in Chapter 25 is a general account of Arabia Felix as a whole. There is no mention of particular groups, and Strabo makes no attempt to exclude the Nabataeans when he reports how people in Arabia Felix behave. Indeed, in his other comments on the Nabataeans he makes no mention of marriage or family, implying perhaps that they participate in the same practices as the rest of the Arabians. For all the apparent civility and culture seen at Petra, the Nabataeans are inseparably linked with the *barbaroi* to the south. Almagor (2005) makes a strong case that Strabo does not believe in degrees of barbarity; one is either a barbarian or not. The Nabataeans, therefore, are not viewed with uniform positivity; their ties to the nomads inject them with a certain degree of unpredictability and primitivism. By organizing the chapter as he does, Strabo shows that the external civility of the Nabataeans is but a veneer, and that within they are still dangerous and unpredictable.

Strabo's *Geography* is not simply a travelogue or ethnographic narrative; at its heart it is an excursus on the nature of the *oikoumene*.[18] According to Dueck (2000: 115), while Strabo saw the subject

[15] On Strabo and barbarians, see Almagor (2005), Thollard (1987).
[16] For discussion, see Bauman (1992: esp. 105-108).
[17] On the issue of contemporanity in Strabo, see Pothecary (1997).
[18] For discussion of the aim of the *Geography* and Strabo's role as an author, see Clarke (1997).

lands as (by and large) worthy of recognition in their own right, he was firmly convinced of Rome's justification to rule over them. Throughout the seventeen books of the Geography, comparisons are continually drawn between insiders and outsiders, civilized and uncivilized. His treatment of the Nabataeans is by no means unique in this regard, and it serves as yet another cautionary reinforcement of his underlying argument.

Syllaeus and Arabia

Bearing this reading of Nabataea in mind, the similarities to Strabo's account of Syllaeus are striking. He too appears to be civilized and trustworthy, but deep down he is corrupt and treacherous. As shown above, there is clear evidence that Strabo has intentionally manipulated the portrait of Syllaeus. I suggest that the vilification of Syllaeus owes as much to the need to paint a portrait of a forbidding and uncivilized Arabia as it does to celebrate the heroic perseverance of his powerful patron, Gaius Aelius Gallus. Syllaeus' character is preserved as a means of typecasting the Nabataeans, creating a tangible representation of the other against which Rome can be compared.

He, the public face of Nabataea, undermines its apparent virtues. While Nabataea may be 'exceedingly well-governed', it is inherently unstable and problematic. Treachery lurks beneath the surface, and if left unchecked it will inevitably throw the region into disarray. Nabataea needs Rome to survive its own frailties — it is a land of promise, but unable to manage itself. Nabataea must be pacified and controlled. Syllaeus serves to illustrate this point, the justification for its eventual inclusion within the *oikoumene* of the empire. He fulfills Strabo's grand vision of the *Geography*, linking his ethnographic exploration to a justification of Rome's imperial expansion.

To be sure, Syllaeus was no saint. A figure of his prominence demands a degree of historical accuracy, for otherwise a knowledgeable audience will reject the account as a false caricature. Some of what Syllaeus was charged with must have taken place, such as his embassy to Augustus and his involvement with the Herodian court, both of which are recorded by Josephus. Indeed, Strabo may well have projected his later crimes backward in time in order to explain the failure of the campaign. He was clearly aware of the later stages of Syllaeus' career, as his triumphant comment about his execution illustrates. I suggest that Strabo has borrowed a notorious figure and reinserted him into a narrative describing the 'special characteristics of Arabia'. Syllaeus is used as shorthand for everything that Nabataea represents, both Petraean and Arabian. Like Nabataea, he is wealthy, powerful and (at least initially) promising. But he is also a very dangerous man, liable to undermine any power structure he comes across. His behavior is unpredictable, wily and self-serving. In this regard, he is a convenient and well-placed embodiment of the unpredictable and dangerous nature of the semi-nomadic desert dwellers who inhabited Arabia. In this reading, he is more than a Nabataean. He is Nabataea itself.

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"They Came and Stayed" A Study of Population Movements into Jordan 1800 - 1948

The area between ar-Ramthā in the north and 'Aqaba in the south, which we now call Jordan, has been a crossroads for many over the centuries. Some of them were conquerors and others were raiders, but most were ordinary people who were simply travelling for one reason or another. The majority of these people were nomads of Bilād ash-Shām, Hedjaz, Nejd and Iraq who were continuously on the move, in search of pasture and water for their herds of camels and flocks of sheep and goats. The fact that Jordan does not have any natural barriers made it easy for large numbers of people to move freely. In the south and east, the desert was an open space for nomads travelling with their camels, whilst in the north, the Ḥawrān was a vast stretch of farmland. In the west, the Jordan River was never a natural barrier as it had at least ten fords and its depth, especially at the end of summer, could be extremely low.[1]

The population in the area under discussion was, at the start of the nineteenth century, extremely small. Although the Ottomans were always eager to collect taxes, their presence in Jordan at that time had become nominal. They had no armed forces in the area and the guards who accompanied the annual pilgrimage caravan had to depend on the goodwill of bedouin tribes along the route. To ensure the safe passage of the caravan, the authorities in Istanbul and Damascus therefore developed the "surra" system by which every tribe on the route received, through its shaykhs, a certain amount of money in a "surra" or purse. In general this system was successful, but on few occasions misunderstandings occurred, with catastrophic results. Records relate how, in 1757, a shaykh of the Banī Ṣakhr tribe named Qi'dan al-Fayiz became unhappy with new arrangements that the caravan commander tried to impose on him. He therefore amassed a force of nomad warriors from the Banī Ṣakhr and other tribes and attacked the relief column, al-Jurda, on 5th September 1757 between al-Qaṭrāna and Ma'ān. Encouraged by this success and with the reinforcement of his party by additional warriors seeking plunder, on 24th October 1757 Qi'dān attacked the pilgrimage caravan on its return journey somewhere between TAbūk and Dhāt Ḥaj.[2] The caravan was completely destroyed with heavy loss of life and property.[3] Insecurity on this scale must have had an adverse effect on settled life and population alike.

Population levels during these times were extremely low when compared with the 2006 population of nearly six million people. Study of a 1596-7 Ottoman census of tax-paying households revealed that at that time the population numbered only 51,885.[4] This is broadly comparable with a study of the population in the early 19th Century, which is based on information recorded by J. L. Burckhardt during his travels in Syria and the Holy Land in 1812. [5] This estimated that the then population of the area represented by modern Jordan was around 90,000 people. Natural growth and improvements in security encouraged more people to move in during the second part of the 19th century, leading to

[1] The Palestine Campaigns, Col. A. P. Wavell, Constable and Co., London, 1928 mentions a few of the fords that the British Army had to cross during the First World War of 1914-1918. Al-Ghoranieh and Umm al-Shuratt appear on Map XVl "The Jordan Valley".

[2] Arabs and Ottomans (1516-1916), Abdul Karim Rafiq, Damascus 1974, p. 268.

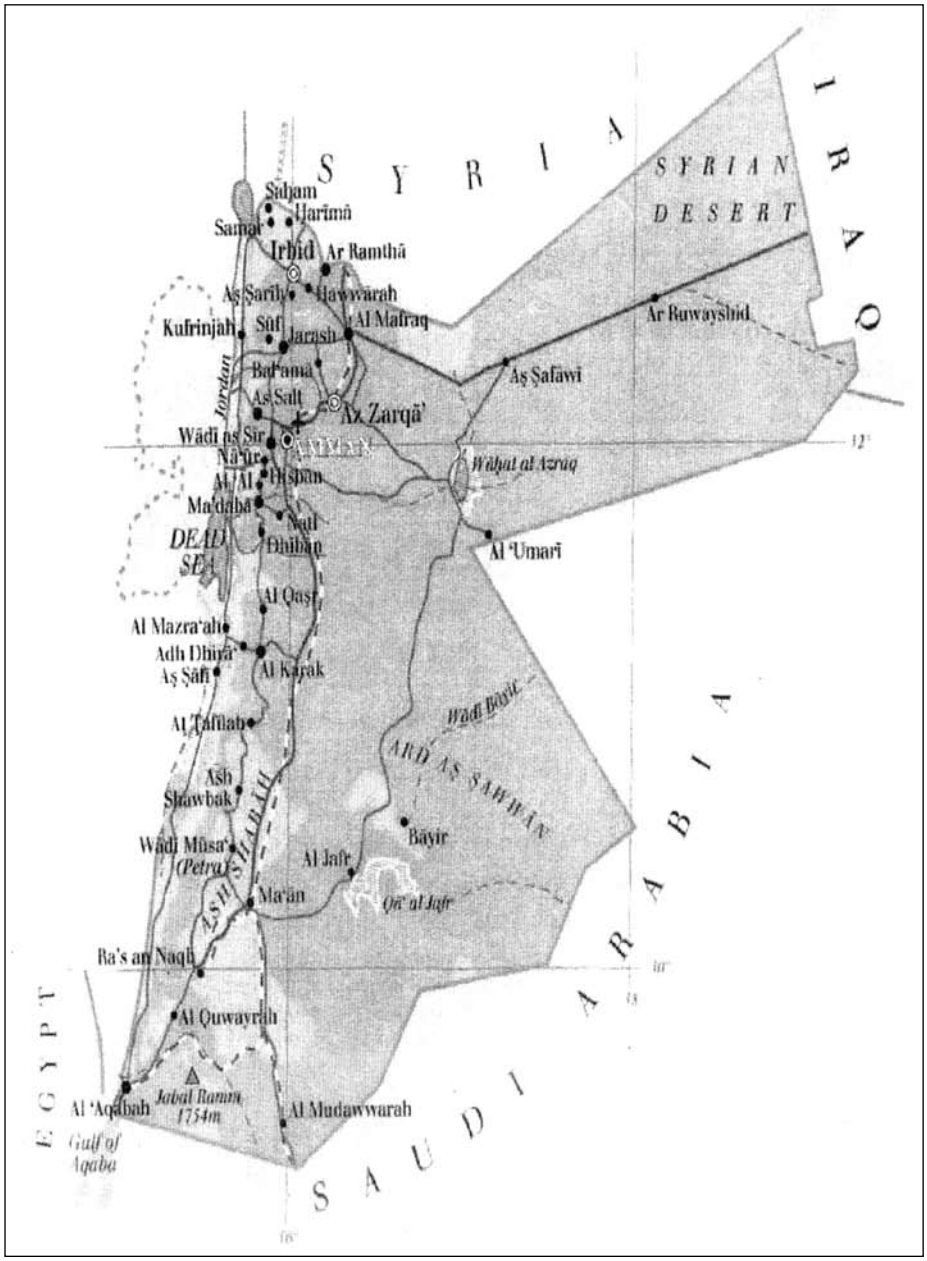
[3] Hawadith Dimashq al-Yawmieh (1741–1762), Shaikh Ahmad al-Budairi al-Halleq, Damascus 1997, p. 248.

[4] Pioneers over Jordan, Raouf Sa'd Abujaber, I.B Tauris London 1989, p. 26.

[5] Travels in Syria and the Holy Land, J. L. Burckhardt, John Murray, London 1822, (visit reports)

further population increases. A preliminary census in 1922 recorded a total of 275,380 people. In 1929 the British government, in a report to the League of Nations, estimated the population at 300,000, whilst the census of 1946, carried out to facilitate the distribution of rations such as rice, sugar and tea, gave the population as 433,659. Of these, people in towns and villages were thought to number 334,398 while nomads living in the *badia* were thought to number 99,261. [6] These figures could have been inflated by as much as fifteen percent if the primary purpose of the census is taken into consideration, but the fact remains that no sudden increases in population were recorded until 1948.

However, in order to explain the natural reasons behind the gentle increase in population prior to 1948, it is necessary to realise that the period with which we are concerned in this study was relatively quiet in comparison with the political and military upheavals in Palestine that pushed the population of Jordan to over five million between 1948 and 2000. During the previous 150 years population increases occurred under more or less natural circumstances, whereas those that occurred after 1948



[6] Amarat Sharqi Al-Urdon, Suleiman Musa, Jordan History Committee, Amman 1990, p. 316.

did so as a result of wars and abnormal circumstances. A chronological study of the natural pre-1948 increases, in the context of the then prevailing conditions, will, in the opinion of the author, lead to a better understanding of the natural causes that led to these acceptable and natural increases in the population of Jordan prior to 1948.

Initially, demographic change was mainly a bedouin phenomenon that involved tribes such as the ‘Nazze , Banī Ṣakhr and al-Ḥuwayṭāt, who were seeking better pastures with better water resources. In 1812 Burckhardt mentioned that the ‘Nazze were heavily defeated at the hands of the Christians of al-Karak. He also noted that they intermarried with the people of the town, even to the extent of giving their girls to them in marriage.[7] This is evidence of their willingness to have close relations with the settled population. As for the Banī Ṣakhr and al-Ḥuwayṭāt, Burckhardt mentioned that the shaykhs of the Banī Ṣakhr received considerable presents by way of friendly tribute, including a Spanish dollar from each Christian family and the fifteen mule loads of Karak-manufactured carpets which the Muslims sent to them annually. [8] Less than fifty years after Burckhardt’s visit, the Banī Ṣakhr moved northwards and are now the dominant tribe in central Jordan. The Ḥuwayṭāt established themselves in the south and hundreds of Jordanian families whose origin goes back to the ‘Nazze tribes, such as the Rūwala and Wuld ‘Alī, now live all over the country.

Twenty years after these events, the *Wālī* of Egypt, Muḥammad ‘Alī Pashā, dispatched an expeditionary force under his son Ibrāhīm Pashā to conquer Syria, then also known as Bilād ash-Shām. He conquered the entire area, as far as central Anatolia, and administered it for ten years. When the European powers woke up to the danger of a union between Syria and Egypt, they rallied to the assistance of the Ottomans and Ibrāhīm Pashā had to withdraw his forces to Egypt. As was often the case in such circumstances, many Egyptian personnel and their families decided to stay. Their descendants in Jordan, both Muslim and Christian, still carry Egyptian family names such as Maṣrī, Qupṭī, Bilbaysī, Fayyūmī, Ṣa‘idi and Shnūda. Other clans such as the Halasah in al-Karak, [9] al-‘Awāzim in Mā‘īn[10] and al-Kafawīn and al-Dhunaybāt[11] in Judayda, a village in the district of al-Karak[12], are descended from Egyptian forefathers.

A decade or two later, a whole tribe of the Ḥijāz area moved northwards and settled in Transjordan. These were the Banī ‘Aṭiyya whose story is related by the then Canon of Durham, H. B. Tristram, who visited during 1872 and published his book in London in 1873. He and his party were attacked by members of this tribe while crossing a stream in Ghawr Ṣafiyya on their way to al-Karak. After describing the encounter he wrote: “It turned out that the tribe were the dreaded Bani ‘Atiyeh, a new tribe from Arabia who have only recently taken to marauding in this part of the country and have the worst possible reputation”.[13]

Not many years later, in 1879, a non-Arab group entered the Jordanian demographic arena. These were the Circassians, who came to Jordan from the Rumeli districts as a result of the war of liberation against the Turks in Bulgaria, and settled in al-Balqā’ in the central part of the country. Laurence Oliphant mentioned their initial arrival in April 1879[14]. Abujaber has looked at this first immigration in detail, describing the tribal origin of the groups of immigrants. [15] In 1884 official Ottoman records described their number as 90 males and 72 females.[16] Presently there are over 50,000 Circassians from the tribes of Qabarday, Shabsugh, Bzadugh, Abzach and Abaza in the areas of ‘Ammān, Wādī as-Sīr, Nā‘ūr and Jarash.

A few years later, consecutive waves of Chechen, Laziki and Daghestani immigrants arrived from different parts of the Ottoman Empire. They were also religious refugees and, like the Circassians before them, were allotted pieces of land, mainly during 1905, in Zarqā’, Ruṣayfa, al-Sukhna and Ṣuwayliḥ. Their number may now exceed 20,000.

Although not exactly an immigration of newcomers, the movement of the three Christian tribes from al-Karak to Mādabā in 1880 was further evi-

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7 Travels in Syria and the Holy Land, John Lewis Burckhardt John Murray, London 1822, P. 382, 385.
8 Same as above, P. 389.
9 Transjordan and its tribes, Lt Col. F.G. Peake, P. 501.
10 Ibid, Jerusalem, 1934, P. 351.
11 Ibid, Jerusalem, 1934, P. (501).
12 Ibid, Jerusalem, 1934, P. 310 and 245.
13 “Land of Moab”, H. B. Tristram, John Murray, London 1873, P. 44. “Transjordan and its tribes” Peake, P. 310.
14 The land of Gilead, Laurence Oliphant, London 1880, P. 51.
15 Pioneers over Jordan, Raouf Abujaber, Tauris London 1989, P. 197.
16 Salname (official calendar) 1884.

dence of changing times. A group of 'Uzayzāt, Ma'āy'a and Karādsheh tribesmen, numbering 151 men and their families settled in Mādabā,[17] where they played an important role in the development of Jordanian agriculture and society.

The Transjordanian countryside was deeply affected by the fact that the Ottomans, after neglecting Transjordan for two and a half centuries, had at last realised the importance of re-imposing their authority, at least in the western agricultural districts. In 1851 an expedition suppressed irregular activities by a number of bedouin clans in the north and a governor was forcibly installed in Irbid with the help of the police. In 1867 another expeditionary force subdued the 'Adwān and Banī Ṣakhr in the Balqā' and an additional governor was installed in as-Salṭ, with a stronger police force at his command. This left the southern districts around al-Karak in a state of administrative chaos that lasted until a similar expeditionary force was dispatched in 1894.

Thus, by 1880 northern and central districts were ready for more activity in the fields of agriculture and trade. Merchants from Syria and Palestine, especially Damascus and Nablus, started venturing into the countryside with their wares laden on camels, mules and donkeys. Some found this activity so rewarding that they decided to stay. Small communities established themselves in as-Salṭ, the principal settlement at that time, and in 'Ammān, then a developing Circassian village. Most of those who came to as-Salṭ were from Nablus, but there were also those who came from Damascus, Hama, Aleppo, Jerusalem, Jaffa and Nazareth. Their numbers grew and they established a quarter in as-Salṭ that became known as Maḥllat al-Aghrāb or Ḥarat an-Nawābilsa. There are no reliable population figures for as-Salṭ at that time, but we have estimated a figure of 6,000 people for 1880. This more than doubled between 1918 and 1920, during the Arab rule of King Feisal. Estimates derived from the records of the Islamic court in as-Salṭ[18] are as follows:

Akrād Quarter	900	families	4061	people
al-'Awāmleh Quarter	620	families	2366	people
al-Quṭayshāt Quarter	510	families	1507	people
Christian communities	651	families	3160	people
al-Aghrāb Quarter	138	families	584	people
Total	2,819	families	11,678	people

It should be noted that these authors commented that the population was probably larger than these figures suggest, as some inhabitants refused to register their names for fear of being enlisted as soldiers.[19] This suggestion is supported by the fact that the average family size seems lower than was normal at that time.

A second group of non-Arab immigrants came to Jordan sometime after 1874, from their temporary settlement in Izmir[20]. These were Turcoman nomads who were given a "land-grant colony" by the Wālī of Damascus in 1886. Fifty properties were gifted to 211 Turcoman, according to documents registered at Nablus.[21] Grandchildren of these settlers were still present in the 1980s, when some applied for Turkish passports.[22] After that they began to sell their properties and left the village. Today there are none left in the area.

Earlier research, conducted in 1994 by the historian Dr. George Tarif, gave the following figures for the geographical origin of newcomers to as-Salṭ: seventy six families from Nablus, twenty one from Jerusalem, seven from Hebron, three from Nazareth, two from Bethlehem, four from Lebanon, two from Turkey and one each from Lydda and Jenin.[23] This total of 102 families accounted for nearly 10 percent of the town's population. Research into the Irbid court records has revealed that those who settled in the town of Irbid were merchants from Damascus, Beirut and Nablus, and craftsmen from Nazareth, Nablus and Lebanon. There were also Armenians, mainly women, and Kurds from southern Turkey.

In 'Ammān, further immigration occurred some ten years after the arrival of the Circassians when

[17] Al-'Uzayzāt fī Mādabā, Dr. Yusuf al-Shuwayhat, Amman 1964, P. 68.

[18] Tārīkh as-Salṭ 'Abr al-'Uṣūr, Dr. Mahmoud Abu Talib, Dr. Muhamad Khreisat, Dr. Mustafa Al-Hiyari, Mu'asasat I'mār as-Salṭ, 2000, P. 364.

[19] Tārīkh as-Salṭ 'Abr al-'Uṣūr, Dr. Mahmoud Abu Talib, Dr. Muhamad Khreisat, Dr. Mustafa Al-Hiyani, Mu'asasat I'mār as-Salṭ, 2000, P. 364.

[20] Peake, P. 529.

[21] Rogan, P. 124.

[22] I heard myself from the Turkish Ambassador to Jordan, H. E. Mr. Resat Arim.

[23] Es-Salt and its suburbs, Dr. George Farid Tarif, Bank Al-'Amal, 'Ammān 1994, P. 248.

merchant families such as al-Baṭīkhī and al-Sa'ūdī arrived from Damascus and other families, such as Aṣfūr, Mango, Khair, Bilbaysi and Abū Qūra, moved from as-Salṭ to 'Ammān. The Circassians of 'Ammān did not seem to have had any capacity or desire to be traders, and it was often mentioned that all they could offer was a single shop owned by one Othman Hassan, which sold hardware, kitchenware and kerosene lamps.[24]

Irbid soon followed suit, with the arrival of a small trading community from Damascus and the cities of northern Palestine, such as Safad, Nazareth, Acre and Haifa. Jarash was next, following the arrival of the Circassians in 1905. A few Damascene and Nabulsi families settled in the town, where they dominated trading activity.

In the countryside around Irbid the situation was different, as the majority of immigrants were farmers from Galilee, the Ḥawrān and the villages of Jabal Nablus. Although the historian Dr. Hind Abu al-Sha'er was unable to obtain exact statistics, she estimated that newcomers comprised nearly one third of the population in the town, but much less in the surrounding district.[25]

1894 witnessed another episode of Egyptian settlement in Jordan. Egyptian farmers, who originally migrated from Zaqaziq to Gaza in 1869 in order to avoid the unpaid labour, known in Arabic as *as-Sukhra*, associated with the construction of the Suez Canal. After 12 years in Gaza, they moved to the lands of by the Banī Ṣakhr at the invitation of Shaykh Sattam Ibn Fayiz. However, as they were unable to buy land for themselves from the Banī Ṣakhr, they instead purchased Khirbat Sahab, an old archeological site with wheat fields around it. The story of this endeavour is described in detail in "Pioneers Over Jordan" but the village, which has an area of around 12000 dunums, now has a population of around 30,000 people with agricultural, commercial and industrial estates forming its suburbs.[26]

After the Circassians, Chechen and Turcoman, Jordan witnessed a fourth immigration of non-Arabs. These were the Bahai Persians, who came in 1910 and settled in 'Adassiyya, a village in the northern Ghawr where their spiritual leader Sir Abdul Bahā' 'Abbas had previously bought half the village lands from the Governor of Tabaria and various residents.[27] These settlers built houses and farms, where they prospered until the 1970s when the East Ghor Canal Authority expropriated their land and allotted them new plots in different locations. They did not stay for long afterwards. Their number, which in 1950 comprised around thirty households, is now dispersed over Irbid, Zarqā' and 'Ammān.

Another wave of collective migration occurred in 1925, when the Druzes migrated under the leadership of their renowned commander Sulṭan Pāshā Al-Aṭrash. They left their homes in Jabal ad-Drūz to avoid retribution at the hands of the French, who occupied Syria in 1920 and against whom they were conducting an armed struggle for independence. Many families followed the fighters and settled in the oasis of al-Azraq. Today around three thousand Druzes live there, with smaller numbers in Zarqā' and 'Ammān.

One group of immigrants is often forgotten about, as their settlement was smooth, gradual and continuous. These were the government officials who came to Jordan from different parts of the Ottoman Empire. Generally speaking, they were civil servants in working in the Islamic courts, government administration (especially in the fields of finance, tax collection and education), army and police. The Turks amongst them were typically few in number and worked primarily in administration and security.

Although the Turkish military withdrew in 1918, many of the non-Turks amongst their number stayed on with their families, as did a number of Turkish civil servants. Some of them have retained the al-Turki name. Indeed, in 'Ammān alone there are 162 families of that name, of which only nine are Turcoman.[28] The majority those who stayed were Arabs from Ḥijaz, Yemen, Bilād ash-Shām and Iraq, but there were Kurds, Armenians and Circassians as well. After performing their duties for a few years, some decided to make Jordan their home. No less than three Jordanian prime ministers and numerous other ministers and public figures are numbered amongst their descendants. The

[24] His name appears in the Jordanian telephone directory of 1946. His number was 321 and could have been installed in his shop as early as 1936.

[25] Irbid and its suburbs Dr. Hind Abu al-Sha'er, Bank Al-'Amal, Amman 1994, P. (96/115)

[26] Pioneers Over Jordan, Dr. Raouf Abujaber, Tauris, London 1989, P. 231-240.

[27] Peake, P. 530.

[28] 1995 telephone directory of Amman, p. (813/814).

prime ministers were Sa'ad Juma'a, the son of a finance official in aṭ-Ṭafīla, and the brothers Mudhar and 'Adnan Badran, sons of an Islamic judge in Jarash.

The end of the First World War in 1918 saw the end of the four hundred-year Ottoman occupation. The Arab Syrian government under King Faisal in Damascus, which succeeded the Ottomans, attempted to improve the people's quality of life and, to assist in that mission, government employees were recruited from all parts of Greater Syria. When this regime collapsed in 1920 as a result of French military action at Maysaloun and Damascus, some of these officials went back to their home towns. However, some stayed and within a year assumed posts in the new administration formed by Amir Abdullah after his arrival at 'Ammān on 21st March 1921. Most them were successful in their service to the land and its people, and a good number of them went on to become Jordanian citizens.

It is indeed a real source of satisfaction and happiness that all those who stayed are now an integral part of the population of this small country. The Hashemite Kingdom of Jordan is proud to have accomplished so much in human integration and citizenship not only during the eighty five short years of independence, but also during the Ottoman times that preceded them. I believe that all Jordanians can look forward to an amicable settlement of Middle Eastern affairs, so that present demographic concerns can be addressed to the advantage of all involved.

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The Nabataeans and Oriental Trade: Roads and Commodities (Forth Century BC to First Century AD)

Nabataean Trade: An Overview

The Nabataeans are usually considered to have attained their prosperity through caravan trade, primarily in aromatic products (on Nabataean trade see Johnson 1987; Rey-Coquais 1989; Zayadine 1995: 70-73; 1996; Fiema 1996: 190-191; Graf and Sidebotham 2003; Schmid 2004). This trade followed trans-Arabian routes which linked the Nabataean capital city, Petra, with the southern and eastern Arabian peninsula. Trade along these routes climaxed between the fourth and first centuries BC, resulting in considerable prosperity within the Nabataean kingdom. This is the picture painted by ancient literary sources, such as Diodorus of Sicily and Strabo, and is also that which is reflected today by the sumptuous ruins of Petra. Roman intensification of trade along the maritime route between the Red Sea ports and west coast of India at the end of the first century BC or beginning of the first century AD appears to have resulted in a decline in the volume of overland trade passing through Petra (Bowersock 1983: 21). Thus, caravan trade, unable to respond to maritime competition, would have gone into an inexorable decline which resulted in the slow fall of the Nabataean kingdom and, ultimately, its annexation by Rome at the beginning of the second century AD. This hypothesis is generally accepted (Sartre 1985: 54-56; Sidebotham 1986: 71, n. 74; Rey-Coquais 1989: 229), notwithstanding a degree of controversy stemming from the fact that recent archaeological research has tended to suggest that the Nabataean kingdom flourished during the first century AD (Fiema 1996: 191; Graf and Sidebotham 2003: 72).

Transported Commodities: What and When?

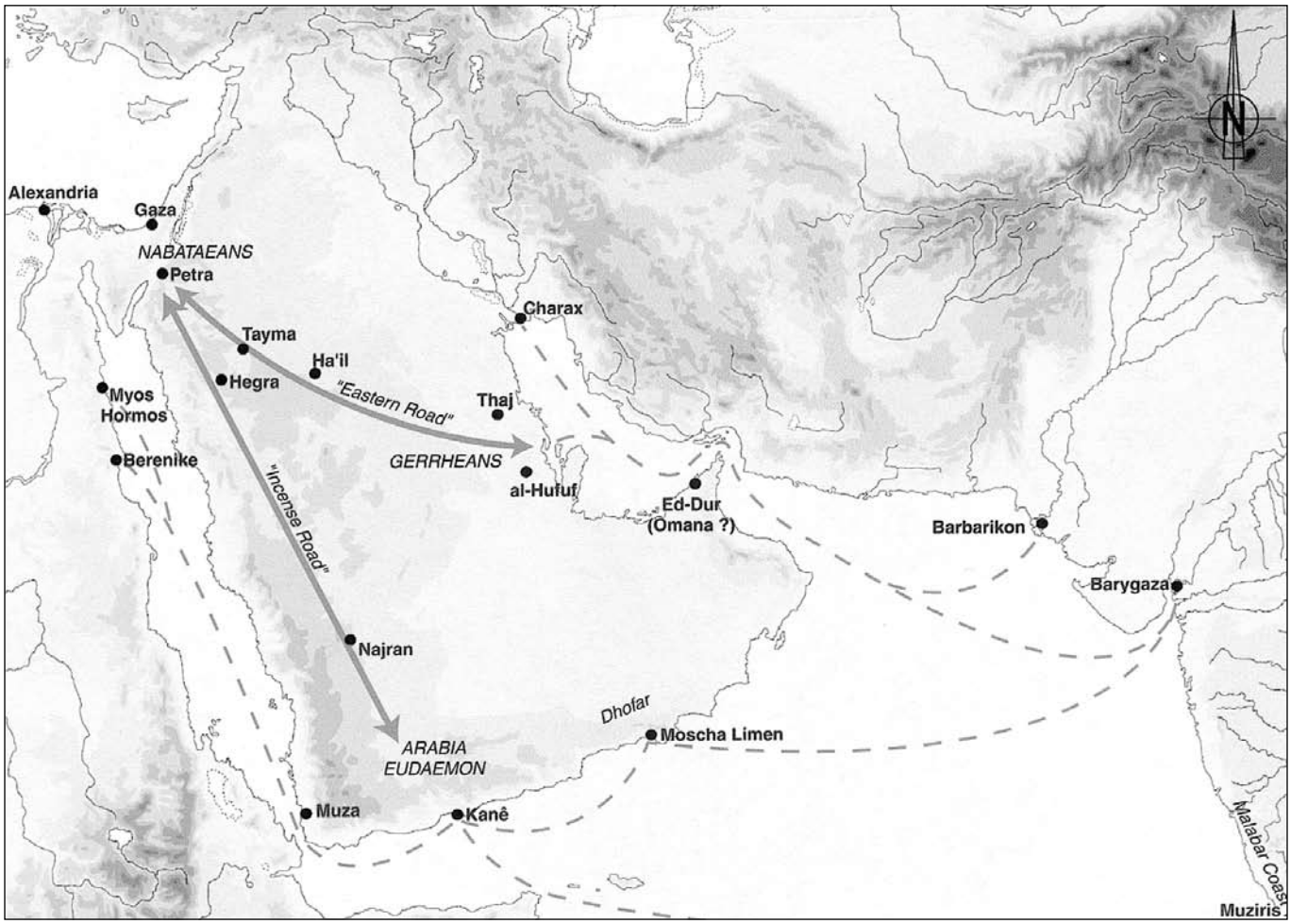
In almost all studies about the Nabataeans, one reads that they participated in the transport of spices, incense, precious stones and textiles from southern Arabia and the Indian world. But do we have a precise idea of the products which were actually being traded, especially the aromatics? Unfortunately, as most of these commodities were highly perishable they are not preserved in the archaeological record. To date, no trace has been found of these vegetal goods in the Nabataean kingdom, with the exception of a large quantity of burnt incense that was discovered in Petra during the Khazneh excavations in 2003 (Farajat and Nawafleh 2005: 375). Literary sources, however, can help to fill in the gaps in the archaeological record. This paper will discuss evidence for the aromatics involved in long-distance Nabataean trade on the basis of textual data. It should be noted that aromatics found in Nabataean territory or its immediate vicinity are excluded from this discussion[1], as is the Mediterranean trade in such products.

Frankincense and Myrrh: The Traditional "Incense Road" (FIG. 1)

The most famous text dealing with the Eastern trade in aromatics is, of course, that of Diodorus of Sicily:

> While there are many Arabian tribes who use the desert as pasture, the Nabataeans far surpass the others in wealth although they are not much more than ten thousand in number; for not a few of them are accustomed to bring down to the sea frankincense and myrrh and the most valuable kinds of spices**,** which they procure from those who convey

[1] For example, balsam of Judaea (from the Jericho area), ladanum (or labdanum), myrobalanos or sweet rush (camel grass) (on these products see Graf and Sidebotham 2003: 72).



1. Major long-distance maritime and trans-Arabian trade routes in the first century AD (Durand / IFPO).

them from what is called *Arabia Eudaemon*.

Diod., XIX.94.4-5 (Geer 1954)

Diodorus not only precisely defines the Nabataeans' role as caravaneers, but also explicitly mentions frankincense (*libanwtoς*) and myrrh (*smurna*). These two products are frequently linked with each other. Frankincense is a gum resin extracted from a tree, *Boswellia sacra*, which grows mainly in southern Arabia, especially in the regions of Hadramaout and Dhofar (Van Beek 1958, 1960; Miller 1969: 102-104; Groom 1977; Monod 1979; Groom 1981: 96-114). Myrrh, also a gum resin, is extracted from a tree named *Commiphora myrrha,* which is native to eastern Africa, although it is also found in southern Arabia (Miller 1969: 104). Diodorus mentions that Athenaeus' troops stole both frankincense and myrrh in Petra in 312BC (XIX.95.3). Other evidence for the trade in frankincense and myrrh comes from a Zenon papyrus dating to the mid-third century BC (*P. Cairo Zeno* 59009 F; Edgar 1971: 285; Durand 1997: 143-149). The text discusses delivery of these aromatics from the countries of the Mineans and the Gerrheans to a man from Moab named *Malichos*, probably a Nabataean (Graf 1990: 54). These documents demonstrate that frankincense and myrrh were conveyed along a north-south trade route that linked South Arabia — the "Eudaimon Arabia" of Diodorus — with the Levant. This ancient route, which had been in use since at least the seventh century BC (Groom 1981: 22-37; Crone 1987: 13-17; for an earlier, eighth century BC date see Singer-Avitz 1999; Jasmin 2006: 144), is the one we traditionally refer to as the "incense road" (Groom 1981: 189-194; Potts 1988a; Zayadine 1995: 69-70; Maigret 1997; Schmid 2004: 418-419; Humbert 2007). However, these documents also contain information on other trade routes. For example, the Zenon papyrus describes a second road, which originated in the kingdom of Gerrha in eastern Arabia (the location of

ancient Gerrha is still a matter for discussion; see Groom 1982; Potts 1984; 1990: 85-97; Bukharin 2007). This is much more interesting, especially when we look at some less well-known texts that give us a glimpse of the other products that were being transported.

Costus and Bdellium: Evidence for an "Eastern" Nabataean Trade Route

The first clue comes from a text by Strabo, probably written right at the beginning of the first century AD, which lists foreign commodities brought to Petra by the Nabataeans:

Some things are imported wholly from other countries, but others not altogether so, especially in the case of those that are native products, as, for example, gold and silver and most of the aromatics, whereas brass and iron, as also purple garb, styrax, saffron, costus roots, embossed works, paintings, and moulded works are not produced in their country.

Str., XVI.4.26/784 (Jones 1961)

The aromatics mentioned include styrax and saffron, both originating from Asia Minor, as well as costus — or costum — roots (*ÍÔÛÙ‹ÒÈ·*). Costus is a perennial herb, *Saussurea lappa*, which grows in the Kashmir and Pendjab mountains (Miller 1969: 84; Crone 1987: 73). Its roots were used in Antiquity for perfume and medicinal purposes; in Asia they are still used to this day.[2] Strangely, the Greek word "*ÍÔÛÙ‹ÒÈ·*" is almost never translated in modern editions of Strabo.[3] Yet, it is very clear that it represents the word "*costus*" with the suffix — *aria*, which usually means the origin of something.[4] Here it obviously refers to the roots of the plant, the only part with market value (Miller 1969: 84). We know from Pliny (XII.41) and, above all, from the *Periplus of the Erythraean Sea* that costus was exported in the first century AD from the Indus delta area, especially from the port of Barbarikon, located close to modern Karachi in Pakistan (*Periplus* 39), and also from the Barygaza area (*Periplus* 48-49), that is to say modern Bharuch, in India.

A second text comes from dioscorides, who wrote around 60AD

One can also find [bdellium] in Petra, dry, looking like a resin, a bit pale, of lower quality.

Dios., *M.M.* I.67 (translated from M. Garcia Valdés, ed.)

This excerpt mentions a gum resin called *bdellium* that one could find in the Nabataean capital, Petra. It was used both as a medicine (Dios., *M.M.* I.67) and as a perfume or incense (Pliny, XII.35). It is identified with a substance extracted from the spiny shrub *Commiphora mukul*, which grows in arid regions from Iran to western India and in eastern and central Africa (Miller 1969: 69-71; *contra* Crone 1987: 67). According to the literary sources (Pliny, XII.35; Dios., *M.M.* I.67)[5], it seems that north-west India and Bactriana were the main sources of this product in Antiquity (*Periplus* 37). According to the *Periplus*, bdellium — like costus — was exported from Barbarikon (*Periplus* 39) and Barygaza (*Periplus* 48-49).

The "Eastern Road" and its Role in the First Century AD (FIG. 1)

Thus, literary sources state that at least two different aromatic products exported from north-west India were reaching the Nabataean kingdom during the first century AD. It seems clear that north-west India maintained close relationships with the Near East in general and Petra in particular, and that a trade route existed between them. What then was the itinerary of this "eastern road"? A maritime route apparently existed between north-west India and southern Arabia that probably linked up with the traditional "north-south" caravan route. Indeed, the *Periplus* mentions maritime routes between Barygaza and Kanê (*Periplus* 27), the main port through which frankincense was exported during the first century AD. However, the most direct route between north-west India and Petra was through the Persian Gulf. Archaeological evidence for a Nabataean presence in the eastern Arabian peninsula during the first century AD supports the concept of an overland route between the Persian Gulf and Petra. Several Nabataean coins of Aretas IV (9BC-40AD) have been found at ed-Dur (Haerinck 1998: 289-290) in the United Arab Emirates. Excavations conducted at this site during the 1990s demonstrated that it was primarily occupied during the first century AD. Scholars tentatively identified ed-Dur

[2] Miller has described how there was a State monopoly on the costus harvest in 20th century Kashmir, (Miller 1969: 84).

[3] See, for example, the English translation of H. L. Jones (ed.).

[4] This suffix is, on occasion, also employed as a diminutive.

[5] Both authors also refer to a source of bdellium in Arabia.

as ancient Omana (for the location of Omana see Salles 1980: 102-104; Boucharlat and Salles 1981: 67-68; Potts 1988b: 155, 1990: 306-310; Salles 1992: 211 n. 36, 233; Groom 1995: 187-188; Healey 1996: 36; Haerinck 1998: 275-278; Jasim 2006: 236), an important port linked with Barygaza that was mentioned by the *Periplus* (*Periplus* 32) and Pliny (VI.32). Nabataean coins of Aretas IV and a few Nabataean painted pottery sherds of the first century AD have also been found at Thaj and Qatif, in Saudi Arabia (Potts 1991; Schmid 2004: 415-416, n° 2). These sites are in the probable vicinity of the as yet undiscovered ancient city of Gerrha, mentioned in the Zenon papyrus.

The "Eastern Road": Already in Use During the third Century BC?

Based on textual and archaeological evidence, it therefore appears that a trade route existed between Petra and north-west India, probably via Gerrha and Omana / ed-Dur, in the first century AD. The Zenon papyrus mentions that trade relations between Petra and Gerrha already existed in the third century BC. That these relations still existed in the mid-second century BC is confirmed by Strabo's account, which is based on information given to him by Agatharchides (Potts 1991: 142) and mentions that the Gerrhaeans and the Minaeans became richer than anyone else on the back of the trade in aromatics that were transported to the rock of the Nabataeans — Petra:

Near the island [of Phocae] is a promontory, which extends to the Rock of the Nabataean Arabians, as they are called, and to the Palaestine country, whither Minaeans and Gerrhaeans and all the neighbouring peoples convey their loads of aromatics.

Str., XVI.4.18-19 (Jones 1961)

It should be noted that there was already a long history of contact between the Indus valley and Persian Gulf. Indeed, there is documentary evidence for such contacts dating back to the late third millenium BC (Speece 1984; Ghosh 1989: 259; Salles 1993: 500; 1994; Haerinck 1998: 296; Carter 2001). Moreover, in the third century BC costus and bdellium were already known and commonly used in the Mediterranean area, since both are mentioned by Theophrastus.[6] Bdellium is also mentioned twice in the *Old Testament* (Genesis, 2.10-14; Numbers 11.7) and we find costus mentioned again on a third century BC Greek inscription from the Apollo sanctuary at Didymes, near Miletos (Dittenberger 1960: 214, 60; Miller 1969: 85).[7] All these data point to the early existence of an eastern trade route between Arabia and north-west India. However, a further clue points at Nabataean involvement in this trade.

Nabataeans and Pepper

This is another, quite famous extract taken from Diodorus of Sicily, which is based on the third century BC writings of Hieronymus of Cardia. This text says that Nabataea produced nothing other than wild honey and "pepper" *(peperi):*

(…); for among them there grow the pepper and plenty of the so-called wild honey from trees (…).

Diod., XIX.94.10 (Geer 1954)

However, no evidence for growth or cultivation of pepper in the Near East exists. Rather, pepper is native to the Indian subcontinent (Miller 1969: 80). There are two possible explanations for this discrepancy: either the mistake concerns the nature of the product, with Hieronymus confusing a local plant with Indian pepper[8], or it really was Indian pepper, but Hieronymus was mistaken about the product's origin. There are actually two very different types of pepper, long pepper (*Piper longum*) and black pepper (*Piper nigrum*), both of which were probably known about by the third century BC (Miller 1969: 82).[9] The first, long pepper, resembles a spike, 2 to 3cm. long, of closely packed seeds whilst the second, black pepper, is a small round black berry, recognisable today as our common "pepper." Black pepper is a climbing plant growing in the Travancore and Malabar forests along the south-western Indian coast, whereas long pepper grows mainly in the hottest regions of northern India, from Nepal to Bengal (Miller 1969: 80). According to the *Periplus*, in the first

[6] Bdellium probably corresponds to an aromatic substance, similar to myrrh, that was extracted from what Theophrastus, writing in the 3rd century BC, referred to as "indian *acantha*" (Theo., *I.P.* IX.I.2). Theophrastus also listed costus amongst the twenty plants used in perfume industry (Theo., *I.P.* IX.7.3).

[7] Costus is mentioned alongside other offerings made to Apollo by King Seleucos II, which included frankincense, myrrh, cassia and cinnamon.

[8] Perhaps the seeds of *Nigella sativa*, sometimes referred to as "false pepper", or alternatively Petra hypericum (*Hypericum petraeum*), of which Pliny (XII.54.119) writes that it can be recognised on account of its "pepper taste", and that its fruits were sometimes mixed with those of the balsam tree in order to augment profits.

[9] Theo., *I.P.* IX.20.1

century AD black pepper was exported from Muziris (*Periplus* 56), the main port of south-western India[10], whilst long pepper was exported from the Barygaza area in a similar manner to costus and bdellium (*Periplus* 49). Moreover, we know that long pepper first reached the Mediterranean area in the fifth or fourth century BC, whereas black pepper only became popular in the Roman world after the direct maritime route opened between ports of the Red Sea and southern India in the first century AD (Miller 1969: 82-83). It is no coincidence that recent excavations at the Egyptian Red Sea ports of Myos Hormos and Berenike have uncovered large quantities of black pepper (for Berenike see Cappers 1998: 311-313; Sidebotham, Wendrich 2001-2002: 30; for Myos Hormos see Van der Veen 2004: 126-127), but no long pepper. Therefore, when considering the abovementioned trade links between north-west India and Nabataea we can, in all probability, assume that the reference by Diodorus / Hieronymus to "pepper" in Petra relates to long pepper exported from the Indus valley.

Conclusion

Owing to a lack of direct archaeological evidence, literary sources have proved useful in shedding light on the aromatic commodities, which reached the Nabataean kingdom between the end of the fourth century BC and the first century AD. Even if the traditional north-south "incense road" remains the best-known route, and even if frankincense and myrrh remain the most oft-quoted products, we should not ignore the existence of the "eastern road" that would have served as a conduit for many other goods coming from Central Asia or northern India. Moreover, the long history of this route — spanning more than four centuries — should be taken into consideration when we attempt to reconstruct the trade networks of Antiquity, particularly when assessing the likely impact of the Roman maritime route on the Nabataean economy during the first century AD.

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[10] This port has been tentatively identified with Pattanam on the Malabar coast (Shajan *et al*. 2004).

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Travelling Looms: Textile Production Crossing Borders

Textile industry is older than pottery and perhaps even than agriculture and stock breeding, and it probably consumed far more hours of labor than pottery making and food production together (Barber 1991: 4).

Identification of weaving gives clues about the organisation of society, its agriculture, herding, textile production, and social relationships. Analysis of looms aids reconstruction of one of the most time consuming activities of the past: textile production.

Looms and Weft

Weaving differs from plaiting, basketry and matting in that mats and baskets are made of short stiff materials that have a framework of their own. Weaving is done with flexible string and thus requires a temporary frame or brace to hold the yarn and to provide a degree of tension while interlacing the flexible threads. The brace, or structure used to apply the tension required for the warp threads, is called a *loom*.

Looms vary considerably in their design and function. They can be divided into two main categories on the basis of the position of the warp-threads while weaving: horizontal looms and vertical looms.

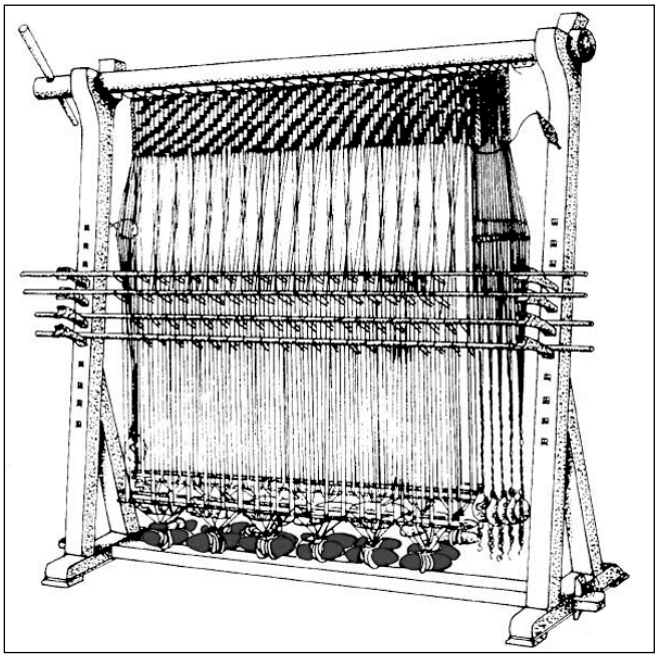
Horizontal looms are those in which the warp-threads and woven cloth are held in a horizontal position. The so-called ground loom is still in use in the Middle East (FIG. 1).

Vertical looms hold the warp threads and woven cloth in a vertical position. This category can be divided into two main groups: standing looms and hanging looms.

A standing loom is a solid wooden construction in which the warp threads are tensioned between two beams fixed between two uprights.

Hanging looms are more flexible constructions, of which the *warp-weighted loom* is best-known (FIG. 2). Two uprights hold an upper beam to which a pre-woven band or starting border is attached, upon which the warp threads are tensioned. The lower ends of the warp threads are not tied to

1. Lady weaving tent cloth on a ground loom in Bayḍā, Jordan, May 2000.



2. The warp-weighted loom.

a beam or rod, as in standing looms, but are tied to weights. These weights can be made of stone, ceramic or clay and are usually referred to as loom weights. The hanging warp is stretched by loom weights and thus forms a flexible construction. The weft of the warp-weighted loom is beaten upwards and the finished cloth is rolled on to the upper beam of the loom. In the first Century AD the Levantine warp-weighted loom was gradually replaced by the two-beam loom (Shamir 1996: 148; Barber 1991: 125).

Materials and Methods: Loom Weights as a Research Tool

The warp-weighted loom can be identified in the archaeological record because the loom weights survive and can therefore be recovered. Stone and ceramic loom weights are easy to recognise. In a burnt deposit, unfired clay loom weights can become inadvertently 'fired' and therefore survive. It is however difficult to recognise and excavate unfired loom weights. The two main problems are: Unfired loom weights 'melt' when they get wet; when excavating mudbrick deposits, the artefact closely resembles building material. But with an open mind and skilled hands it is possible to recover the unfired clay loom weights of warp-weighted looms, which can tell an interesting story of textile production (FIG. 3).

Stone loom weights are known from the Levant, but in this region were more typically made of clay. In the Bronze Age, loom weights were made of fired clay, whilst in the Iron Age they were made of unfired or poorly-fired local clay.

Discussion

From the work of Marta Hoffmann (1964), Margrethe Hald (1980) and Elisabeth Barber (1991) we know that the warp-weighted loom originated in central Europe during the Neolithic. It became common along the River Danube and then spread north through Europe into Scandinavia. In Scandinavia the warp-weighted loom was in use until about 1950 AD.

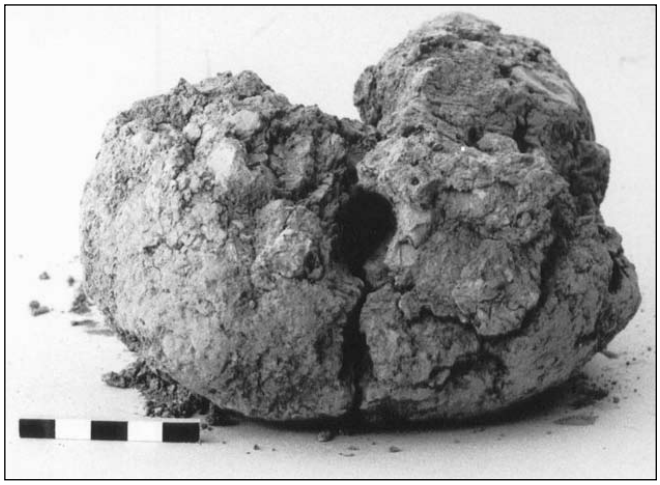
Intricate textiles made on warp-weighted looms are known from Early Neolithic Swiss lake villages such as Rubenhausen (Keller 1866: 323 and 333) and Early Bronze Age 'doughnut' -shaped loom weights have been reported from Czechoslovakia (Hoffmann 1974: 388; Barber 1991: 101, Fig. 3.22).

The warp-weighted loom also spread southwards from Switzerland, Hungary, Bulgaria and Romania, through the Aegean and Anatolia (Barber 1991: 95-98) and into the southern Levant where the warp-weighted loom was introduced during the Middle Bronze Age (Shamir 1996: 139; Barber 1991: 124), *contra* Friend (1998: 2-14) who states that it was already in use during Early Bronze Age III. [1]

3. Skilled hands excavating loom weights.

[1] Based on the loom weights of Tall Taanek Friend (1998: 13-14) states that the warp weighted loom arrived at Tall Taanek already in the Early Bronze Age. Because her statement is based on the find of only three loom weights from Early Bronze Age III loci of Tall Taannek this theory is disputable, as suggested by Friend indeed further research needs to be done, before the warp weighted loom can be situated in the Levantine Early Bronze Age.

4a. Donut shaped loom weights.



4b. Unfired loom weight damaged.

After the introduction of the warp-weighted loom in the Southern Levant, its use increased during the Iron Age. Perforated loom weights are known from different excavations dating from the Middle Bronze Age into the Roman period, including Tall Batash / Timna (Browning 1988; Kelm and Mazar 1995: 162-163), Jerusalem (Shamir 1996), Tall Taannek (Friend 1998), Tall as-Sa'īdiyya (Pritchard 1985: 36), Tall Dayr 'Allā (Boertien 2004) and Tall Jāwā (Daviau 2002: 191-200).

Until recently there was a tremendous gap in our knowledge of loom weights from Syria. The lack of published information on loom weights from Syria caused Elisabeth Barber to state that such weights did not exist there, in between Anatolia and Palestine (Barber 1991: 300 and 302). However, rather than a gap in the distribution of loom weights in Syria as argued by Barber, these artefacts had actually been excavated there but were only recently published (Cecchini 2000). Cecchini argues for a difference in form between loom weights from Syria and those from the Levant. In northern Syria reel- or bell-shaped loom weights have long been known from excavations, but those without holes have not always been recognised for what they are.

Unperforated loom weights were used in northern Syria and eastern and central-eastern Anatolia during the Late Bronze Age and in central Syria from the start of the Iron Age. The spread of the warp-weighted loom is thought to have resulted from the transfer of material culture from the Aegean to northern Syria via Cyprus and the Anatolian coast (Cecchini 2000: 217). An Aegean, or more precisely Cypriot origin for this kind of loom weight may certainly be taken into consideration in relation to Palestine (Cecchini 2000: 216). This statement is an interesting point that has to be studied in Levantine loom weight collections.

The general conclusion is however beyond doubt: the warp-weighted loom spread from Europe to northern Syria and the Levant via Greece, Cyprus and Anatolia.

Results

Loom weight types

The elongated and unperforated forms of loom weights from northern Syria and eastern and central-eastern Anatolia from the Late Bronze Age, and from central Syria from the start of the Iron Age, differ from the form of loom weights from the southern Levant (FIG. 5).

Iron Age I

Unperforated loom weights are made of unfired or poorly fired clay, are elongated cigar- or bell-shaped and are referred to in the literature as reels, spools or bobbins. They have been excavated at Kastanas in Macedonia[2], Maa Palaeokastro and Kition in Cyprus[3] and at various sites in Syria and Anatolia[4]. In

[2] Kastanas Layer 13, (ca. 1190 BC) A. Hochstetter. Kastanas Die Kleinfunde der Spätbronze und Eisenzeit. Berlin 1987: 90-91. pl 22.1-3; 36.17-18.

[3] V. Karageorghis & M. Demas. Excavations at Maa-Palaeokastro 1979-1986. Nicosia 1988: 222. V.Karageorghis. Excavations at Kition V, the Pre-Phoenician Levels, part II Nicosia, 1985: 133, 153, 166.

[4] Cecchini 2000: 217.

5. Map traveling looms.

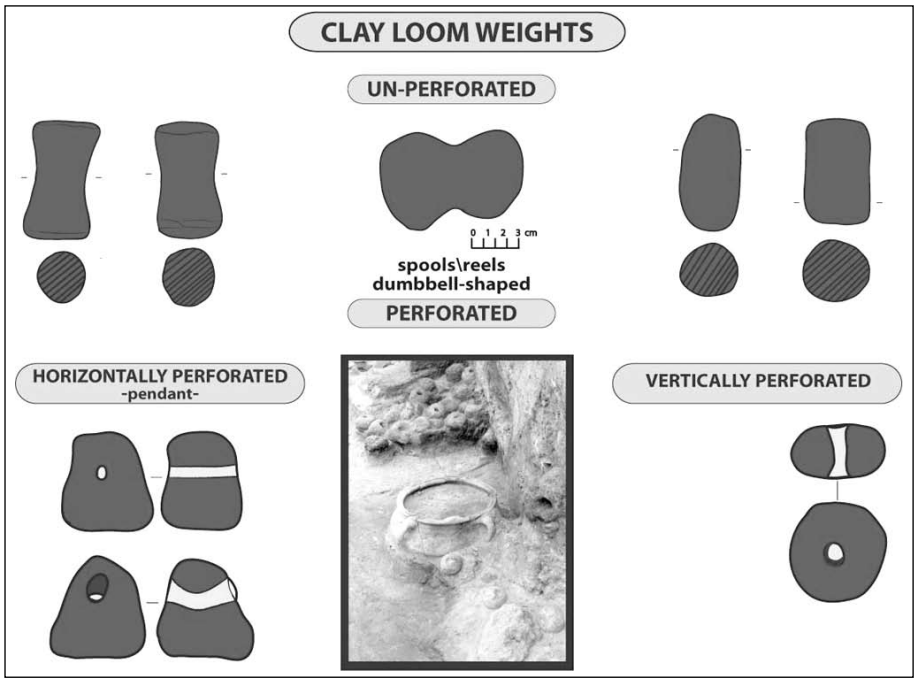
western Palestine unperforated loom weights have been reported from Iron Age I levels at Ashdod (Dothan and Porath 1993: 64, 68, Fig. 24: 3-5, Fig. 25: 8 and Pl. 39: 4), Ashkelon (Lass 1994; Stager 1995: 346), Tel Miqne-Ekron (Dothan and Gitin 1994; Shamir 1991; Stager 1995: 347, Pl. 6) and Megiddo (Loud 1948: Pl. 170: 26). They are referred to as a Philistine phenomenon: the so-called 'Philistine cylindrical type'. Loom weights of this 'Philistine cylindrical type' have recently been reported from Lehmann and Niemann's (2007) excavations of Iron Age I deposits at Qubūr al-Walayidah.

The name 'Philistine cylindrical type' raises questions because the loom weights from the Philistine site of Tel Quasile (Stratum XII) are perforated 'doughnut' -shaped or cylindrical loom weights (Shamir 1994; Mazar 1980: 42-44; Mazar 1985: 80, Photo 85). Unfired, unperforated loom weights with a cylindrical form demonstrate a strong connection with loom weights from the Mycenaean world (Lass 1994: 33). Unperforated loom weights are known from Mycenae and Tiryns (Schliemann 1886: 146), Kition (Karageorghis and Demas 1985: 113, 153, Pls 201 and 229), Pylos and Troy (Blegen 1958: 152, Fig. 256). In Syria unperforated loom weights of Iron Age I date have been excavated at Tall Afis and Tall Mastuma (Cecchini 2000: 217).

Unperforated loom weights dating to Iron Age I have not been reported from Jordan. It remains to be seen whether or not reels or cigar-shaped weights were used east of the River Jordan at that time. There is a possibility that these unperforated loom weights have not been recognised and are thus missing from excavation reports.

Iron Age II

Levantine loom weights of this period are mostly of the well-known perforated type, made of unfired local clay and 'doughnut' -shaped, or of the spheroid and flattened cylindrical types. In Syria unfired clay loom weights are found alongside fired exam-



6. Different types of loom weights.

ples, whilst in Jordan perforated loom weights during Iron Age II tend to be of the fired variety.

In Syria pierced spheroid loom weights replaced cylindrical loom weights between the end of the eighth and start of the seventh centuries BC. At Tall Afish in northern Syria reel-shaped loom weights continue to be used to a lesser degree alongside perforated loom weights. A similar process can be seen at Tall Ahmar, Tall Nebi Mend, Tall Masin (near Hama), Taba el-Akrad (Level I) and at the Neo-Hittite site of Malatya; Cecchini (2000: 219) speaks of a transitional phase.

Iron Age II loom weights have also been reported from other Syrian sites. For example, at Hama ('Pièce G' of Bâtiment V) fired reel-shaped loom weights have been recovered from a destruction level dated to 720BC (Cecchini 2000: 219, 223, Note 60). At Tall Mishrifeh / Qatna, 140 spool- or reel-shaped loom weights have been found in the *suq*, together with spatulas and spindle whorls (Garna and Besana 2006). At Tall Abu Danne, loom weights dated to between 855 and 750 / 700BC have been reported (see overview in Cechcini 2000: 223).

Also of interest are the Iron Age II finds from Tall Mastuma; Cecchini describes 25 storage jar rims, smoothed so as to have a cylindrical shape, that were found together with perforated pierced loom weights and 25 cylindrical objects (Cecchini 2000: 219 and 223).

Jordan

Surprisingly, research on loom weights from Iron Age II strata at Tall Dayr 'Allā in the Jordan Valley (Boertien 2004) has demonstrated their typological similarity with Iron Age II loom weights from Syria (Cecchini 2000). At Tall Dayr 'Allā, the loom weights are made of the local banded clay in a style that is similar to finds from Tall Afis in northern Syria.

Tall Dayr 'Allā (Phase IX)

In a room that was partially paved with cobblestones, a three-rowed loom stood next to a large cooking pot. This loom with its three rows of weights was used to produce a patterned textile. The 34 loom weights used on this loom were of different types (Boertien 2004: 320).

This group of loom weights yielded a remarkable unperforated spool or reel-shaped loom weight in association with the perforated weights (FIG. 7). It was made of the same banded clay as the other loom weights within the group, but its clay was tempered with grit and not well-mixed. The dimensions of this object are: height 8.5cm, diameter 6-7cm,

7. Unperforated spool/ reel shaped loom weight from Tall Dayr Allā.

Iron Age Tall Dayr 'Allā (Group XII , B / E9 locus 24).

Type	Number	Weight range in gr.
'Doughnut'-shaped	12	255 - 480
Conical	17	320 - 500
Beehive-shaped	4	460 - 500
Spool (unperforated weight)	1	430
Total	34	Average weight 347

weight 430gr. Within Group XII, three fragments made from the same type of clay were excavated. Although these could not unequivocally be identified as loom weight fragments, they could conceivably comprise three more spool-shaped weights. The form of the unperforated spool is comparable to spools from Syria (Cecchini 2000: 212).

The 'doughnut' -shaped loom weights in this group are of the type commonly found on sites throughout the southern Levant.

The conical and beehive-shaped loom weights are similar to Iron Age II loom weights from Tall Afis in northern Syria. The similarity in form between the horizontally perforated conical and conical-pyramidal weights from Syria and the horizontally perforated weights from Tall Dayr 'Allā in Jordan is striking. Both the perforated and the unperforated loom weights are made of local unfired clay. They are very brittle and would therefore have been unsuitable for sale or exchange.

The typological similarity between the perforated loom weights used in Syria and in Jordan is spectacular. The presence of an unperforated spool- / reel-shaped weight in a collection of loom weights from Jordan points to a hitherto unknown relationship between the Jordan Valley and Syria.

Spatulas

An increasing number of loom weights excavated from different Iron Age sites in Syria and the southern Levant are found in association with interesting small bone artefacts, namely *spatulas* or *laminas* (FIG. 8). Spatulas are flat, oblong objects averaging between 10 and 12cm in length, 1.5 and 2cm in width and 0.1 and 0.2cm in thickness. Spatulas typically have a single sharpened end, but occasionally both ends are sharpened (Cecchini 2000: 223). They are made of smoothed animal rib bones and the sharpened end typically shows signs of wear (Hollander 2003). Their function has long been debated (Tufnell 1953: 397; Crowfoot and Crowfoot 1957: 461-462; Friend 1998: 6-7; for an overview see Cecchini 2000: 223, Note 63). These authors suggest that spatulas were used as pattern sticks to separate certain threads when weaving a complicated pattern. More remarkable is the suggestion of G. and O. Van Beek (1990), who suggest that they were used as a type of ophthalmic instrument with which to clean the eye. Kertesz (1989: 364) proposed that spatulas with rounded ends were used to apply cosmetics and that those with pointed ends were used to puncture abscesses and clean wounds.

8. Spatulas/ laminas.

It is now clear that these thin, sharpened bone artefacts were associated with weaving. It has already been suggested that they could have been used to beat small areas of the weft (Vogelsang-Eastwood 1989). Friend (1998: 7) argued that spatulas were used as pattern-weaving tools on the basis of their similarity to traditional weaving tools. Hella Hollander (2003) has demonstrated from use-wear analysis that spatulas were used to insert patterns into the weft (Hollander 2003).

Spatulas have been excavated in places where the warp-weighted loom was used. Loom weights and spatulas have been found together at Samaria (Crowfoot and Crowfoot 1957: 461), Megiddo (Strata I to V) (Lamon and Shipton 1939: 39-62, Pls 95 and 96: 1-9), Jerusalem (Shamir 1996: 139; Franken and Steiner 1990: 17, 26 and 44), Tall Dayr 'Allā (Vogelsang-Eastwood 1989; Hollander 2003), Tall Taannek (Friend 1998: 7), Tall Jāwā (Daviau 2002: 191-200, 261, Figs 2.154: 1 and 2) and at Khirbat al-Mudayna.

In Syria, spatulas have been found in association with loom weights at Tall Afish (Cecchini 2000: 223), Tall Mishrifeh / Qatna (Garna and Besana 2006), Tall Abu Danne and Umm al-Marra (Doyen 1986).

In sum, spatulas and loom weights have been found together at a number of Iron Age Syro-Palestinian sites. The increased frequency of loom weights and appearance of spatulas are indicative of pattern weaving.

Conclusions

Cloth played a central role in ancient economies. Typically neither cloth nor wooden loom compo-

nents survive in the archaeological record, so any remaining artefacts used in the production of textiles, e.g. loom weights, are important.

Loom weights can be used as a research tool to indicate where looms may have stood or where the weights themselves were stored. Analysis of loom weights sheds light on one of the most time-consuming activities practiced by ancient societies: textile production.

"Given the centrality of cloth in ancient economies, identification of weaving could give us clues about how a society organized its agriculture, herding, textile production and social relationships" (Miller and Leaman 2007).

The Journey of the Warp-Weighted Loom

Until a few years ago, loom weights were generally understood to be rounded or conical weights of terracotta or stone with a hole from which they could be suspended. It is only recently that terracotta objects in the form of reels or spools have begun to be recognised as loom weights.

Recent finds from Syria provide a hitherto missing link in the spread of the warp-weighted loom (Cecchini 2000; Garna and Besana 2006). The conclusion is that the warp-weighted loom spread from Europe, via Greece, Cyprus and Anatolia, to Syria and the Levant.

The perforated loom weights from Tall Dayr ʻAllā in the Jordan Valley show northern influence (Boertien 2004). The recovery of a spool-formed weight at Tall Dayr ʻAllā raises the question of whether or not unfired or partially-fired clay loom weights without a perforation, i.e. the so-called reels or spools, were used at sites east of the River Jordan as they were used in Syria.

Have the unfired and unperforated loom weights been missed in the archaeological record, or were such weights never used on a large scale in this part of the Levant? To answer this question a comparison between loom weights from Syria and loom weights from different sites in Jordan has been carried out.

Increasing Frequency of Loom Weights

Loom weights from different sites in Jordan show a spectacular increase in frequency during Iron Age II. This phenomenon is repeated all over the southern Levant during the Iron Age. The increasing frequency of these 'soft', i.e. unfired, loom weights shows that the warp-weighted loom was used intensively during the Iron Age. This is typically attributed to two factors: (1) weaving on a flexible loom is thought to have been easier, thereby enabling production to be increased for export and (2) an increase in textile production could have been linked to Assyrian demands; indeed textiles are mentioned in Assyrian tribute lists relating to Palestine (Browning 1988: 154-158).

ANET 282 and ANET 283 mention locally-produced garments with multicoloured trimmings that were received by Tiglat Pileser III from the states of the southern Levant, including Damascus, Tyre, Israel and Gaza.

The fine and intricate textiles found in central Europe show that the warp-weighted loom was used to weave fine textiles with colored patterns. It's possible that the warp-weighted loom was used in the Levant precisely because it enabled the warp threads to be hung in two, three or more flexible rows, thereby facilitating the weaving of intricate patterns in the weft. This would in turn have resulted in the use of more loom weights. It should be noted that the technical potential of the warp-weighted loom has long been under-estimated.

The increasing number of loom weights used in the Levant during the Iron Ages, in combination with the appearance of bone spatulas/ laminas, demonstrates that the sophisticated pattern techniques that had been practiced in central Europe since the Neolithic, spread into the Levant during the Bronze and Iron Ages.

The warp-weighted loom is a western invention that spread all over Europe and, via Greece, Anatolia and Syria, into the southern Levant to form the basis of a vibrant Levantine textile tradition. The warp-weighted loom and its archaeological evidence — the loom weight — show that the traditional view of the origin of culture as *ex oriente lux* can also be seen the other way round, as *ex occidente lux*!

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Ceramic Traditions in the East Central Jordan Valley during the Late Iron Age IIC (An Insight into the Pottery from Tall Dayr ʻAllā)

Introduction

During the Late Iron Age IIc period (734-539 BC) a new ceramic tradition appeared and blossomed in the central Transjordanian highlands, principally in the region around ʻAmmān which was, during this period, the core region of the kingdom of Ammon. This ʻAmmonite' corpus of ceramic vessels is morphologically and technologically distinct from those of neighbouring areas of Palestine and the Iron Age kingdoms of Moab and Edom. It typically includes fine red-slipped and burnished bowls, jars and tripod cups characteristically decorated with black and white paint, cooking pots and large holemouth bowls (Herr 1999: 224; London 1999: 89-92).

The distribution of ʻAmmonite' ceramic traditions in the Central Jordan Valley, situated between the regions of Transjordan and Palestine (FIG. 1), remains unclear. The sites of Tall as-Saʻīdiyya, Tall al-Mazār and Tall Dayr ʻAllā have all yielded ʻAmmonite' pottery, although its frequency within the respective assemblages is not yet clearly understood.

In 2005, a new study on the Iron Age IIc and Persian period pottery from Tall Dayr ʻAllā was initiated by CAAS, the Centre for Art and Archaeological Studies.[1] CAAS, which started as a collaboration between Leiden University and the Delft University of Technology in the Netherlands, is a centre for the scientific study of material culture in its archaeological and art historical context, with a strong interdisciplinary focus.

The new CAAS study aims to analyse ceramic traditions at Tall Dayr ʻAllā, in order to study continuity and / or change in the production and distribution of pottery from Phase VII to Phase III (see also Groot and Dik 2006: 95-97). This paper discusses the ceramic traditions of Phases VI and V/VI.

Tall Dayr ʻAllā

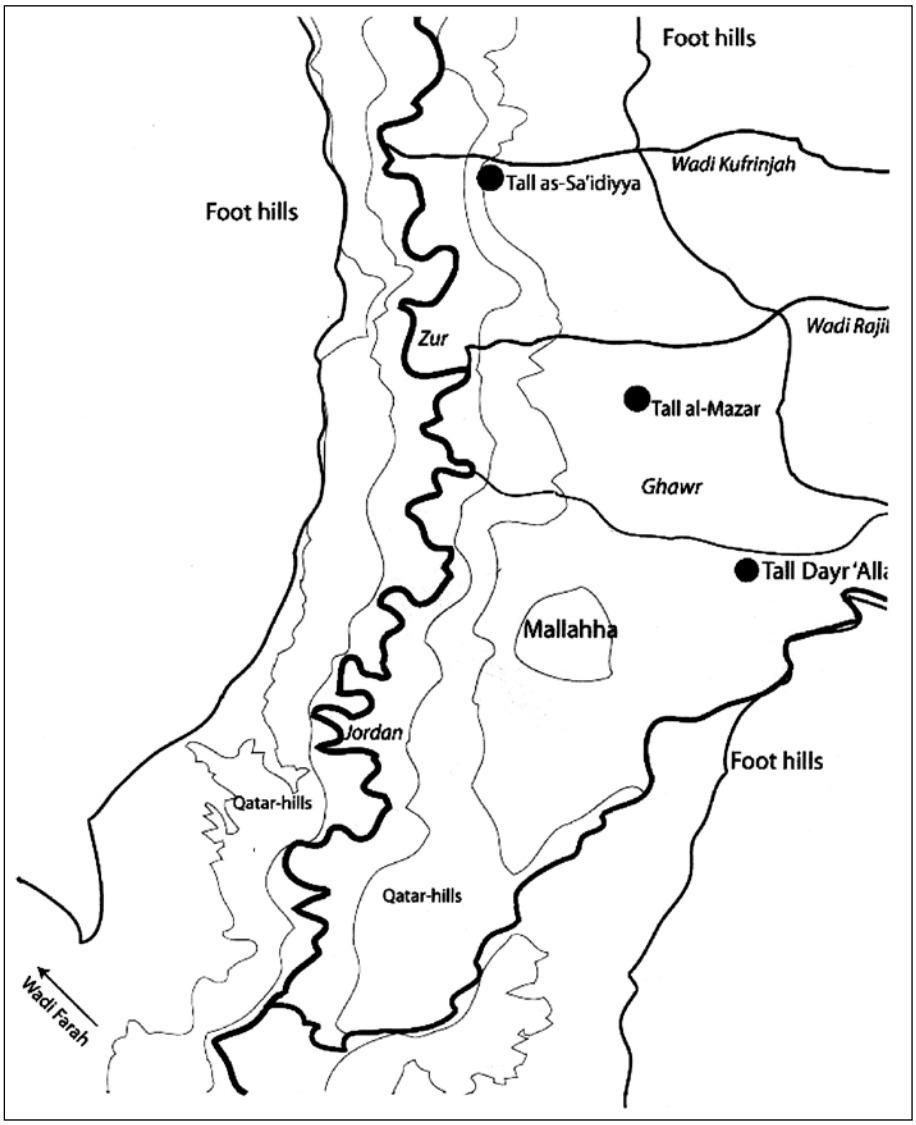
The stratigraphy of Tall Dayr ʻAllā, situated in the Central Jordan Valley, includes layers dating to the Iron Age IIc and Persian periods (734-332BC). These layers were amongst those excavated by the Leiden University expedition between 1959 and 1967 (mainly in 1967), which was led by Henk Franken. A large area was also excavated by the later Joint Expedition of the Department of Antiquities, Yarmouk University and Leiden University. The Joint Expedition was co-directed by Dr. Gerrit van der Kooij and Dr. Moawiyeh Ibrahim. Dr. Zeidan Kafafi succeeded the latter in 1996.

The Late Iron Age IIc phases, VI and V/VI, are restricted to the eastern summit of the tall, where they are exposed in the northern part of this area and also in a trench to the south. The archaeological evidence from both phases has suffered from subsequent digging activities and erosion.

Phase VI, dated to the latter half of the seventh century BC, represents a walled village. This settlement was built in stages on the levelled remains of Phase VII and consisted of farmhouses and large courtyards. Phase VI comprises two sub-phases, both of which were abruptly terminated by fire.

Phase V/VI, dated to the sixth century BC, followed a period of abandonment at the end of Phase VI. It is referred to as Phase V/VI because it was only recognised after the archaeological phasing had been established. It too can be divided into two sub-phases. The first is marked by the accumulation of courtyard deposits and the construction of large, lined pits approximately five meters in di-

[1] This study forms part of doctoral research being undertaken by the author on ceramics from Tall Dayr ʻAllā.



1. Map of the Central Jordan Valley.

ameter. After period of time, these pits went out of use whilst wash and courtyard deposits continued to accumulate. The second sub-phase is likewise marked by the accumulation of courtyard deposits, but is distinguished from its predecessor by the presence of numerous small, typically bell-shaped pits which seem to have been used for fodder. After a period of time these too were abandoned and eventually filled with constructional and other debris washed in from a higher level (van der Kooij 2001: 295-297). These sub-phases, both characterised by pit-digging and the accumulation of courtyard deposits, can most probably be attributed to the presence of a hamlet or house on top of the tall during Phase V/VI, as only a few ephemeral architectural remnants have been exposed (Ibrahim and van der Kooij 1983: 581).

Ceramic Traditions

This study of the Iron Age IIc pottery from Tall Dayr ʻAllā is based on the concept of ceramic traditions as defined by Henk Franken. A ceramic tradition is thus defined on the basis of observed constants in a chronological ceramic sequence, as reconstructed at a single site. These constants, that is to say the methods employed by the potters, include the selection of clays and tempers, the repertoire of shapes produced, the range of applied techniques, the firing method(s) and the distribution of the products themselves. This approach, which is focused on the potter rather than shape alone, aims to take all aspects of pottery production into consideration. Consequently, it is better able to explain aspects of continuity and change within an assemblage (see Franken 2005: 1-17; London 1999: 64-67).

The methodology of the current research is a reflection of the theoretical position outlined above. Three aspects of the ceramic assemblage are taken into consideration: shape, manufacturing techniques and fabric. The analysis of fabric includes both low- and high-tech. components. In the former, i.e. low-tech., samples were broken off a representative number of sherds. These were ground down and then re-fired to 725° degrees Celsius in an oxidising kiln at the ceramic laboratory in the Faculty of Archaeology, University of Leiden. The samples were subsequently studied at 10-50 x magnification. The latter, i.e. high-tech., component utilised X-Ray Fluorescence and INAA (Instrumental Neutron Activation Analysis), and included a study of provenance (Groot and Dik 2006: 95-97).

The Late Iron Age IIc Ceramic Repertoire from Tall Dayr ʻAllā

Phases VI and V/VI have both yielded a ceramic repertoire which can be described as predominantly 'Ammonite' in style, paralleling the Iron Age IIc pottery of Central Transjordanian sites such as ʻAmmān Citadel, Ḥisbān, Jāwā, Rujum al-Ḥinū, Ṣāfūṭ and al-ʻUmayrī (Groot in press). The repertoire of both phases includes the following typical shapes: grinding bowls, step-rim bowls, squat hemispherical bowls, thin carinated bowls, holemouth bowls and decanters (see FIG. 2 for a selection of Phase VI and V/VI shapes).

Analysis of the ceramic repertoire from Tall Dayr ʻAllā has shown that the production and use of pottery at that site did not undergo significant change during Late Iron Age IIc. Despite this general sense of continuity, two minor changes can nevertheless be discerned. First, although black burnished ware comprised ± 5% of the complete rim repertoire during Phase VI, during Phase V/VI its frequency seems to have been markedly reduced (see FIG. 2.4 for a Phase VI example). Second, two types of Palestinian bowl (FIG. 3.3-4) which were common in Phase VI had almost completely disappeared in Phase V/VI.

This study therefore suggests that, notwithstanding some minor changes, ceramic traditions in the Central Jordan Valley were characterised by a high degree of continuity during the period under consideration. This saw the blossoming of Ammon, the decline of Assyrian power and subsequent political upheaval which culminated in the Babylonian conquest (Dion 2003: 505-513). Nevertheless, the continuity observed in ceramic traditions at Tall Dayr ʻAllā indicates that at least part of the population remained in the Central Jordan Valley during this period of potential political unrest.

The Ammonite Tradition

On basis of characteristic shapes, manufacturing techniques and fabrics, the majority of vessels from Phase VI and all of those from Phase V/VI can be assigned to the Ammonite ceramic tradition. At Tall Dayr ʻAllā, the Ammonite tradition can be divided into three sub-traditions which continue all the way through both phases (Groot in press).

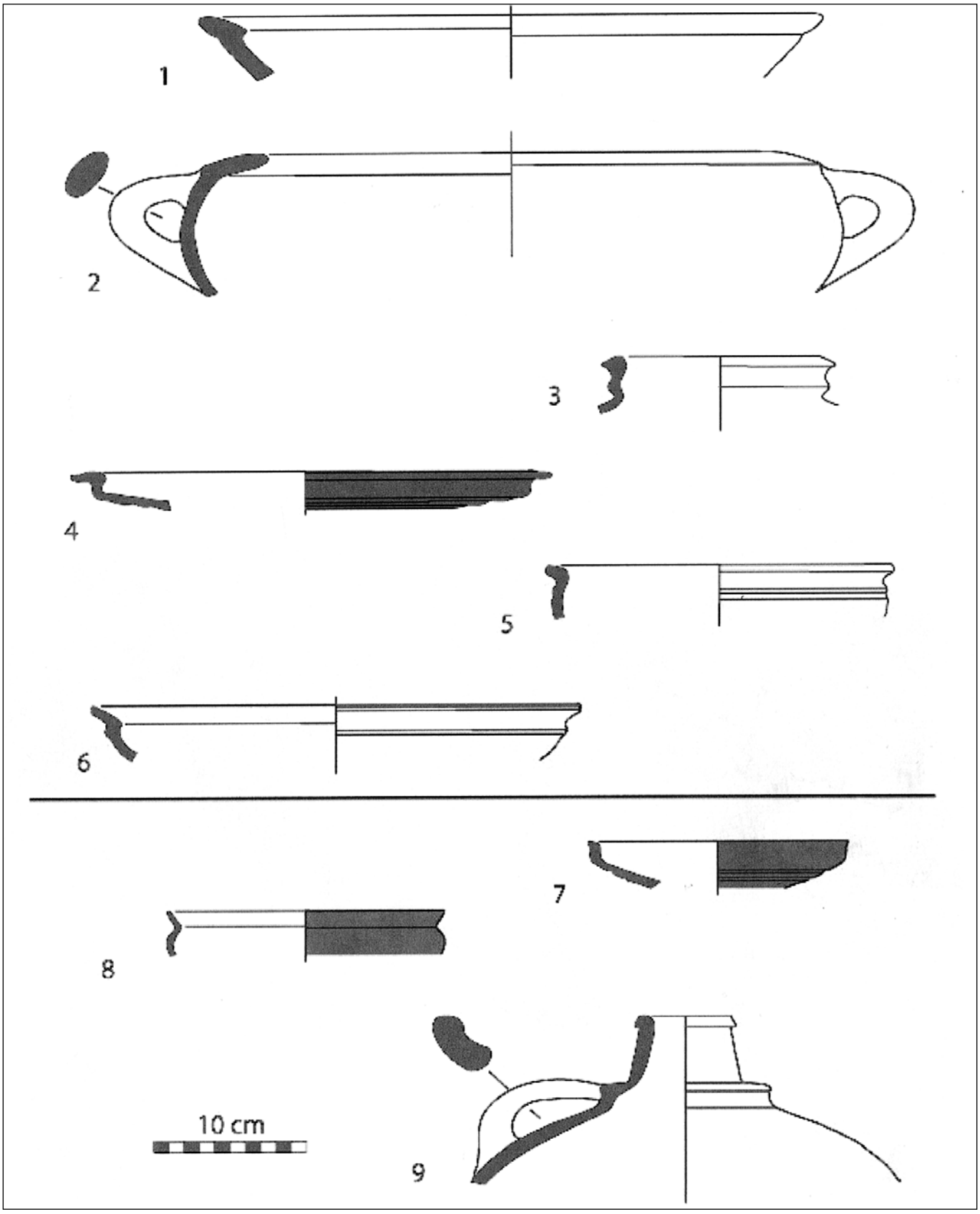
A. *The Local Tradition*

Vessels, in this study, are attributed to the local tradition when clay from the Damya formation was used in the preparation of the fabric. Such fabrics are characterised by the presence of undissolved clay particles, an early stage in the formation of mudstone. The particles themselves are small plates, typically reddish brown in colour (see Franken 1992: 106-108). Examples of Damya clay fabrics from Tall Dayr ʻAllā have been published for the Late Bronze Age (Franken 1992: 106-108) and Iron Age IIb (Vilders 1992: 191-192). This study has identified four (see FIG. 4 for an example) local fabric types (Groot in press).

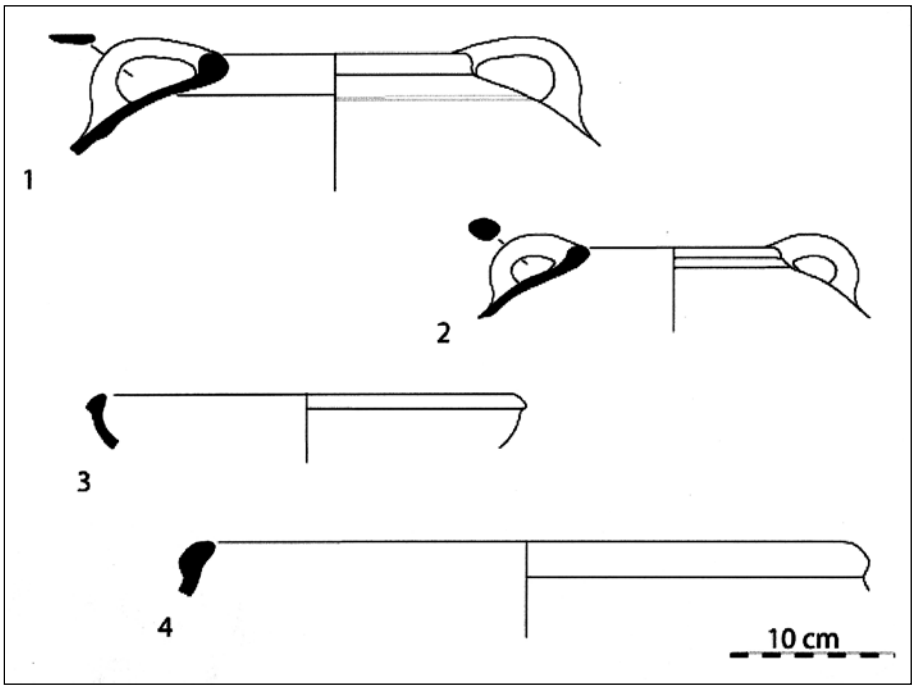
The Damya formation was deposited in Lake Lisan during the final stages of its retreat between 14-13.000 and 10.000BC (Abed and Yaghan 1999: 23-26), in which manifestation it is also referred to as Lake Damya. The formation consists of a sequence of differently coloured clay layers, which are easily accessible owing to the presence of several natural outcrops above the current valley floor. The site of Tall Dayr ʻAllā is situated on one these outcrops (van der Kooij and Ibrahim 1989: 76).

It is clear from the results of the fabric analysis that a wide range of shapes was locally produced (see FIG. 2.1-6). These include Ammonite shapes such as holemouth bowls (FIG. 2.2), squat hemispherical bowls (FIG. 2.5), step-rim bowls (FIG. 2.6), and the distinctive black burnished ware (FIG. 2.4). Furthermore, the collection demonstrates that the so-called 'mansaf bowl', a locally occurring large bowl since Phase F of Iron Age I (Franken 1969: 157-160), was still being produced in the region (FIG. 2.1).

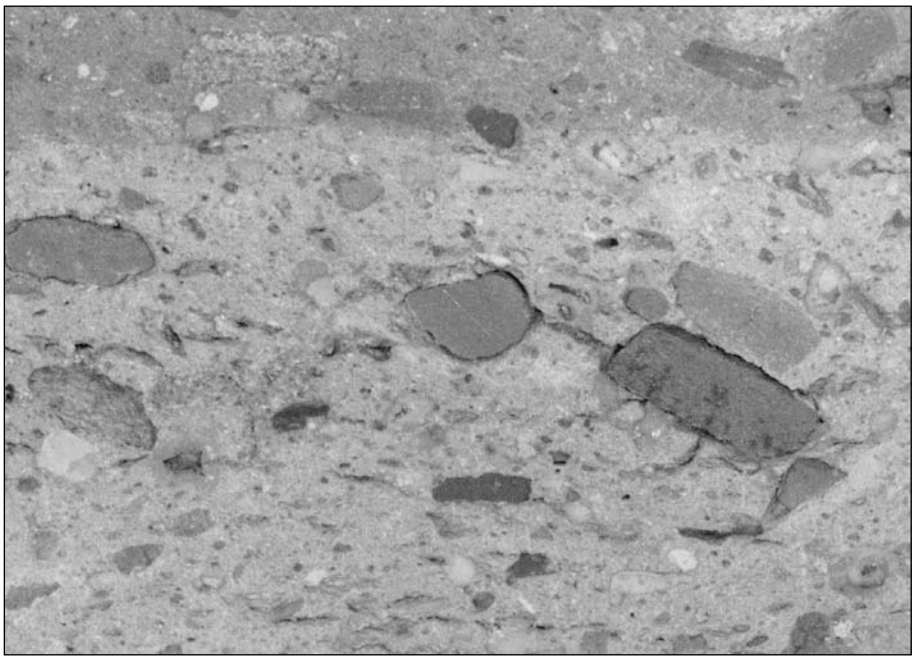
Study of manufacturing techniques has demonstrated that, in addition to the use of moulds, both



2. Selection of locally produced vessels from Phase VI (1-6) and non-local vessels from Phase VI (7, 8) and Phase V/VI (9).



3. Phase VI cooking pots (1, 2) and 'Palestinian' bowls (3, 4).



4. Example of a local Damya clay fabric.

fast and slow wheel[2] techniques were used within the production process. The use of a wheel is further attested to by the discovery of an incomplete wheel head from Phase VI (Ibrahim and van der Kooij 1985: pl. XV.1).

The presence of a wheel head on Tall Dayr 'Allā itself permits the hypothesis that ceramic production took place within a kilometre or so of the site. This hypothesis, together with other results of the study, serves as the basis for a reconstruction of at least three aspects of local production using ethnographic models.

1. *Organisation of production*. Peacock's (1982:

[2] Momentum allows a fast wheel to spin for longer than a slow wheel, which needs continuous pressure to keep it turning. A fast wheel, which rotates at around 60 revolutions per minute, also requires the use of two hands to form a shape (London 1999: 69-70).

6-11, 25-31) ethnographic model describes various modes of ceramic production, each with its own distinctive organisation in which a particular range of techniques are applied to the production of pottery. According to this model, the manufacturing techniques documented at Tall Dayr ʻAllā are indicative of ceramic production in an individual workshop. The use of a slow and, especially, a fast wheel is highly suggestive of this mode of production, in which a male potter with a small team of assistants would most probably have produced the vessels. The different manufacturing techniques required to produce the vessels suggest that some division of labour may have taken place. Wheel throwing is a clear example of specialisation, and construction of *pithoi* may have been another. The construction and finishing of vessel components, for example attaching lugs, could have been the task of assistants (see also London 1999: 71).

Extrapolation from Peacock's model suggests that the potter was probably a sedentary inhabitant of the immediate environs of the tall, with production of pottery as his main source of income. However, as pottery production is almost exclusively seasonal in this mode, he would most probably also have engaged in other activities. In the Central Jordan Valley, pottery production would probably taken place under the mild conditions of winter and spring. This is because temperatures during the summer months would have been too high for production (van der Kooij and Ibrahim 1989: 10). At this time of year the intense heat could have caused vessels, especially those which were wheel-thrown, to crack as a result of excessively rapid drying and shrinkage.

2. *Raw Materials*. The range of actions by which a potter obtains the raw materials required for ceramic production have been described in an ethnographic model by Dean Arnold (Arnold 1999: 363-367). This 'threshold model' is based on the average distances travelled by potters to obtain clay and temper. It states that most of the studied potters lived within seven-kilometres of their clay and temper sources and that, of these, the majority lived within just one kilometre of their sources. By applying this model to Tall Dayr ʻAllā, the following hypothesis can be constructed. The potter could have obtained clay from the clay beds of the nearby Damya formation. The non-organic tempers used in the local fabrics were quartz sand and calcite. These would all have been readily available within the hypothetical maximum distance of seven kilometres from the site. Quartz sand is found in deposits close to the tall (Vilders 1992: 191), whilst calcite is present in the foothills of the Transjordanian highlands to the east. Different clays and tempers could have been obtained from other geological areas lying within seven kilometres of the site, including the course of the River Jordan, also known as the Zur, the foothill margins or the bed of the nearby Wādī az-Zarqāʼ (See FIG. 1).
3. *Location*. Access to water was the factor that most probably determined the location of the workshop at Tall Dayr ʻAllā. The most consistent water sources would have been the Wādī az-Zarqāʼ itself and the associated network of irrigation channels that would have been required for agriculture (van der Kooij 2001: 298, 299). Clay from the Damya formation and temper would have to had been mixed with water to obtain a workable paste. Furthermore, one local fabric type contains fine mudstone particles which are indicative of levigation. This further strengthens the case for a nearby water supply.

It is thus reasonable to hypothesise that the workshop would have been located at the foot of or in the general vicinity of the tall. It should however be noted that, in addition to the possibility of destruction by agricultural activities, potters' workshops may be difficult to locate archaeologically owing to the seasonality of production amongst other factors (London 1999: 69).

B. *Other 'Ammonite' Traditions*

The presence of other Central Transjordanian / 'Ammonite' traditions is attested to by the use of non-local fabrics for 'Ammonite' shapes (see FIG. 2.7-9 for examples). Because several minor fabric groups exist within this category it can be suggested that, in addition to the use of different clays in local production, there may have been exchange with other 'Ammonite' pottery producing regions. Indeed, there would probably have been an intricate and intangible ceramic exchange network, consisting of family and tribal relationships, redistribution and trade.

Owing to the number of individual workshops supplying the market, it is clear that vessels ended up at Tall Dayr ʻAllā which were also produced locally. Examples include holemouth bowls, squat

hemispherical bowls and step-rim bowls. Also, the presence of fine Ammonite red-slipped and / or burnished fine ware (FIG. 2.7-8), including the characteristic carinated bowls, suggests that there may have been one or more workshops which specialised in the production of these wares.

C. *Cooking Pots*

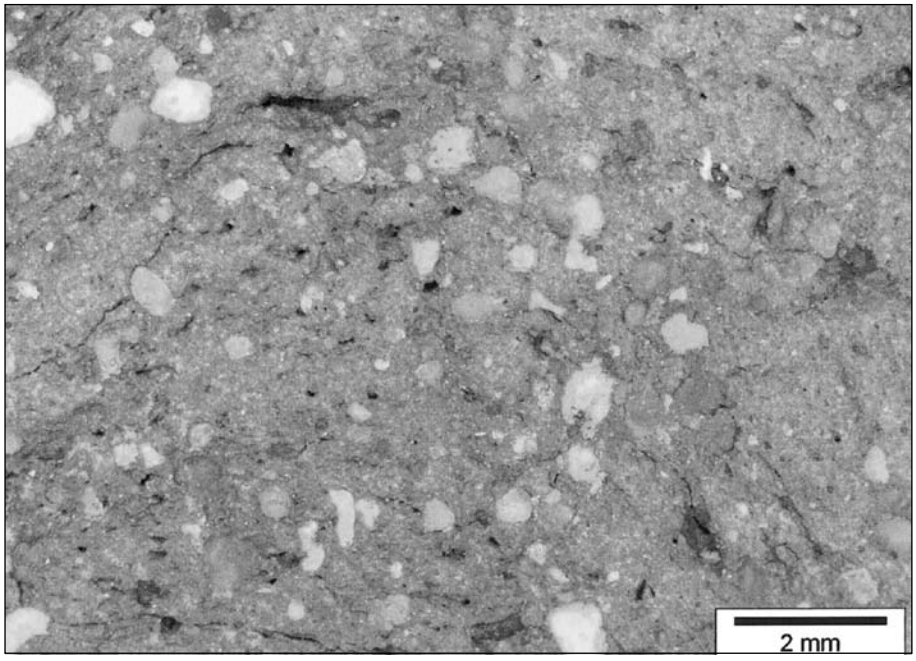
The third sub-tradition, whether local or non-local, is represented by the cooking pots which are almost exclusively of Transjordanian type. This tradition is distinguished by the use of iron-rich clay and an old method of construction in which the lower half of the vessel was formed in a mould, to which coils were subsequently added whilst turning in order to form the upper half (see Franken 1969: 118-120). However, an innovation occurred during the seventh century BC when potters began to experiment with tempers other than calcite. This shift can be seen in the Phase VI and V/VI cooking pots, in which sand was the dominant non-plastic temper, and reflects contemporary developments in Palestine and Central Transjordan (London 1999: 91).

During the course of this shift two types of cooking pot, of broadly similar shape, emerged in the ceramic repertoire. The first was characterised by a thickened, sometimes ridged, vertical rim (FIG. 3.1) and a predominantly quartz sand temper with a small amount of added calcite / lime (FIG. 5). The second was characterised by a groove underneath the rounded rim (FIG. 3.2) and a mixed sand / calcite temper (FIG. 6). The difference in temper points to the existence of two separate traditions which produced broadly similar cooking pots. This is suggestive, first, of local production and, second, of the existence of more than one pottery workshop.

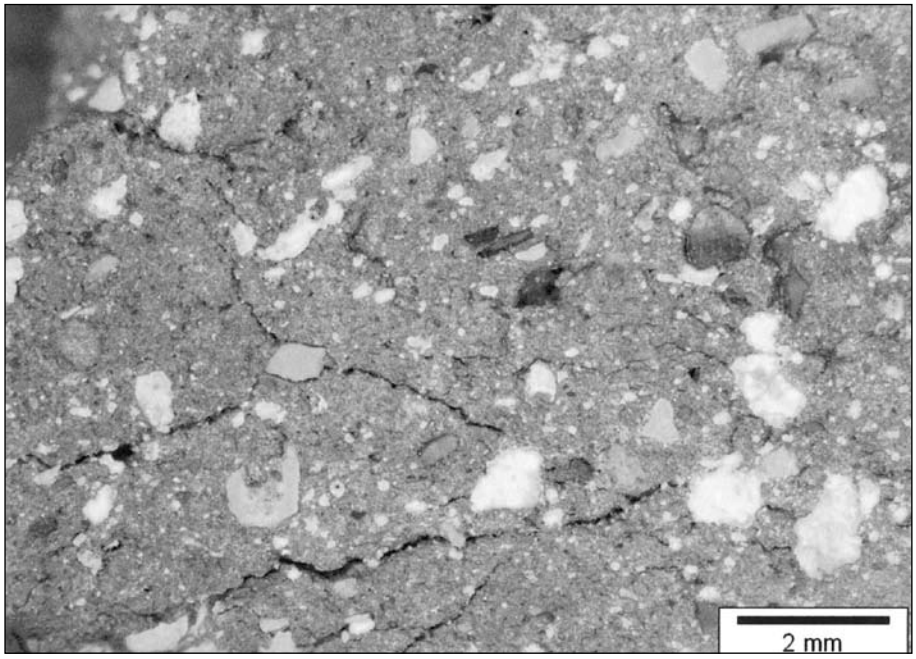
The Palestinian Tradition

The other main ceramic tradition at Tall Dayr ʻAllā can termed ʻPalestinian' on the basis of parallels in shape, finishing and fabric. These parallels are especially pronounced in the case of two types of bowl (FIGS. 3.3-4), referred to in Jerusalem by Franken as Small Bowls, Class 4 and Large Storage Bowls, Class 11 (Franken and Steiner 1991: 103-104, 116-119).

In the case of these bowls, eight different fabrics have been identified (Groot in press). All of these appear to be non-local and all are different to sampled ʻAmmonite' vessels. Additionally, it seems that in Transjordan the distribution of these bowls is restricted to sites in the Jordan Valley, including Tall as-Saʻīdiyya Stratum IV (Pritchard 1985: figs. 15.10 &13). This constitutes good evidence for the existence of trade or exchange networks between the Central Jordan Valley and Palestine. On the basis of the diverse fabric types referred to above, the mechanism by which these bowls ended up at Tall Dayr ʻAllā, was not a matter of straightforward exchange between two locations. These objects were acquired at different



5. Example of cooking pot fabric, Type 1.



6. Example of cooking pot fabric Type 2.

places and / or were brought to Jordan Valley by middlemen or merchants in order to be sold. The use of these bowls as containers seems improbable on account of their impractical shape and size for the transport of goods.

Overview

At Tall Dayr ʻAllā the ceramic repertoire remained largely unchanged during the Late Iron Age IIc. During Phase VI it was dominated by an ʻAmmonite' ceramic tradition which became ubiquitous in Phase V/VI. This tradition appears to have been characterised by workshop production in which a broad range of manufacturing techniques were used. The range of fabrics represented suggests that, in addition to local production, there was a system of exchange between the Central Jordan Valley and other regions in which ʻAmmonite' pottery was produced. Transjordanian cooking pots, occurring in at least two distinct traditions each with its own technical characteristics, form part of this wider ʻAmmonite' tradition. The Palestinian ceramic tradition at Tall Dayr ʻAllā formed part of a complex of trade or exchange representing contact between east and west, at least during Phase VI.

In conclusion, this analytical approach based on ceramic traditions has enabled us to reconstruct a wide range of pottery dynamics, thereby offering a better glimpse into the society of this still enigmatic region of Ammon.

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Scierie Hydraulique de Gerasa/Jarash: Restitution Théorique et Restitution Matérielle d'une Machine Hydraulique du VI^{e} Siècle de Notre ère

L'anastylose d'un monument antique n'est que très rarement possible. Le plus souvent seule une restitution matérielle partielle est envisageable et parfois menée à bien. Toutefois, dans un cas comme dans l'autre, ces travaux ne peuvent – et ne devraient – être que l'ultime étape d'un long et minutieux processus d'étude et d'analyse des vestiges matériels conservés. Seul en effet ce travail préalable peut permettre de proposer la restitution graphique la plus vraisemblable, permettant de juger du bien-fondé ou non d'une «restauration» matérielle, ainsi que des limites que cette dernière devrait respecter. Bien souvent, la «restauration» matérielle s'avère trop aléatoire, voire impossible, trop peu d'éléments de l'ancienne construction étant accessible à l'étude et ceux qui le sont ne permettant pas «d'assurer», physiquement, la restitution. Souvent également, ce sont de simples contraintes budgétaires qui limitent la reconstruction de «l'objet» étudié à sa seule image de papier, bien moins onéreuse à réaliser (et à entretenir…).

Depuis quelques années, la qualité, la précision et la rapidité d'exécution des dessins de restitution ont été considérablement améliorées grâce à l'introduction de l'informatique et du dessin assisté par ordinateur. Les puissances de calcul accessibles aujourd'hui sont telles que le «pouvoir évocateur» de ces restitutions, proposées par «l'archéologie virtuelle» et accessible depuis chez soi via Internet, semble rendre encore plus inutile toute restauration matérielle, toute anastylose (à l'exception de quelques monuments de sites prestigieux, produits d'appel pour touristes). Le développement de ces techniques de dessin 3D, celle des banques de données informatisées d'éléments architecturaux où il «suffit» de piocher colonnes, chapiteaux et autres «motifs», … celle enfin d'une demande croissante de la part des médias et des organismes de «communication» de reconstitutions «spectaculaires» et rapidement disponibles, conduisent parfois à marginaliser l'analyse pointilleuse des vestiges matériels, à ne plus la considérer comme indispensable. Les modèles numériques disponibles permettant de restituer une «image virtuellement suffisante» du monument ruiné, les vestiges matériels deviendraient même une gêne aux «belles restitutions graphiques». Ces dernières finiraient alors par proposer non une image de ce qu'avait pu être le monument, mais de ce qu'il aurait pu être, ou même dû être selon les «goûts du public», le virtuel supplantant progressivement le réel.

L'anastylose graphique, même la plus scrupuleuse et documentée, basée sur l'examen et l'analyse minutieuse de chaque élément conservé serait-elle pour autant suffisante? Permet-elle de cerner l'ensemble des problèmes posés? de rétablir le monument dans sa plus grande globalité et précision? Sans relancer le vieux débat sur la nécessité scientifique ou non de l'anastylose des monuments anciens, seule à même de prouver le bien-fondé des hypothèses proposées, (l'anastylose ne tolère aucune erreur: chaque bloc, taillé sur mesure, étant unique, il ne peut occuper qu'une seule place dans le monument), la question apparaît toute différente lorsque l'étude porte sur des machines antiques. Le problème est alors bien plus complexe, la restitution concernant non plus les interrelations de simples volumes «statiques», plus ou moins complexes et décorés, mais celles de volumes en mouvements relatifs les uns par rapport aux autres, dont beaucoup étaient en matériaux périssables ou recyclables, celles de forces variables mises en œuvre pour produire des effets difficilement chiffrables sans expérimentation directe.

L'anastylose, ou la reconstitution matérielle, sont alors les seuls moyens qui permettent de véri-

fier la justesse ou non des hypothèses de restitution avancées, non seulement pour l'objet lui même, mais également pour son fonctionnement supposé.

C'est une telle expérience qui a été tentée à Jarash, avec la reconstitution d'une des plus anciennes machines connues : une scierie hydraulique du VI^{e} siècle.

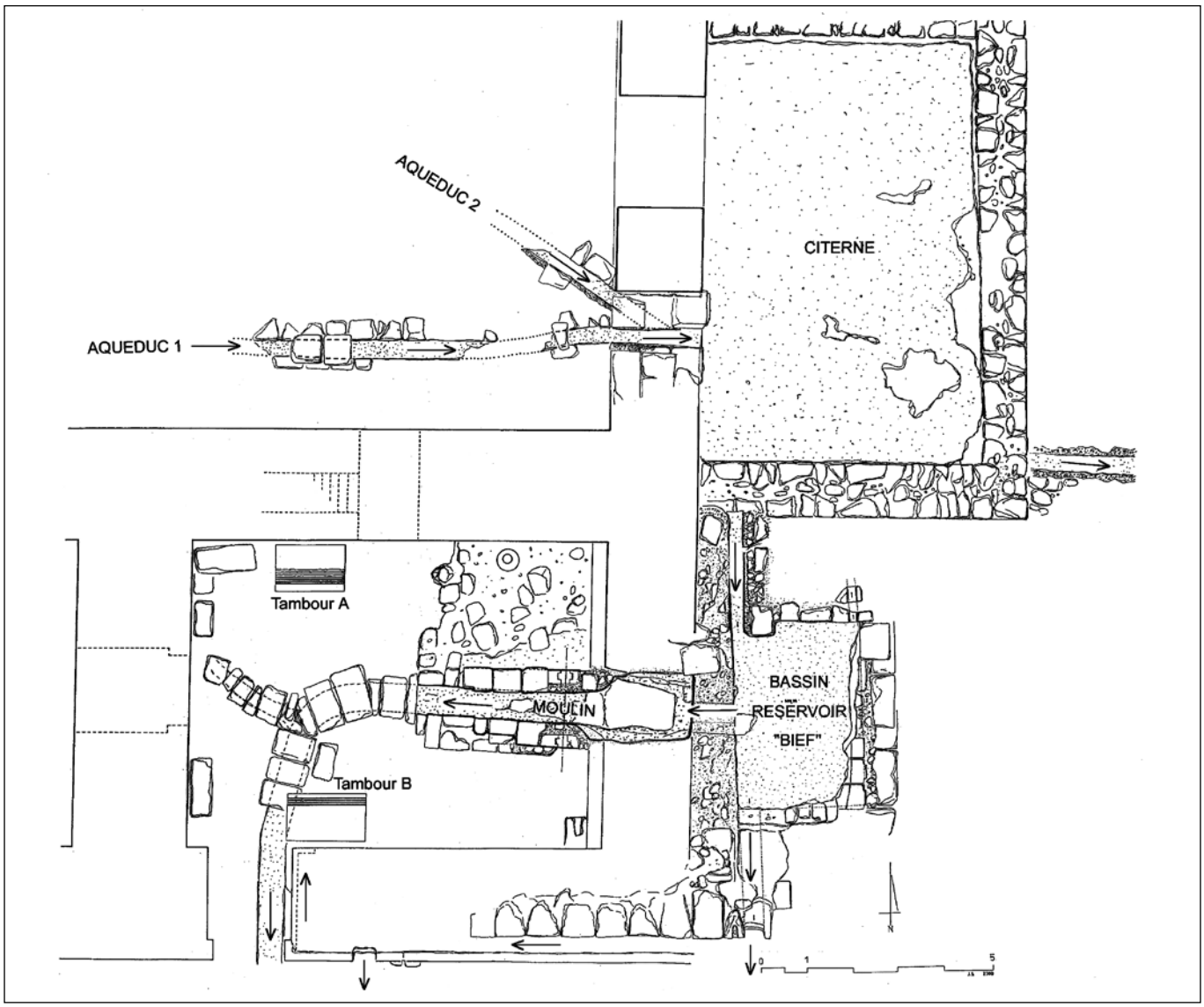
Les Vestiges Matériels

En 1926, lors de la phase préliminaire à la grande fouille menée à Jarash (Jordanie) par les équipes anglo-saxonnes dirigées par C.H. Kraeling (1938), la petite salle voûtée (8,65m/6,65m) marquant l'extrémité orientale du cryptoportique méridional du sanctuaire d'Artémis à Gerasa (Jarash) fut dégagée par G. Horsfield, pour y aménager un musée lapidaire. Cette salle abritait les vestiges bien conservés d'un moulin hydraulique associés à deux tambours de colonne de grand diamètre abandonnés en cours de sciage. Cette fouille, semble-t-il, ne fut jamais publiée ni même mentionnée et resta complètement inédite jusqu'en 2002 date à laquelle ces vestiges furent interprétés comme ayant appartenu à la plus ancienne scierie mécanique actuellement connue au monde (Seigne 2002a, 2002b et 2002c).

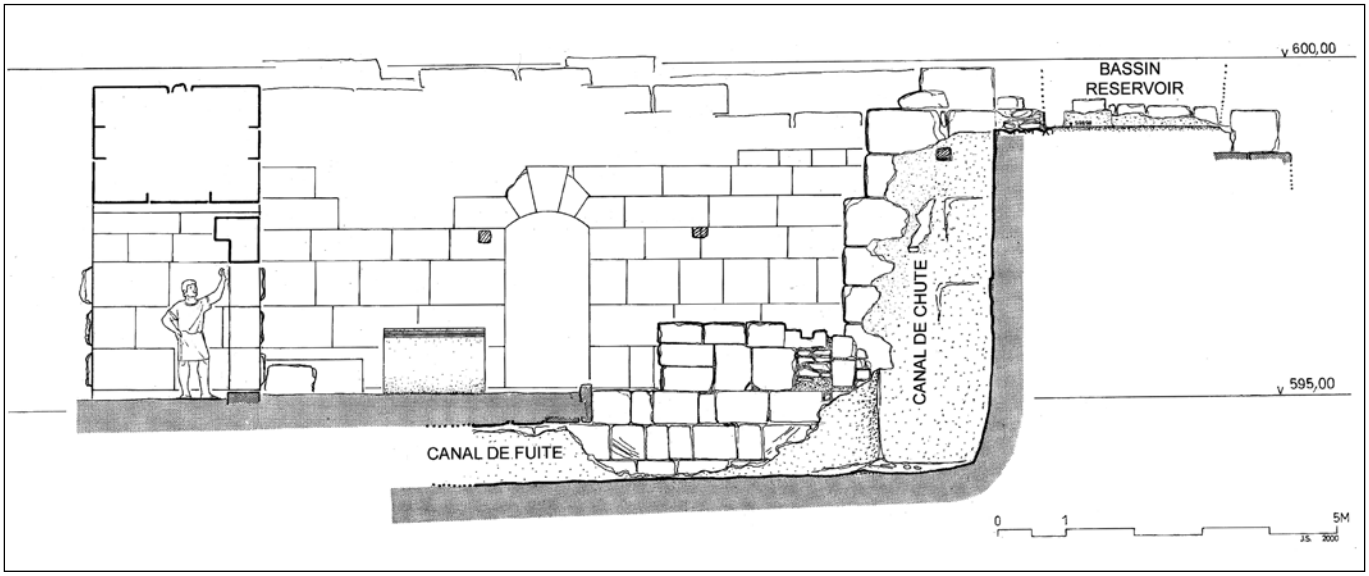
Restitution Théorique

A- Des vestiges matériels au principe de fonctionnement : du concret à l'immatériel

Les différents éléments conservés ont déjà été décrits (Seigne 2002a) (FIGS. 1-2). Rappelons simplement que le trop plein d'une large citerne



1. Plan général de l'installation. Relevés et dessin, J. Seigne.

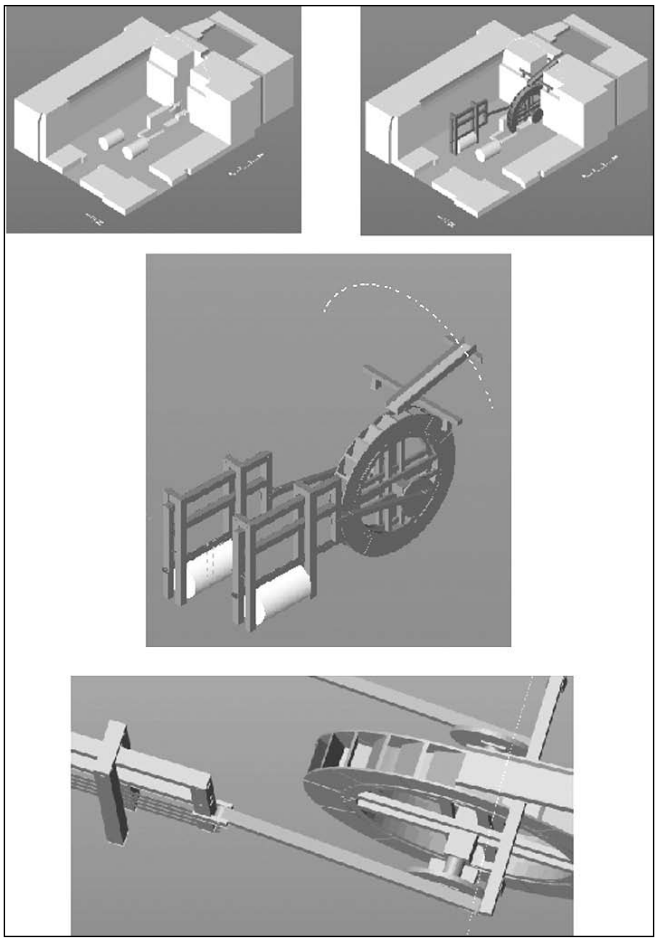


2. Coupe ouest/est des vestiges après la fouille de 2007. Relevés et dessin, J. Seigne.

(70m^3) alimentait un bassin/bief (2,80m/4,20m), toujours identifiable malgré son mauvais état de conservation. Ce bassin domine de plus de 3m le sol du cryptoportique, vers lequel l'eau se déversait via une large et profonde tranchée creusée dans le mur oriental du cryptoportique. Enduite de mortier hydraulique, elle est connectée à un profond et étroit (0,60m) canal axial en partie souterrain et couvert de larges dalles de pierre. Sa partie non couverte, au pied du canal de chute est limitée par deux murets parfaitement préservés, formés de blocs de pierre en remploi et dont deux, situés en vis-à-vis de part et d'autre du canal, portent, sur leurs lits supérieurs, les mortaises et encastrements destinés aux deux paliers d'un arbre de rotation horizontal. Ces blocs portent par ailleurs, sur leurs faces extérieures verticales, de profondes traces d'usure circulaires, laissées par le frottement répété d'objets vraisemblablement métalliques. Deux tambours de colonnes (1,50m de long pour un diamètre de 1m), avaient été découverts dans la salle par les fouilleurs américains, vraisemblablement de part et d'autre du canal de fuite. Tous deux avaient été abandonnés en cours de sciage et tous deux présentent des amorces de découpes regroupées par quatre ne pouvant être expliquées que par l'emploi de scies multi lames. Tous ces éléments permettaient de restituer un moulin hydraulique constitué d'une roue à augets, de 4m de diamètre alimentée par en dessus, entraînant, grâce à deux systèmes de bielle/manivelle montés à chacune des extrémités de l'axe horizontal court de la roue, deux très grandes scies à cadres verticaux portant chacune quatre lames sans dents (Seigne 2002a, 2002b, 2002c, Seigne Morin 2006, 2007). L'installation était prévue pour débiter simultanément huit plaques de calcaire dur de grandes dimensions (1,50m/1m).

Grâce aux autorisations accordées par le Docteur Fawwaz Al Khraysheh, Directeur Général du DoA et en plein accord avec l'équipe italienne, dirigée par R. Parapetti, chargée de la fouille et de la restauration du sanctuaire d'Artémis, l'étude de cette installation, découverte fortuitement, a pu être réalisée. Dans un premier temps, les recherches ont porté sur le relevé des vestiges visibles et sur l'étude des traces identifiables sur les blocs conservés. A partir de cette première documentation, et des premières hypothèses de restitution qui pouvaient être formulées, Thierry Morin réalisait une «maquette» tridimensionnelle informatisée (dessin vectoriel, voir FIG. 3) permettant de visualiser chacun des éléments constitutifs de la machine, séparément ou en connexion avec ses voisins.

Cependant, de nombreux éléments restaient mal connus, en particulier la structure de guidage des scies, celle(s) destinée(s) à la récupération de l'abrasif, à l'alimentation en eau des zones de coupe, … La date même de l'installation, élément primordial pour l'histoire des techniques, restait incertaine. Un dégagement général de la salle et la réalisation de sondages complémentaires s'avéraient indispensables. Ils furent réalisés durant l'hiver



3. Axonométrie de travail. DAO. T. Morin

2006/2007[1].

Ces travaux montrèrent que les dégagements de 1926, entrepris dans le but d'aménager un musée de site à l'intérieur de l'ancien cryptoportique du sanctuaire d'Artémis, avaient malheureusement été poussés au-delà du niveau de sol antique correspondant à l'installation hydraulique. Seul un lambeau de dallage grossier, associable à la scierie, fut retrouvé dans l'angle nord/est de la salle (FIG. 4). Toutefois, la fouille du contenu du bas du canal de chute, du coursier et celle du canal d'évacuation de l'installation, non perturbé et laissé in situ lors des fouilles américaines, permettait de retrouver un très important mobilier archéologique (verreries, céramiques, monnaies,…), datable du troisième quart du VI^{e} siècle et correspondant à l'abandon de l'installation. Le matériel découvert est venu confirmer les premières hypothèses formulées et permet de repousser de près d'un millénaire les débuts de l'utilisation du système bielle/manivelle, c'est-à-dire celle de la maîtrise de la transformation des mouvements, base de la mécanisation du travail.

Cette «découverte» a également permis d'interpréter les vestiges d'une autre installation de sciage mécanique, découverts à Ephèse et datés des VI^{e}/VII^{e} siècles (Schioler 2004, 2005; Mangartz 2006, 2007), de «relire» le poème Mosella d'Ausone (écrit vers 362-364) et de comprendre le bas relief du sarcophage de Marcus Aurelios Ammianos, «ingénieur mécanicien», mort à Hierapolis (Turquie) à la fin du III^{e} siècle de notre ère (Ritti 2006; Grewe Kessener 2006, 2007), et, au-delà, de prouver que le Proche Orient, à l'époque romaine, avait connu les débuts de la mécanisation du travail, même si la véritable mise au point d'installations totalement maîtrisées et fiables ne se fit qu'à la Renaissance, en Chine et en Europe.

B- Mise en Image des Principes de Fonctionnement: du Schéma à la Modélisation 3D Animée

Lors de l'étude des vestiges de l'installation de Jarash, puis lors de l'élaboration des hypothèses de restitution, l'apport de l'imagerie 3D fut décisif. Le dessin vectorisé des différentes composantes restituées, suivi de leur assemblage et de leur mise en mouvements relatifs, réalisé bénévolement par Thierry Morin, aboutit à la constitution d'une maquette virtuelle, 3D, animée, de l'installation, fractionnable et modifiable, permettant de visualiser, de tester et de modifier les hypothèses avancées (FIG. 3).

Toutefois, ces restitutions informatiques ont également montré les limites de l'imagerie virtuelle, tout au moins avec les moyens dont nous pouvions disposer (à titre d'exercice, une simple modification de paramètres mathématiques, aboutissant à faire pénétrer les cadres des scies dans leurs guides, n'empêcha nullement la machine virtuelle de fonctionner… sans que cette impossibilité physique ne soit relevée lors des conférences et colloques où la restitution truquée fut présentée). De même, coupée de toute réalité matérielle, la restitution «informatique» ne peut aborder que les principes de la restitution. Les problèmes liés au poids et à l'encombrement réels des différentes pièces, à leur fabrication, transport et assemblage,

[1] Ces travaux de nettoyage puis de fouille, indispensables et préalables à la reconstruction, ont été réalisés en collaboration étroite avec les membres du service des antiquités de Jarash et grâce au soutien financier de L'IFPO 'Amman. Y ont participé: Mesdames Claire Hasenohr et Chrystelle March, Messieurs Abd el Majjid Mujali, Jean-François Salles, Abu Zeidoun et les ouvriers du DoA.

à la main d'œuvre nécessaire à leur mise en oeuvre, au phasage de la réalisation, sans parler des «astuces» et secrets de fabrication liés à des millénaires de travail manuel aujourd'hui perdus,… tous ces aspects, pourtant fondamentaux pour une «bonne» réalisation de la machine restent totalement inconnus de l'ordinateur. De même, les logiciels disponibles actuellement (à notre niveau de recherche en sciences humaines) ne permettent pas de «modéliser», ni d'évaluer, la puissance réelle développée par la roue, les efforts engendrés, les pertes générées par les frottements,… La connaissance de ces paramètres serait pourtant essentielle pour comprendre le fonctionnement de telles machines et estimer leur rendement.

Restitution Matérielle

Face à ces questions, est né le projet un peu fou de reconstruire la machine grandeur nature, d'installer la restitution sur le site même de Jarash et de la «remettre» en marche.

Plusieurs objectifs étaient poursuivis:

- Essayer de répondre aux questions techniques exposées ci avant en «testant» une machine reconstruite grandeur nature;
- Transmettre au plus grand nombre les résultats d'une étude, sous une forme immédiatement visible et compréhensible par tous, touriste intéressé comme simple passant;
- Restituer la découverte faite à son pays d'origine et remercier la Jordanie pour les années de soutien aux recherches françaises menées à Jarash.

L'idée de départ comportait également un volet pédagogique en essayant d'associer une institution d'enseignement professionnel à l'opération, tout en préparant un petit documentaire destiné aux médias[2].

Le lycée professionnel Emile Delataille de Loches (37) a bien voulu relever le défi et tenter l'aventure en inscrivant la reconstitution de la machine dans le cadre d'un projet d'établissement, «aux arts lycéens», fortement soutenu par la région Centre. Les fonds réunis grâce à l'Association des

4. Emplacement de la machine après la fouille de 2007.

Amis de Jarash, placée sous le patronage de Sa Majesté la Reine Noor Al Hussein, permettaient d'acheter les matériaux de base nécessaires. En novembre 2006, les élèves des classes terminale BEP «Bois et matériaux associés», 1ère et 2e année de Bac Professionnel «Technicien, Menuisier, Agenceur»[3], encadrés par leurs professeurs Daniel Berruer et Claude Malbran, entamaient la fabrication des différentes pièces de charpente, alors que Jean Marie Laurence, professeur de décolletage à la retraite, s'attachait à la fabrication des éléments métalliques. Le 17 mars 2007, six élèves encadrés par leurs deux professeurs, arrivés la veille à Jarash, commençaient le remontage sur site (FIGS. 5-6). Le 22 mars 2007, son Altesse Royale le prince Hamzeh bin Hussein, inaugurait la reconstitution de la scierie hydraulique en présence de Monsieur Denys Gauer, Ambassadeur de France en Jordanie et du Docteur Fawwaz Al Khraysheh, Directeur Général du service des Antiquités, de Messieurs Beffara et Picault représentant la région Centre, de Monsieur Gille Breton, proviseur du Lycée Delataille et de Madame Buzelay, chef d'atelier[4].

A- Du Principe de Fonctionnement à la Machine: de l'immatériel au Concret

La reconstitution se voulait la plus fidèle pos-

[2] Ce documentaire n'a pu être réalisé, faute de moyens. Toutefois, toute l'opération a été filmée, à titre privé, par l'un des professeurs du lycée de Loches.

[3] De nombreux élèves ont participé à la réalisation. Six d'entre eux, plus particulièrement impliqués, furent sélectionnés pour remonter la machine en Jordanie: Mathieu Bijeault, Jonathan Clairet, Renaud Gervais, Cédric Legrand, Anthony Martins et Romuald Teillet. Ce voyage fut pour eux l'occasion de prendre un baptême de l'air et de découvrir un pays du Proche-Orient et, grâce aux membres du service des Antiquités, Jarash, 'Amman, Madaba, Karak, et Pétra.

[4] Le projet a pu être mené à bien grâce au soutien du Ministère jordanien du Tourisme et des Antiquités, de l'Association des Amis de Jarash, de Royal Jordanian, du Ministère Français des Affaires Extérieures, de la Région Centre, de l'Institut Français du Proche Orient, de la section libanaise de l'Union des Français de l'Etranger, du Rotary Club section de Loches, de S.D.V. Logistic, du Centre National de la Recherche Scientifique et de l'Université de Tours.

5. Le moulin et l'installation de sciage reconstitués.

6. Daniel Berruer et Claude Malbran avec Mathieu Bijeault, Jonathan Clairet, Renaud Gervais, Cédric Legrand, Anthony Martins et Romuald Teillet, devant la machine reconstruite.

sible. Cette position de départ sous entendait de n'utiliser que des matériaux et des techniques de fabrication connues à Jarash dans l'Antiquité. Elle se révéla rapidement impossible à tenir, à la fois pour des questions techniques (impossibilité de trouver facilement certains matériaux, comme le fer doux, ou des artisans sachant encore travailler «à l'ancienne», comme des scieurs de long ou des forgerons) et surtout financières (durées et coûts de fabrication, salaires prohibitifs d'artisans spécialisés, …). La fabrication fit donc appel à des matériaux disponibles dans le commerce, ainsi qu'aux équipements modernes du lycée de Loches (machines diverses, y compris à commandes numériques). Toutefois, toutes les phases de fabrication auraient pu être réalisées avec les outillages et les techniques attestées à Jarash pour l'époque romaine. Toutes les pièces de charpente et de métal

pourraient être entièrement refaites artisanalement, à la main, mais avec des délais et des coûts de fabrication sans commune mesure avec ceux obtenus grâce aux équipements modernes.

Pour les matériaux, la menuiserie fit appel à des bois pré dimensionnés du commerce, mais en respectant au mieux les essences connues sur les montagnes de l'Ajlun (chêne et pin sylvestre, le pin d'Alep n'étant pas disponible en France). Le plus gros problème concerna les parties métalliques, le fer doux étant très difficile à trouver dans le commerce sous forme de barres et les forgerons étant aujourd'hui des «artisans d'art» plus habitués à fabriquer sièges, rambardes et autres statues plutôt que des lames de scie de 4m de long.

B- Fabrication, Construction, Mise en œuvre: Contraintes Matérielles et Solutions Pratiques

Si la reconstitution matérielle a permis de valider les grandes options théoriques de la restitution proposée, elle a également montré que d'autres solutions, plus simples à réaliser, plus solides, existaient pour la réalisation de certaines pièces de la machine. C'est ainsi que, dès les premières phases de fabrication, les professeurs du lycée proposaient de remplacer les «plateaux circulaires» fixés en bout d'axe et correspondant aux plateaux supports des excentriques, restitués à partir des traces observées sur les montants du coursier, par des assemblages à mi-bois enserrant les extrémités de l'axe de la roue (FIG. 7). Elle a également mis en évidence la nécessité d'ajouter certaines pièces, «oubliées» lors de la restitution théorique, comme celle des contrepoids, indispensables pour équilibrer les masses non des scies mais des bielles. De même, l'étude fine des traces conservées sur les tambours de colonne, rendue possible par le déplacement des blocs à la grue lors des travaux d'aménagement, a permis d'affiner la restitution du bâti de guidage des scies.

La reconstitution matérielle a enfin révélé toute

7. Détail de l'assemblage bielle/manivelle.

l'importance, en volume/temps et en savoir faire, des parties métalliques de la machine. Le forgeage de pièces en fer de très grandes dimensions et de faible épaisseur (comme les lames des scies, longues de près de 4m pour une largeur de 10 à 12 centimètres et surtout pour une épaisseur de 3 à 4mm au maximum) apparaît aujourd'hui comme de véritables «tours de force» aux forgerons interrogés. Il est vraisemblable qu'il en était de même dans l'Antiquité, même si beaucoup de «tours de mains» et de «savoir-faire» sont aujourd'hui perdus dans ce domaine. Il apparaît ainsi que la construction de la scierie représentait un très important investissement financier, difficilement chiffrable en l'état actuel des recherches.

Par ailleurs, un certain nombre de «détails», ou parties considérées comme tels dans le cas d'une restitution virtuelle, se sont révélés fondamentaux au bon fonctionnement de l'ensemble de la machine, une fois celle-ci «matérialisée». Par exemple, dans la maquette 3D animée, les lames de scie sont «naturellement» considérées comme correctement tendues. Or, dans la réalité, la mise en tension de quatre lames sur un bâti unique est loin d'être évidente et n'apparaît plus comme un «détails» technique secondaire: si elle n'est pas assurée, l'ensemble de l'installation ne peut fonctionner, le moulin, les bielles/manivelles, les scies et système de guidage ne servent plus à rien. La maîtrise de ce «détail» était tout aussi fondamentale au bon fonctionnement de l'installation que celle de la mise au point du système bielle/manivelle.

De fait, c'est vraisemblablement l'incapacité à résoudre l'un de ces «détails techniques», la mise au point d'un système permettant d'interrompre instantanément la liaison moteur/outil indispensable en cas de blocage des lames, qui aboutit à l'échec du développement de ces premières machines antiques. La machine de Gerasa, trop ambitieuse avec ses huit lames de coupe, ne dépassa pas le stade des tests de mise au point, comme le prouvent à la fois les traces d'étalonnage de coupe relevées sur le lit d'attente d'un des tambours de colonne, et celles correspondant à la rupture d'une des lames en cours de travail visibles sur l'autre. A Ephèse, malgré la réduction du nombre de lames montées sur les scies, la machine connut semble-t-il, les mêmes problèmes de mise au point, même s'il est probable que son fonctionnement fut plus long avant son abandon. De fait, il faudra plus d'un millénaire de tâtonnements pour que les prototypes des premières machines issus de la première (?) tentative de mécanisation du travail menée par Marcus Aurelios Ammianos à Hierapolis deviennent effectivement des substituts efficaces, rentables à la force musculaire.

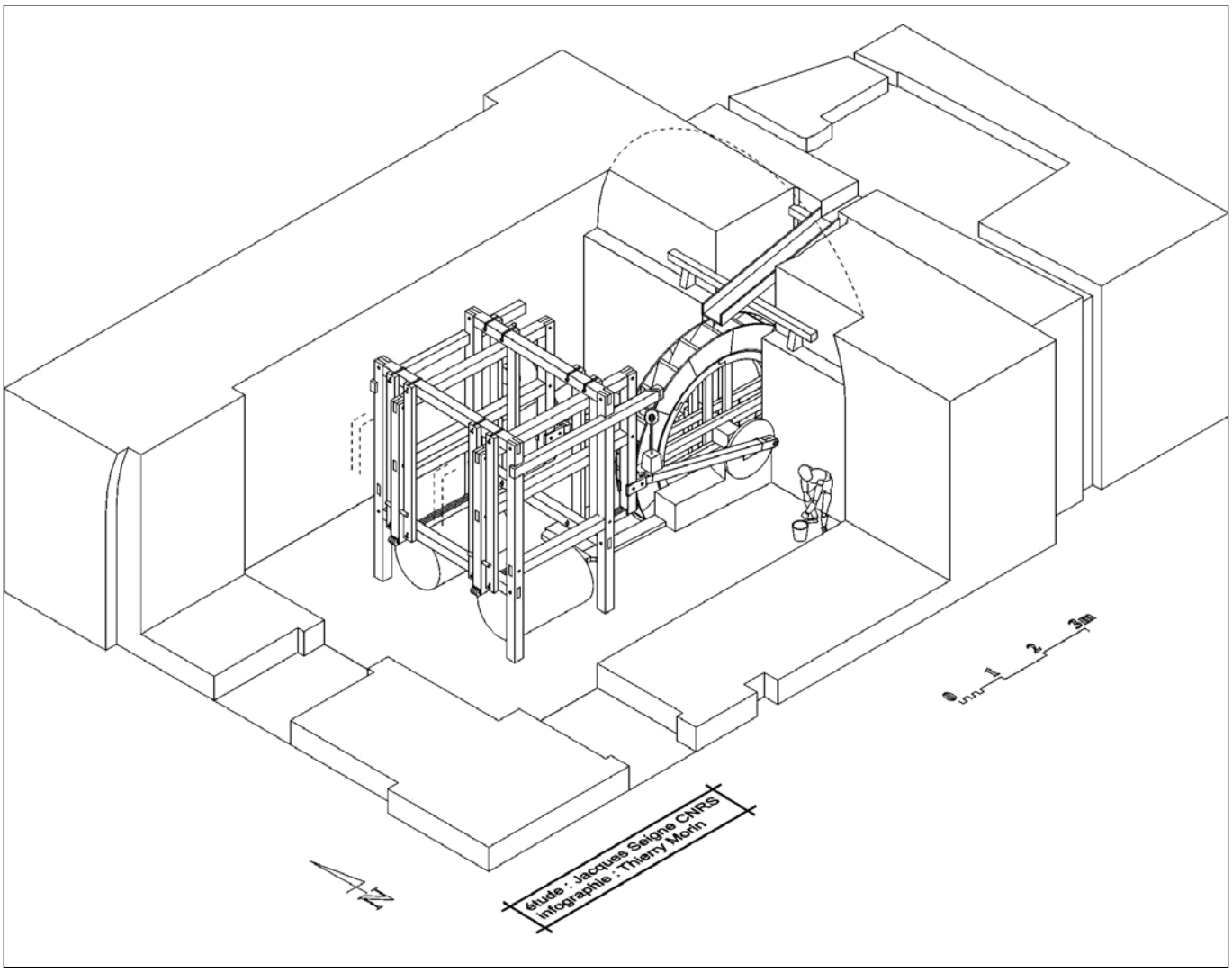
C- Du Concret au Théorique: Retour à la Restitution

En raison de problèmes financiers, la reconstitution matérielle de la machine de Jarash n'a pu atteindre tous les buts fixés. La remise en eau de l'installation a été ajournée et tous les tests de quantification reportés à des jours meilleurs. Toutefois, et en ne considérant que les aspects scientifiques de l'opération, le remontage matériel a été particulièrement instructif en permettant de compléter et/ou modifier la restitution théorique. Le bâti de guidage des scies était plus complexe et plus élaboré que celui proposé. Inversement, les plateaux porte excentriques ont été simplifiés et rendus plus solides par des assemblages à mi-bois. La visualisation de la taille réelle des pièces des structures, et donc la prise de conscience de leur réalité, de leur encombrement et de leur poids, fut également fondamentale. La présence de contrepoids pour équilibrer les bielles, celle de poulies pour faciliter le relevage des scies, la nécessité «d'organiser» le montage en raison de l'encombrement et du poids de chaque pièce de bois, … sont devenues évidentes. La reconstitution théorique fut donc progressivement modifiée, adaptée à ces contraintes matérielles pas ou mal prises en compte lors de la phase de travail théorique, de reconstitution virtuelle. La reconstitution matérielle ne s'est pas révélée un simple «plus» politico-touristique, mais un véritable élément de la réflexion globale ayant permis d'aboutir aujourd'hui à une restitution plus vraisemblable, moins «virtuelle» et plus proche de la réalité que fut la scierie hydraulique de Gerasa (FIG. 8).

Tous les problèmes n'ont cependant pas été résolus. Beaucoup reste encore à faire, à affiner, à quantifier, pour espérer pouvoir approcher encore un peu plus ce que fut le détail et le fonctionnement de cette extraordinaire réalisation artisanale. Il faudra pour cela poser de nouvelles questions (et en reposer certaines) et tester de nouveaux remontages.

Principes et Réalisations Pratiques: de l'idée à l'exploitation de l'idée

L'importance majeure des vestiges découverts à Ja-



8. Restitution axonométrique de la machine. DAO, Th. Morin.

rash est d'avoir apporté la preuve matérielle que le Proche-Orient, au moins, avait vu, dès l'époque romaine, les premières tentatives de mécanisation du travail. La mise en œuvre, en association avec un moulin hydraulique, de systèmes à bielles/manivelles permettant la transformation des mouvements, et ce dès les premiers siècles de notre ère, ne fait maintenant plus de doute.

Cependant, les «mécaniciens» antiques n'ayant pas réussi à développer certains éléments indispensables au fonctionnement correct de ces premières machines, ces premières tentatives ne furent que des demi-succès, révélant par là même qu'une bonne idée n'est rien sans une application correcte, qu'il y a toujours un monde entre le virtuel et le concret.

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Interpretation and Presentation of a Multi-Period Site The Case of Tall Ḥisbān

Introduction

Tall Ḥisbān is located on the edge of the highland plateau overlooking the northern tip of the Dead Sea and the Lower Jordan Valley. It is an 'open window' on the history of Jordan. After nearly half a century of excavation and research several structures have been exposed. Amongst the structures, there are:

- A Bronze Age cave system;
- An Iron Age dry moat and reservoir;
- A market plaza and remains of monumental buildings belonging to the Roman period;
- Two Byzantine churches with mosaic floors;
- An Umayyad / Abbasid house;
- A Mediaeval village;
- A Governor's palace with bath-house belonging to Mamluk period;
- A 19th century farmhouse.

Its presentation to the general public requires a clear restoration strategy. The stratigraphic sequence must be made clear. Where it is possible to determine the typology and size of the settlement in each occupational phase, these should be presented to generate a real understanding of the site's history. Since it is not possible to expose each phase of occupation, owing to the multi-period nature of the tall, several display panels could be used to present an image of the site in each period. At the same time one or more restored structures could provide a more physical representation. Strategically located soundings could provide a good indication of the dimensions and, possibly, an impression of the settlement during each phase along with its architecture and its socio-political context.

2006 Campaign of Restoration

In 2005 the excavators of Tall Ḥisbān were selected for funding through the U.S. Department of State's Ambassador's Fund for Cultural Preservation. A co-operative venture between Andrews University, the Department of Antiquities of Jordan and the former Municipality of Ḥisbān (now Directorate of Ḥisbān), the Tall Ḥisbān Restoration Project was conducted over one and a half years, with 24 weeks of fieldwork, and was executed in four phases.

The main aim of the project was the transformation of the site into an understandable place in the living history of the village rather than into a representation of its cultural heritage. Thus, the restoration should be part of the life of the site and not the beginning of its death. Archaeological sites are meaningful as places of life and not as merely as *mausolea* of particular interpretations.

With this in mind, the biggest challenge was the creation of a living collective memory to fill the widening gap between the scientific interpretation and public perception of the archaeological site.

The presence of a multi-cultural team on the site improved the quality of the work and the involvement of the local community. The investment of effort and funds had a tremendous impact on local public opinion and was effective in creating a sense of pride and ownership of the site on the part of the villagers. The exchange of technical knowledge and local traditions with the villagers helped close the gap between the scientists and general public.

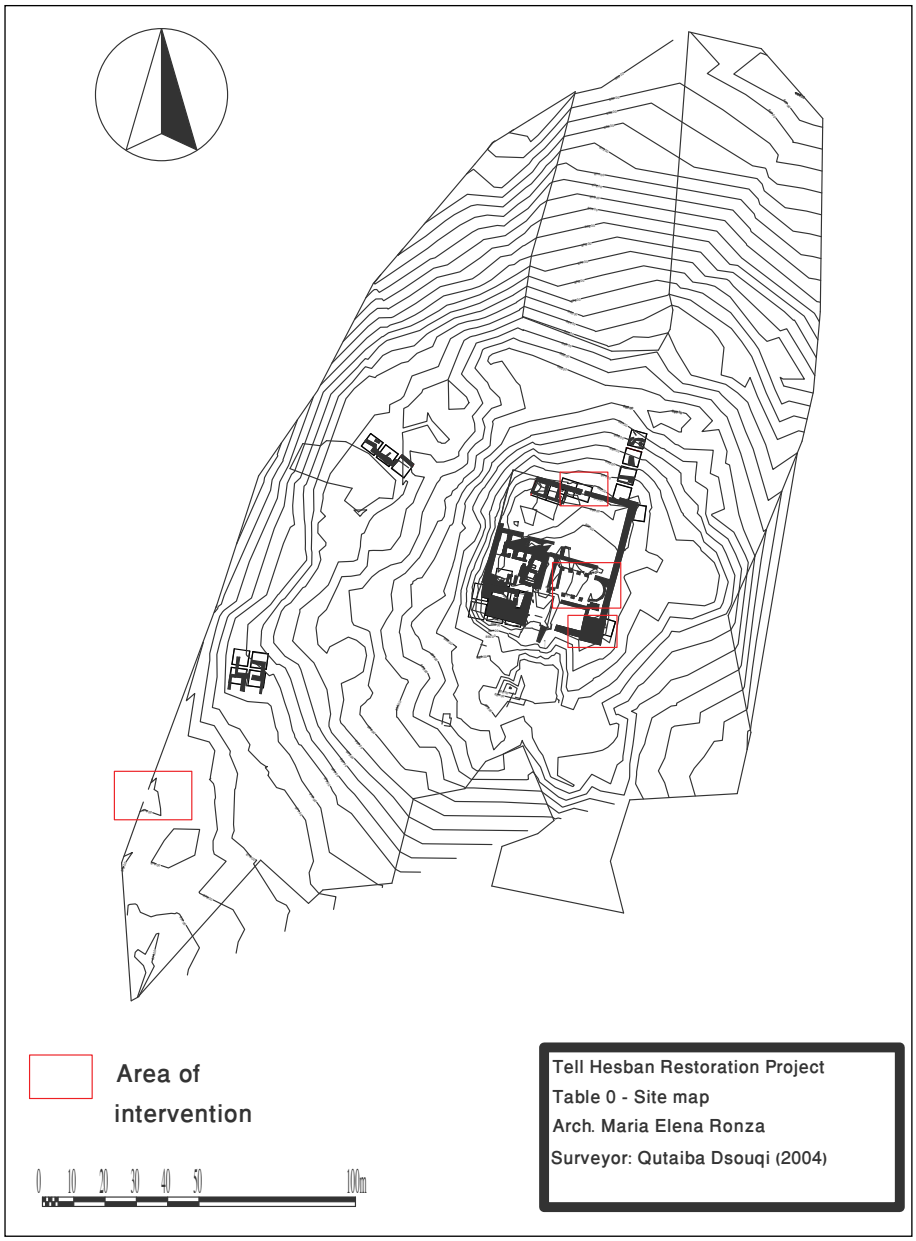
To that end, the Tall Ḥisbān Restoration Project was managed according to the following principles:

1) In the recruitment of professional staff and workers, preference was given to locals (wherever possible from Ḥisbān);
2) Supplies and building materials were purchased in the village;
3) Local craftsmen (metalwork, construction, carpentry etc.) were employed.

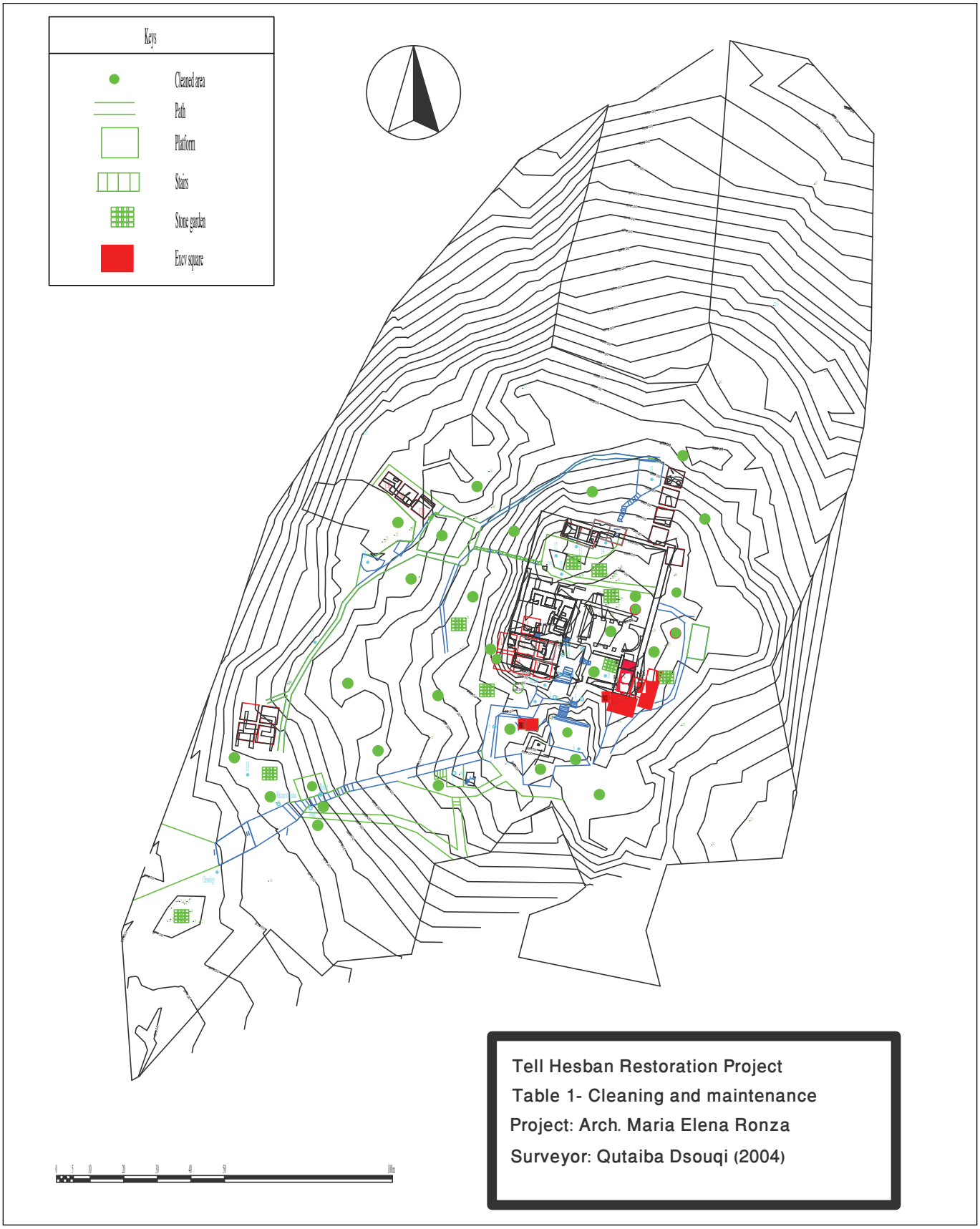
Additionally, an Andrews University team developed curricula in co-operation with local school-teachers for the schoolchildren of the village. Work on a virtual internet tour of the site is also in progress, with clear links to the information signs on the site, so that tourists and locals can obtain updated information on the progress of excavation and restoration, whilst enjoying a guided tour of the site on their mobile phones.

The 2006 campaign was the first season of restoration and consisted of a series of small interventions aimed at general site maintenance, the restoration of four previously excavated monuments and improvements to site accessibility.

Much work was done on general site maintenance (FIGS. 1-2). This included cleaning the entire site and improving a previously developed system of pathways and platforms designed to facilitate visitor circulation (FIGS. 3-5). A major objective of the project is the reintegration of the site in the daily life of the village: Tall Ḥisbān has to become a living, inviting, accessible and understandable place. To that end, maintenance activities during the Tall Ḥisbān Restoration Project also included the clean-up of existing stone gardens, the creation of new stone gardens and the repainting and, in some cases, rewriting of information signs around the site (FIG. 6). The stone gardens at Tall Ḥisbān



1. Site map.



2. Cleaning and maintenance.

3. A viewing platform.

are collections of architectural remains arranged in close proximity to each excavation square for the purpose of accurately documenting architectural elements removed during excavation and to aid in future restorations. The various information signs are strategically placed in order to explain the history and stratigraphy of the site.

Four monuments located on the summit of the tall were selected for restoration during this campaign:

- The so-called Roman “plaza”;
- The Byzantine church;

4. The area of the reservoir at the beginning of the season.

5. The area of the reservoir after cleaning.

6. The system of signage.

- The north gate and wall;
- The south-east tower.

The restoration strategy is to clear the excavated structures to clarify stratigraphic relationships, without giving preference to any specific phase over another. Reconstruction has been restricted to structures in imminent danger of collapse, or to cases where a scientific and well-documented historical reconstruction of the building is possible.

Roman 'Plaza'

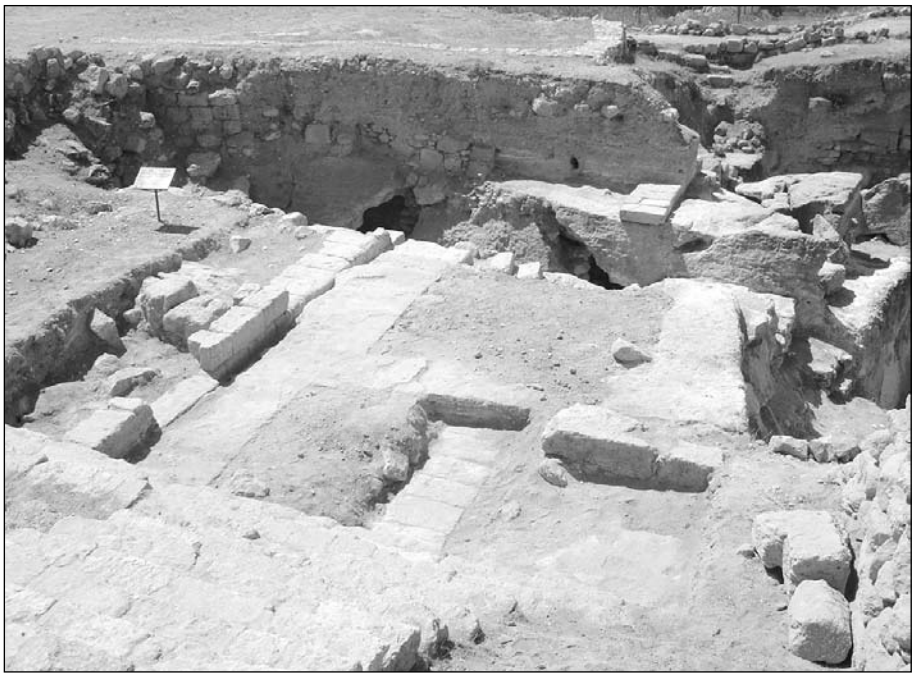
Excavation and Clearance

The Roman 'plaza' area was cleaned (FIGS. 7-8), exposing the Roman structures revealed in the 1968-1976 excavation seasons (Boraas and Horn 1969: 165-217; Boraas and Horn 1973: 35-71, 89-112; Boraas and Horn 1975: 133-167, 183-202; Boraas and Geraty 1976: 29-62, 79-99; Boraas and Geraty 1978: 31-49, 109-128).

In an unexcavated area measuring approximately 3 x 4m at the foot of the staircase leading to the acropolis, one square (R9.1) was opened. In terms of stratigraphy, Square R9.1 confirmed the results of the 1968-1976 excavation seasons with a series of *ḥuwwar* layers interspersed with layers of soil.

The exposed structures include a complex of rooms with a line of curb-stones running north-south on the east side, another line of north-south

7. The area of the Roman 'plaza'.



8. The Roman 'plaza' after clearance.

curb-stones and a paved area of *ḥuwwar* layers on the west side and a monumental stairway to the north.

Restorations

The re-exposed complex of structures from this area was in use for a long period of time — Strata 11-13 cover the period from ca. 130AD to 363AD — and consists of several architectural phases (Mitchel 1992: 75-124). According to Mitchel, this complex of rooms, with several transformations and restorations, was in use during the periods represented by Strata 12 and 13 (ca. 130-284AD), falling out of use in the period represented by Stratum 11 (ca. 284-363AD). The lines of curb-stones in squares D4 and B7 belong to Stratum 13 (ca. 130-193AD) and the monumental stairway belongs to Stratum 11 (ca. 284-363AD).

During this season, the team exposed and cleaned up part of the complex of rooms and paved area, in addition to the western line of curb-stones and its associated *ḥuwwar* layer. These curb-stones continue to the south. Two of the curb-stones, which were *in situ* in 2001, had collapsed sometime between 2001 and 2004. These were restored to their original positions.

The Byzantine Church

Introduction

The apse and eight bases of the main nave, along with the walls of the side naves were exposed during previous seasons of excavation (Boraas and Horn 1969: 142-165; Boraas and Horn 1973: 17-34; Boraas and Horn 1975: 117-132; Boraas and Geraty 1976: 17-28; Boraas and Geraty 1978: 19-30). Bases on the north side of the structure are *in situ*, whereas the bases on the south side were replaced during previous excavation seasons (FIG. 9). By comparing photographs from previous excavation seasons with a catalogue of architectural elements scattered within the site fence that was prepared during the 2001 and 2004 field seasons, our team was able to determine the position of two of the columns lying on the summit. One column was located on the second base (starting from the apse) of the north side and consists of three drums. The second column was located on the third base (again starting from the apse) of the south side. This column should have had at least a second drum, but this has not yet been identified.

Project and Execution

The bases on the south side of the church were moved into alignment with those on the north. The two columns whose positions had been identified were re-erected in their original locations, following the levelling of their bases (FIGS. 10-11). For safety reasons, a titanium bar (diameter 20mm x length 200mm) was inserted inside each column drum. A hole (diameter 20mm x depth 100mm)

9. The church before restoration.

10. Placing the second drum of the northern column.

was drilled in the centre of each drum in which to insert the titanium bar. Additionally, a lead sheet (2mm thick) was set on the base of each column to improve levelling.

Clearance of the Underground Structure North of the Church

An underground installation in the area north of the church, which was investigated during 1968-1973 seasons of excavation (Boraas and Horn 1969: 142-165; Boraas and Horn 1973: 17-34; Boraas and Horn 1975: 117-132; Boraas and Geraty 1976: 17-28; Boraas and Geraty 1978: 19-30), was cleared and the stones resulting from this operation were placed in stone gardens.

The North Wall and Gate

Introduction

The north wall is free standing with two / three courses preserved above ground on the west side and one / two courses preserved on the east side. The east jamb of the gate leans northward. Analysis of the building materials and architectural stratigraphy reveals limestone construction in at least four phases:

1) Includes the east corner, made of very large unshaped dry-laid boulders;
2) Includes the gate and first two courses of the

11. The church after intervention.

western part of the wall; this phase of the wall has a rubble core and is composed of dry-laid boulders;

3) Includes the third course of the western and the entire eastern part of the wall; this phase is a later restoration belonging to the Late Byzantine / Early Islamic period and is constructed in a chink and boulder style (including at least one re-used architectural element on the east side);

4) Includes an Abbasid house abutting the west wall; this phase is constructed in a chink and boulder style.

At the beginning of the season, several blocks belonging to the wall were found scattered downhill (FIGS. 12-15).

Project and Execution

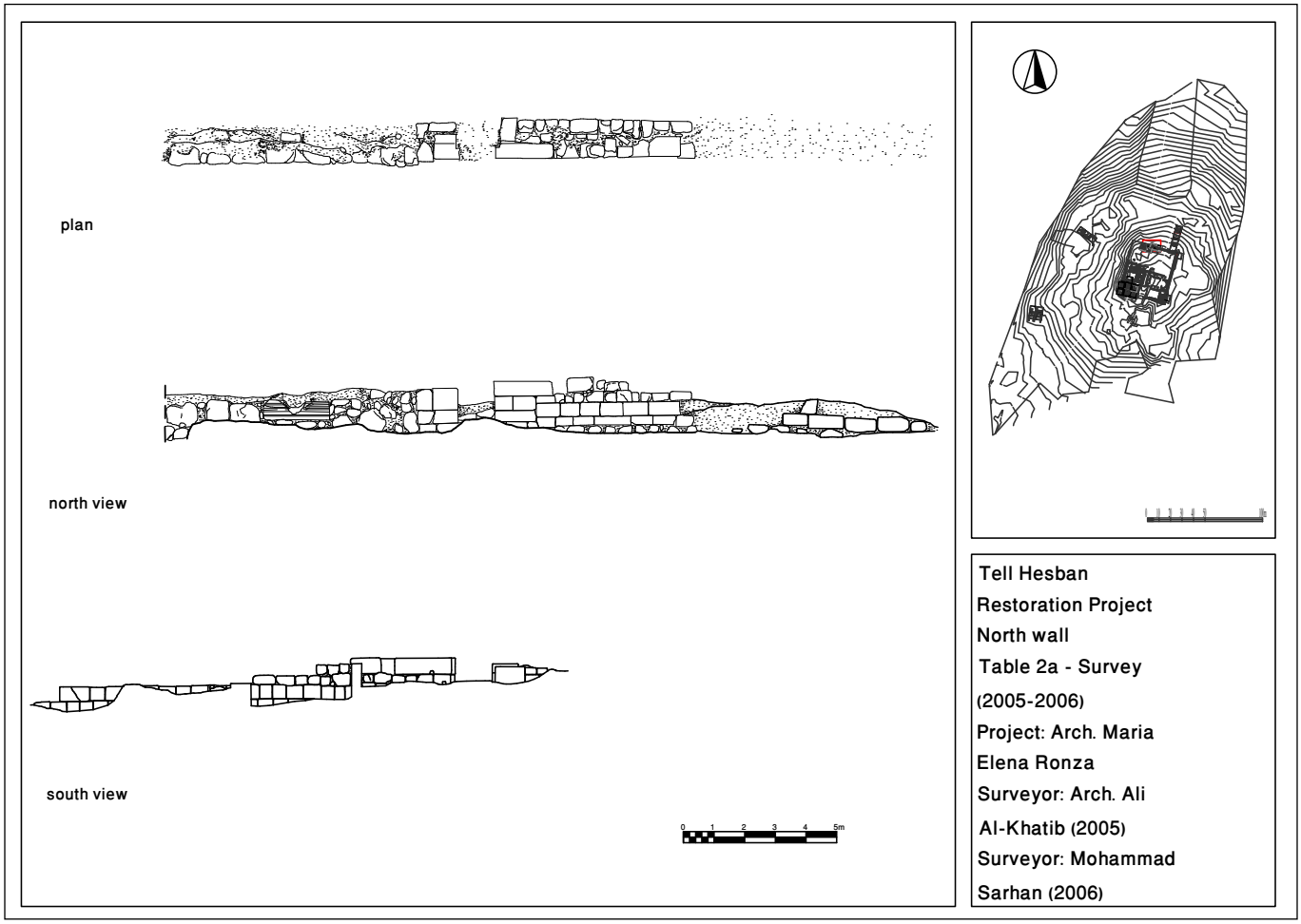
During the course of the Tall Ḥisbān Restoration Project, several operations were conducted towards the restoration of the north wall and gate. The standing structures of the wall and gate were cleaned, with all accumulated soil and grass removed. The eastern jamb was restored to its original position, with the inside faces of the blocks being cleaned and put back in place. A freshly cut block was placed to support the upper block of the western door-jamb, which was found downhill from the wall. The western part of the wall was restored, with the scattered blocks being placed back in their original positions wherever possible. In some cases, missing blocks were replaced with blocks that clearly belonged to the wall but whose original position was unknown. The year of intervention was carved into these blocks to distinguish them from the originals. The core of the wall was constructed of limestone pebbles and lime mortar. No original blocks were moved (FIG. 16).

The South-East Tower

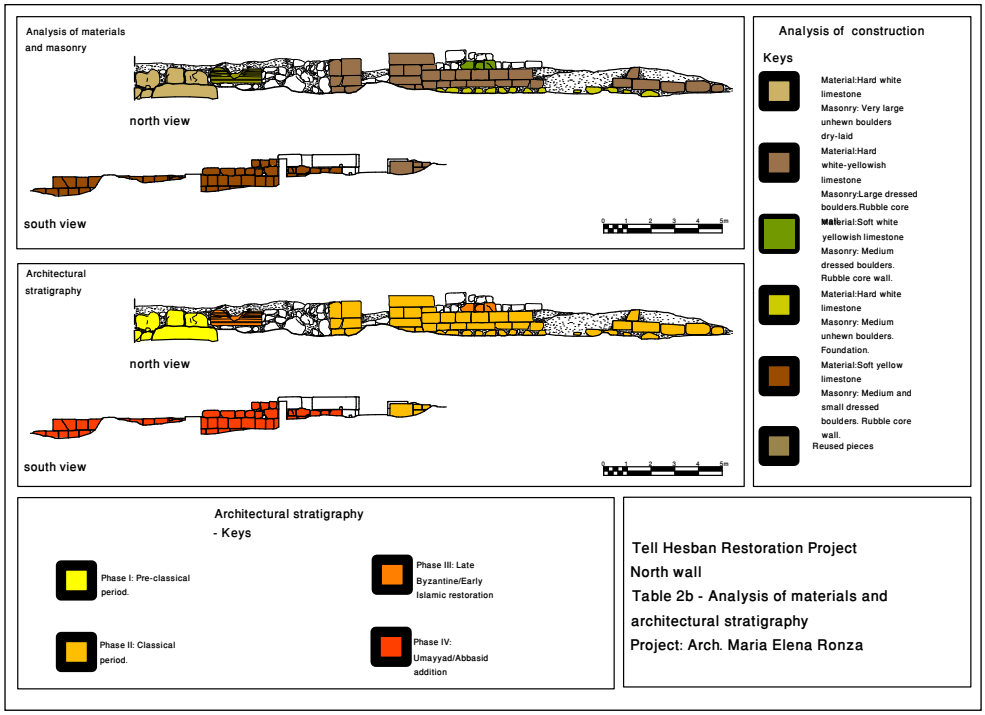
Introduction and Excavation

Prior to the start of this project, a small rectangular building measuring approximately 4 x 8m, consisting of one room with an entrance, was visible above ground. A modern restoration added two courses on the south and west walls of the tower. The blocks used did not belong to the original wall and some decorated architectural elements belonging to another building were used. Between 2004 and 2006, six squares (R1.1, R1.2, R1.3, R1.4, R1.5, and R1.6) were opened to investigate this structure's perimeter (FIGS. 17-19).

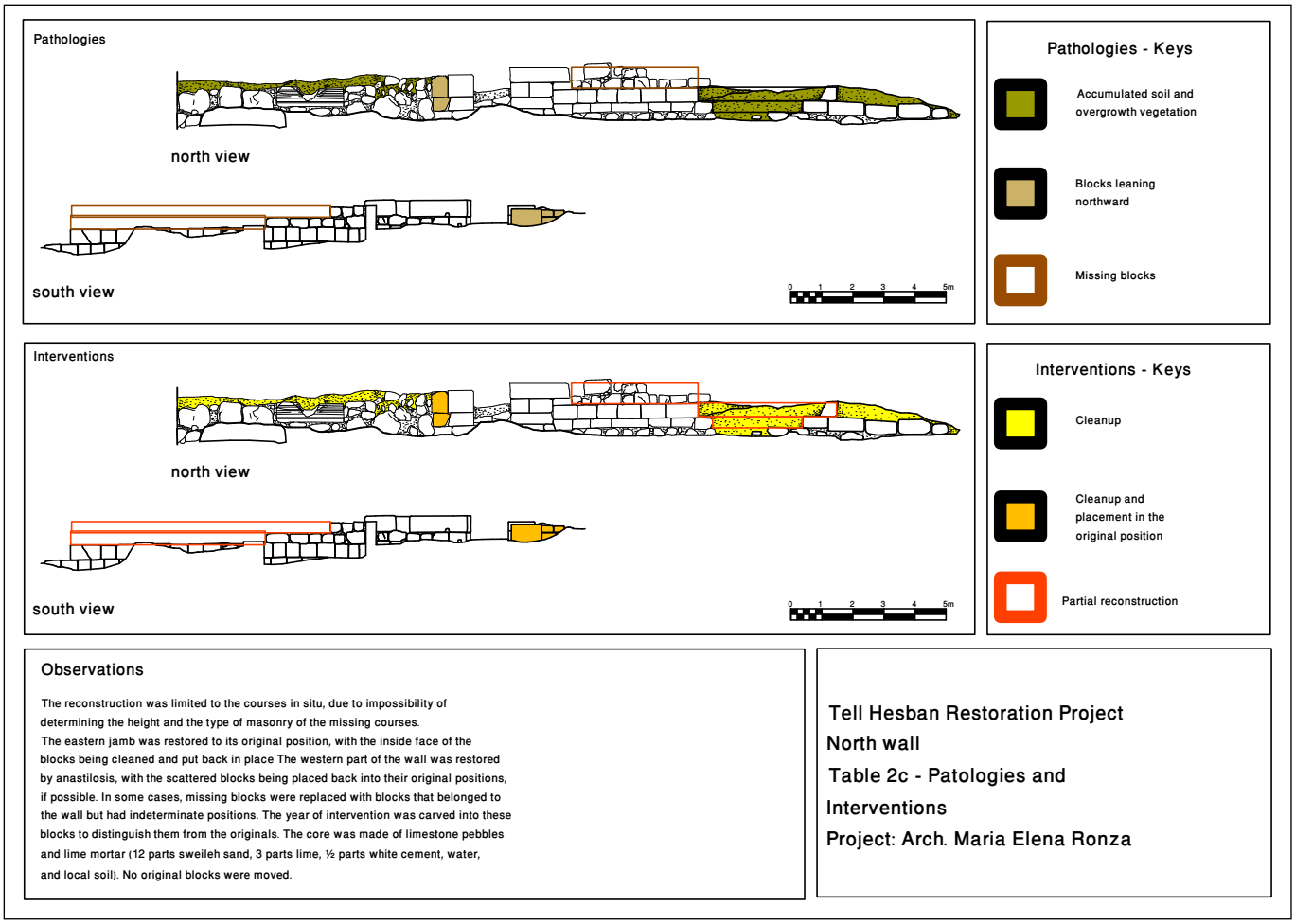
The rectangular room has a mosaic pavement made of large, white, irregular *tesserae* (FIGS. 20-22). It appears to be part of a larger structure that was in use over a long period of time. On the south side of this building, another structure was discovered abutting the tower. It is paved with a thin layer of beaten *ḥuwwar*. This building extends further to the east and its perimeter in this direction was not completely excavated. The walls are free- stand-



12. North gate – Survey.



13. North gate – Analysis.



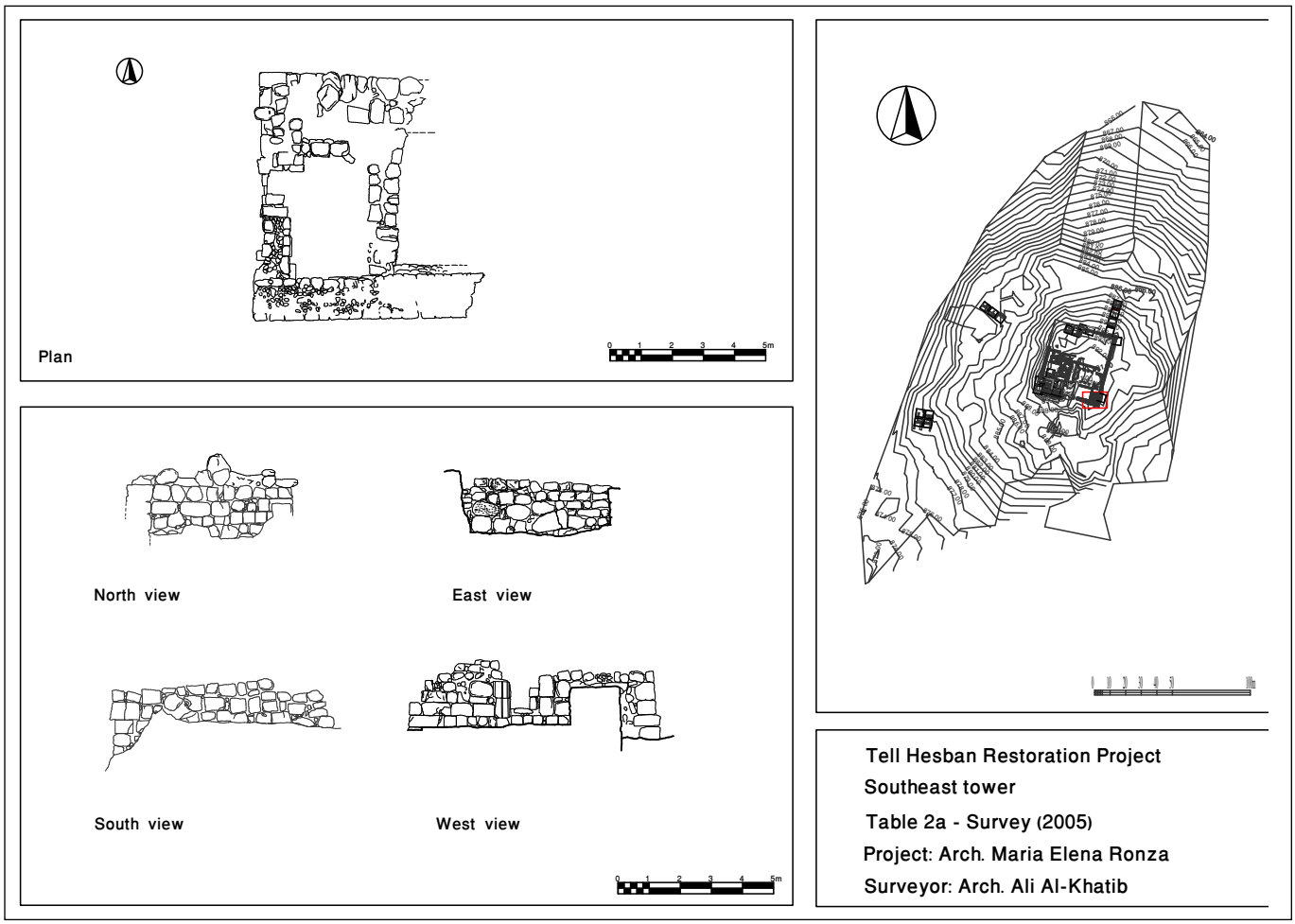
14. North gate – Interventions.

15. The North gate at the beginning of the season.

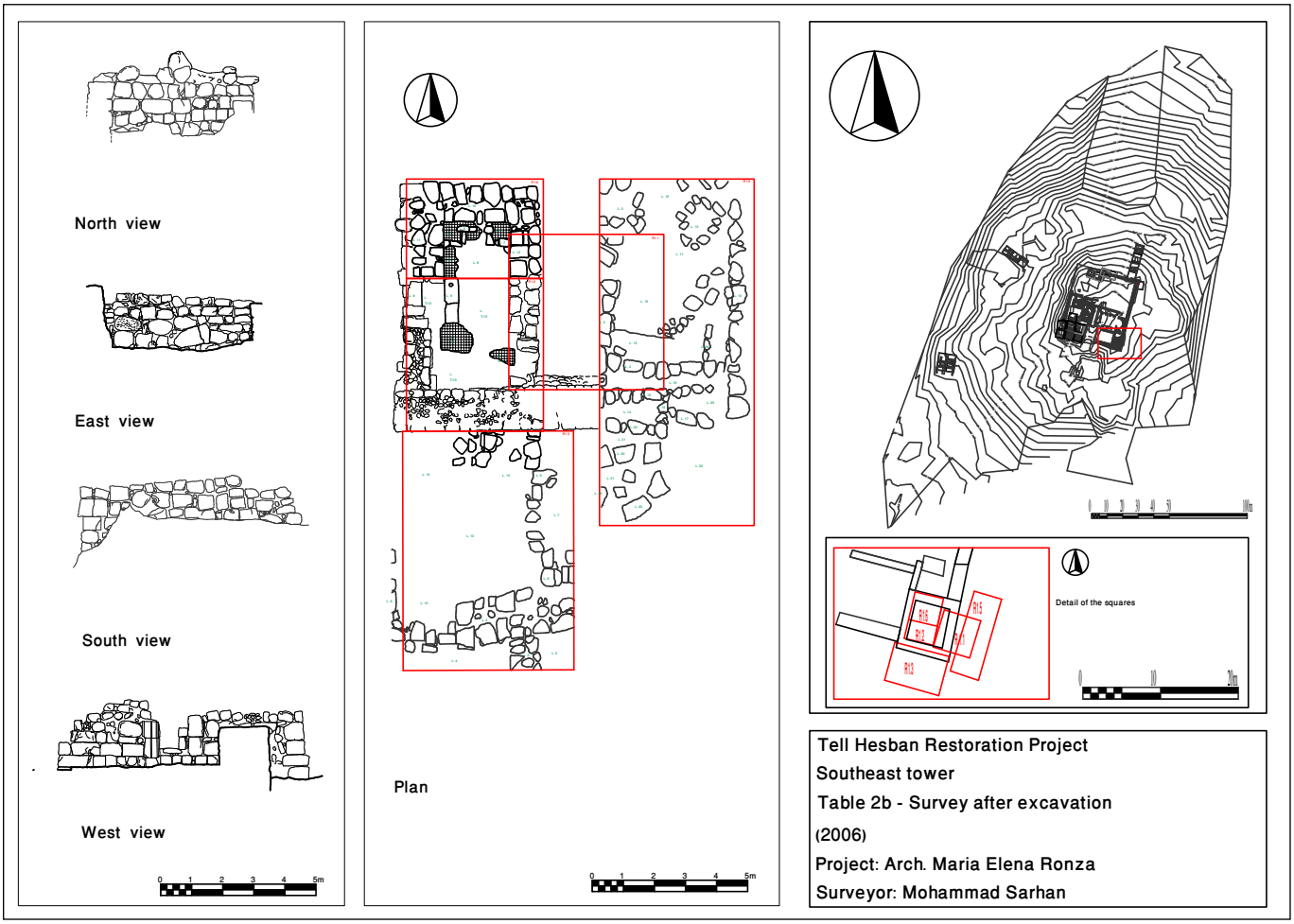
ing, preserved in good condition to a height of 3-4 courses and are constructed of limestone blocks in — mostly — boulder and chink construction. None of these walls are in imminent danger of collapse.

In analysing the architectural stratigraphy of this structure, we can make several assumptions about its use. The earlier part of the exposed structures is a square building (approximately 8m on one side)

16. The wall during the work.



17 . South-east tower – Survey.



18. South-east tower – Survey.

formed by the west and north walls of the 'tower' and loci R1.5,20 on the south and R1.5,10 on the east. The south-east and north-east corners of this structure have not been exposed. In this early phase, the structure was divided by wall R1.5, 2, which runs from north to south and had a barrel vaulted ceiling. In a later phase, the **size** of the room on the west side of wall R1.5,2 was minimised with the construction of walls R1.5,15, R1.5,16 and R1.5,17, while wall R1.5,4 was built to lend support to wall R1.5,15. In a subsequent phase, a room with mosaic pavement R1.2,16 and R1.6,9 occupied the internal area of the 'tower', extending to the east (FIGS. 23-25).

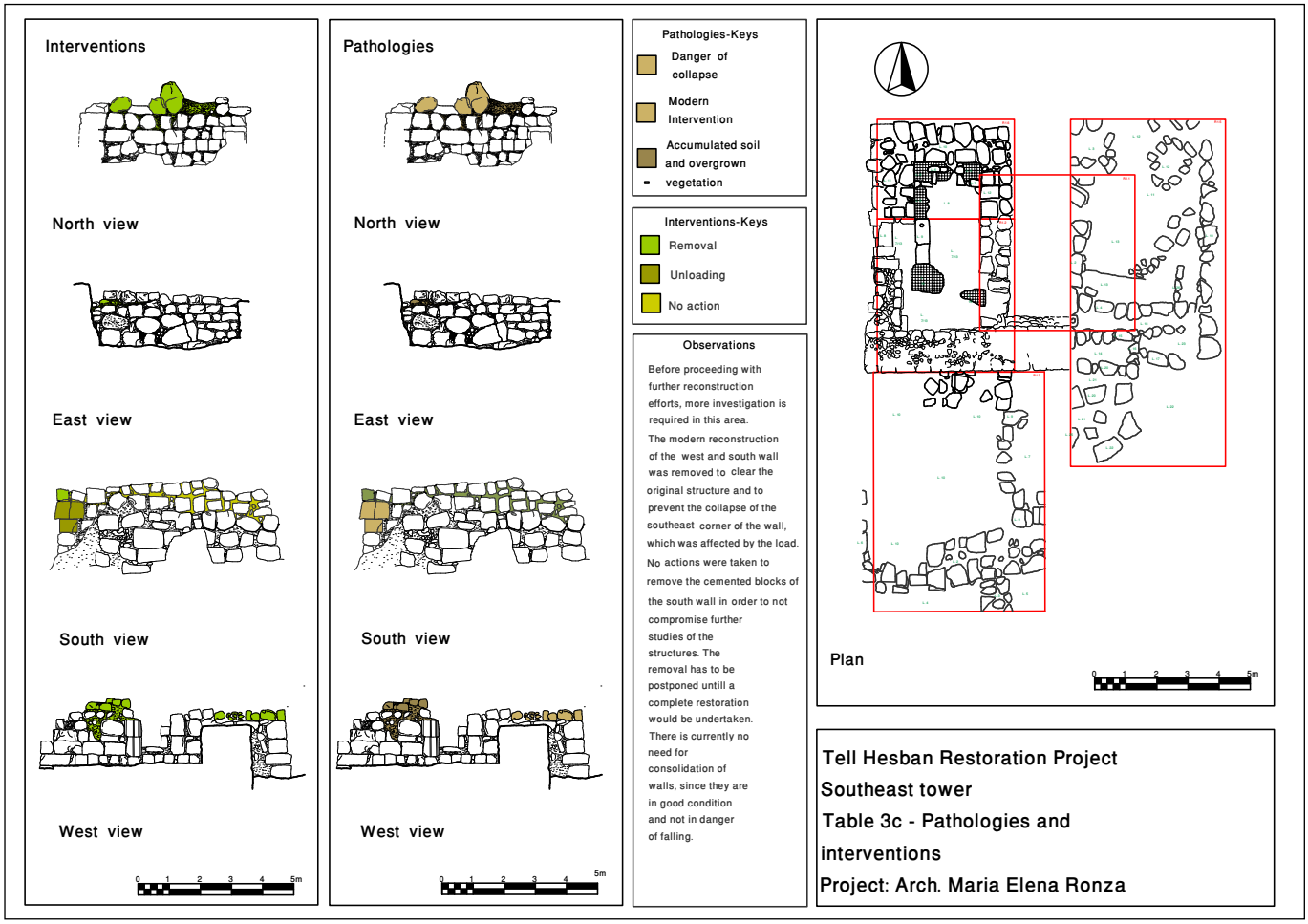
According to an initial analysis of the pottery, the pavement can be dated to the Umayyad / Abbasid period. The room with the mosaic floor was still in use during the Mamluk period. Subsequently, this room was divided by the eastern wall of the 'tower'; two bins were found lying above the mosaic pavement. The complex of walls on the south side of the 'tower' (square R1.3) is tentatively dated to the Ayyubid / Mamluk period (FIG. 26).

Project

Before proceeding with further reconstruction work, more archaeological investigation is required in this area. The recent reconstructions of the west and south walls were removed to expose the original structure; there is currently no need for consolidation of walls, which are in good condition and in no imminent danger of collapse (FIG. 27).

Parking Lot and Gate

In order to facilitate access by large tourist buses, the gate area was enlarged. Now located 5m east of the former gate, the new gate has access for both buses and, through a newly constructed smaller gate, pedestrians. The area to the north-east side was levelled to create a car park and several columns that were previously scattered across the summit area have been relocated and arranged at



19. South-east tower – Interventions.

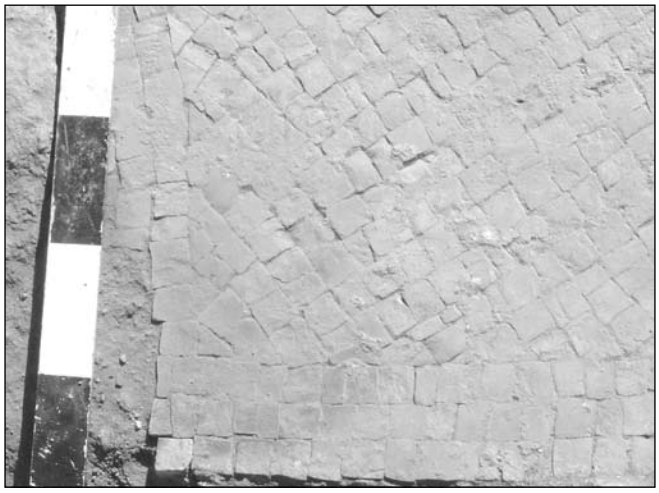
20. Collapse over the mosaic floor in square R1.2.

21. Mosaic floor in square R1.2.

the entrance of the site (FIGS. 28-29).

Construction of Guard-House and Toilet Facilities

Owing to episodes of vandalism that occurred in

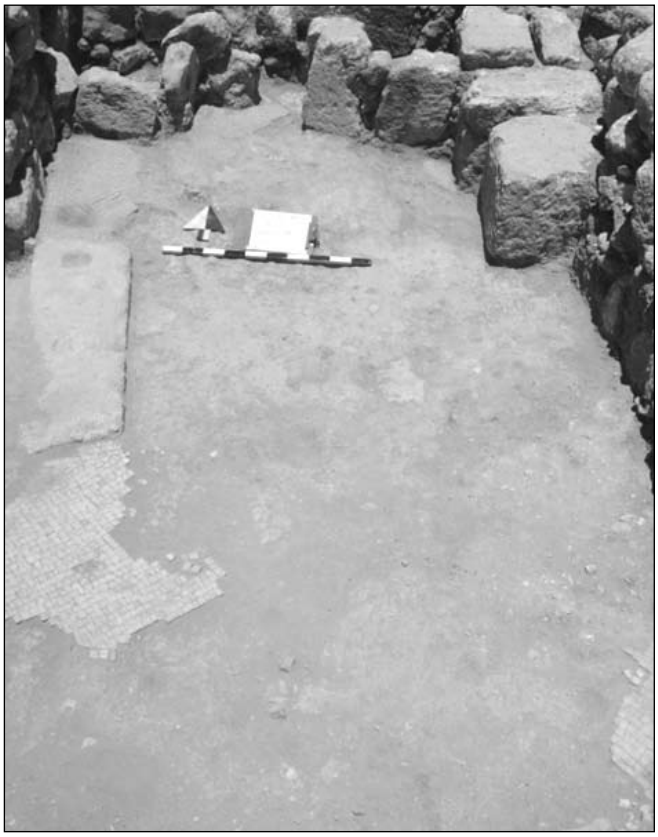


22. Detail of the mosaic floor.

23. The dump in square R1.5.

24. Square R1.5 – Locus 2 on the right, also Loci 10 and 21.

between the various phases of this project, it was deemed necessary to provide the site with a guard-house in order to prevent damage to the newly restored structures. This building was built on the north side of the gate, where no archaeological structures have been identified. The design of this building is simple, with neutral paint to ensure a low visual impact. The pillars of the gate are decorated with pottery sherds set in mortar and the Madaba Mosaic School provided a mosaic of the site's logo for the main entrance (FIG. 30).



25. General view of square R1.6 at the end of the season.

Conclusion and Acknowledgements

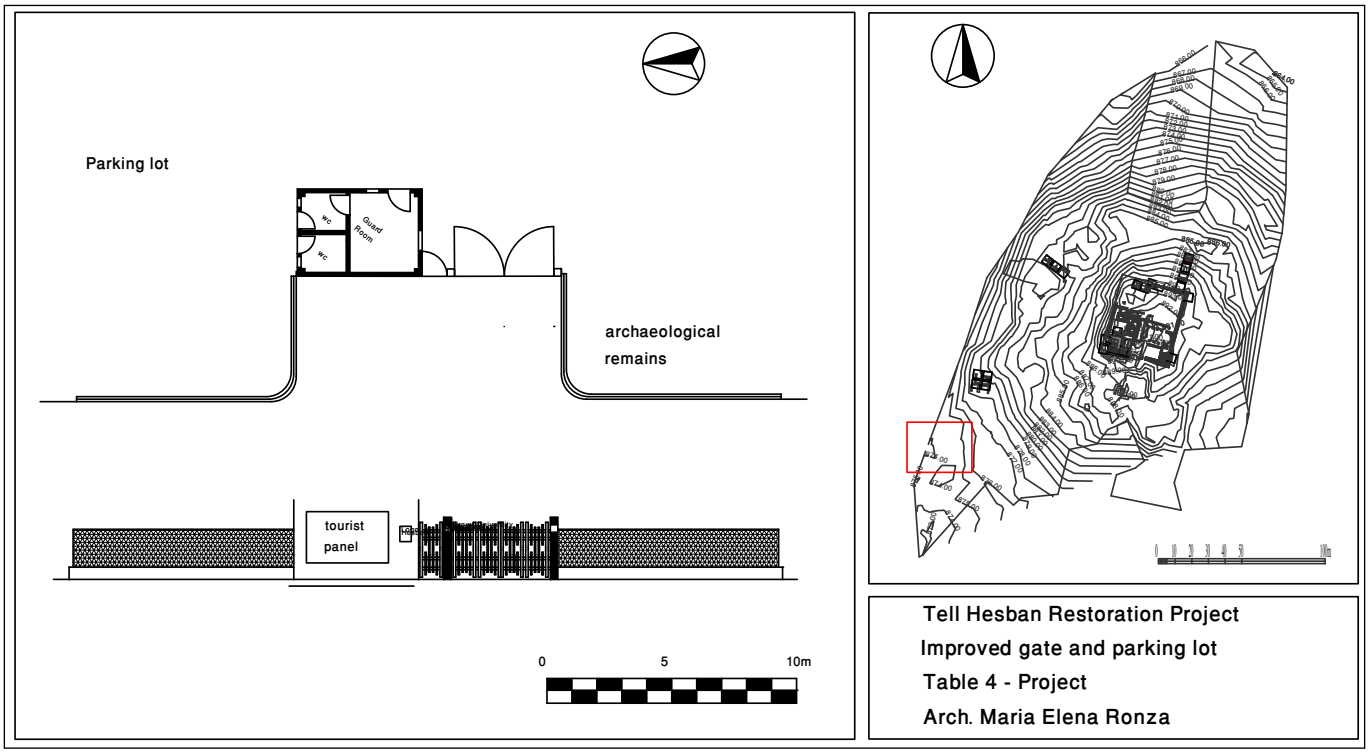
The Tall Ḥisbān Restoration Project was a fruitful co-operation of international, national and local institutions that has brought great benefits to the site, the economy of the village of Ḥisbān and to tourism in Jordan. I would take this opportunity to thank Dr Fawwaz al-Khraysheh and his staff, especially Mr Faisal Qudah, Miss Rula al-Qussous and Mr Ali al-Khayyat, for the great support given to the project.

We are now working towards a new project aimed at ensuring on-going maintenance and restoration at Tall Ḥisbān. This project would help to strengthen existing partnerships, such as those between the site's excavators, the Department of Antiquities of Jordan and the Municipality of Hisban, and would help to reduce the threat of vandalism owing to a more continuous presence on the site.

26. Square R1.3 with the south-east tower in the background.

27. The modern intervention on the south wall.

29. Column drums arranged at the entrance before the construction of the new gate.



28. Improved gate.

30. General view of the new gate.

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Roads, Travel, and Time 'Across Jordan' in Byzantine and Early Islamic Times

Not All Roads are Necessarily Roman

Crossing the land surface of Jordan today can be done with great speed and with little regard to topography. It was, of course, not always so, and even just a few decades ago getting from one place to another took time and, most importantly, no little knowledge of road networks and how the transport system worked. At what time of the year to travel, and by what means, were crucial issues with major economic and safety ramifications. Hence, an understanding of roads, ways of travel and travel times needed to journey from one place to another in antiquity are essential components in assessing the political, cultural and economic history of any age. This paper reviews and evaluates documentary and archaeological material detailing the major routes that crossed Jordan, the manner in which they were transversed, and the time required to travel over them in late antiquity and early Islamic times. In that post-Roman world, roadways took on new meaning as the needs of a Mediterranean empire gave way to wider, and more self-defining, social and economic requirements.

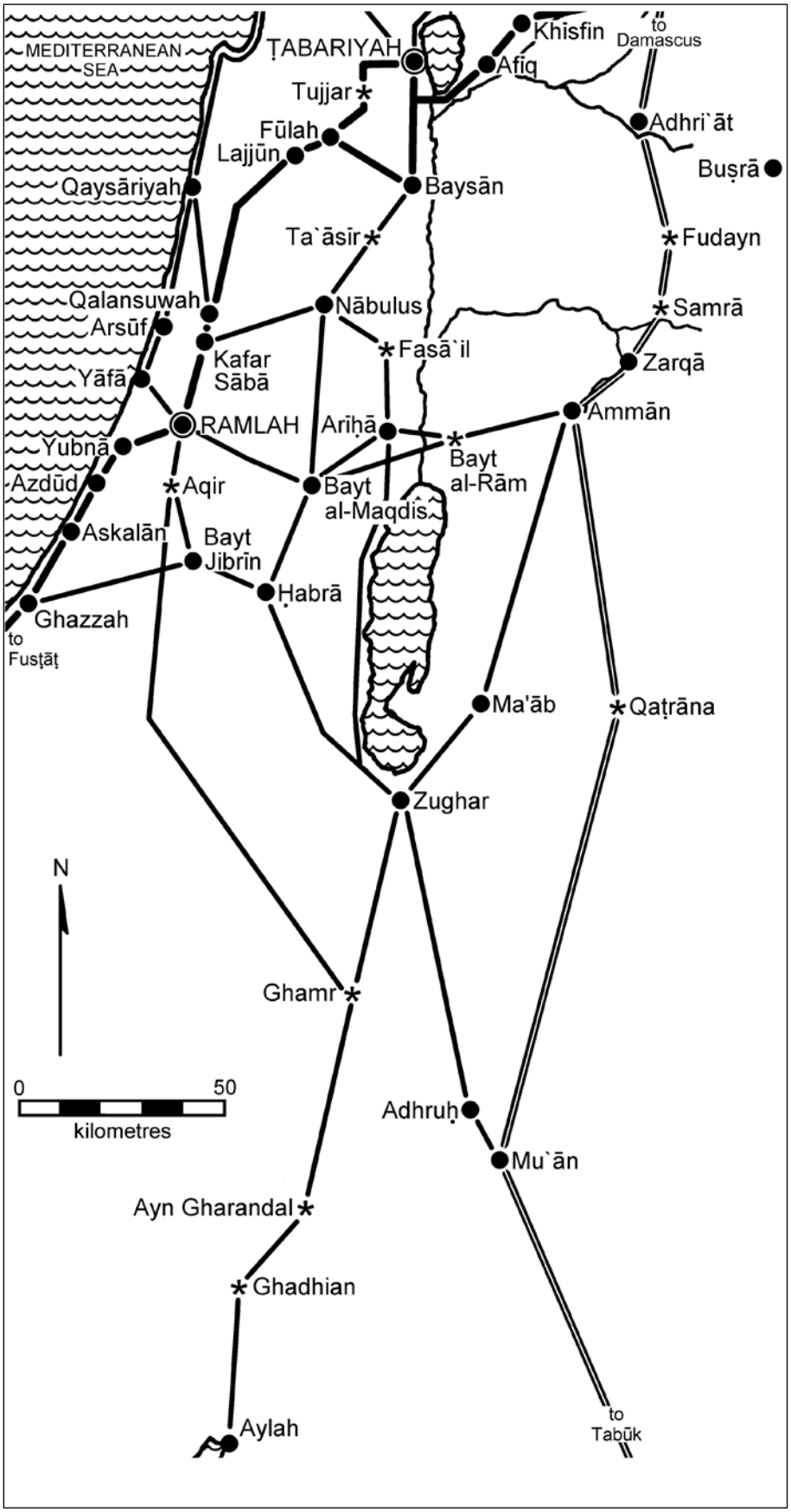
There are many ways of evaluating pre-modern transport networks, but my intentions are reasonably straightforward: to map out known, and some surmised, routes through Jordan in late antiquity and early Islamic times, and then to suggest the ways these routes were crossed and how long such journeys could take. To do this, both written and archaeological data will be used.

After the emperors Justinian (527-565) and Justin II (565-578), and hence beginning with the last quarter of the sixth century AD, Jordan and the whole of Bilād ash-Shām experienced significant cultural and settlement reorientations, reaching final expression in the provincial structure of early Islamic times (FIG. 1). In very general terms, inland areas experienced expansion while coastal regions lagged behind. In some cases urban centres faltered (although this should not be overstated), while many rural areas throve (Di Segni 1999). Accordingly, the bādiyah with it many villages, such as Umm al-Raṣāṣ or Riḥāb, blossomed while settlement profiles in many towns, such as Pella/Faḥl and Jarash, underwent significant changes (Walmsley 2007b). In the last quarter of the sixth century, we can see the unquestioned manifestation of the post-classical transformation of Jordan, but not in the manner of Hugh Kennedy's "*polis* to *madīnah*" hypothesis (H. Kennedy 1985), but rather a cultural levelling and a search for new, post-Roman, identities with a concomitant impact on the physical manifestation of towns.

What, then, of roads? In a time of shifting cultural boundaries, did the road network remain the same, or adapt to the changes, and what means of transportation were used to cross the landscape after the last quarter of the sixth century? We know remarkably little, but the changes of late antiquity suggest simply transposing the roman system onto this later time is just not satisfactory.

Ninth and tenth century AD written sources offer a useful outline of the important roads in Jordan during the first Islamic centuries (FIG. 2). Crucial, without doubt, was the road and pilgrimage route between Damascus and the Ḥijāz, which crossed Jordan from north to south (Muqaddasī (al-Maqdisī) 375/985 [1906]: 192.11-13, 249.13-250.7). The route, beginning in Damascus, passed through Adhri'āt (Dar'ā) to reach Zarqā', noted for its later Ayyubid fortlet (Qaṣr Shabīb) on a spur near the river (Petersen 1991), and thence to 'Ammān, a sub-governorate of the Jund Dimashq (Northedge 1992). Here pilgrims from Bayt al-Maqdis/al-Quds joined the pilgrimage.

1. The military provinces (*ajnād*) of early Islamic Bilād ash-Shām, the territorial extent of which was an outcome of cultural and settlement changes originating in late antiquity (Walmsley).



2. The main roads of Jordan and Palestine in the ninth and tenth centuries AD as recounted in the written sources (Walmsley).

South of ‘Ammān, the route would have passed by the Qur’anic site of Kahf ar-Raqīm, with two mosques (FIG. 3), and thereafter continued south to Ma‘ān via Qaṭrānah and onwards to the Ḥijāz. The Umayyads paid especial attention to this road as both an obligatory and prestigious act. Specifically, al-Walīd I built reservoirs and infirmaries on the Damascus–Makkah road (Ibn Faqīh (ed.) De Goeje, 290H/903AD [1885]: 106.17-20; al-Rashid 1980: 8), while later Hishām improved the water facilities on this route (al-Rashid 1980: 9, 11). In the fading years of the Umayyad caliphate, the hapless al-Walīd II commenced a grandiose palace to receive the pilgrimage, which was his habit: “At a staging-post called Zīzā’ [Jiza] he [al-Walīd] would ... feed for a period of three days people returning from the pilgrimage” (Ṭabari trans. Hillenbrand 1989: 103-4). Tragically, however, the project – Mushatta, with its south-facing façade depicting an earthly paradise (FIG. 4) – was abruptly terminated by his assassination (Walmsley 2007a: 100-4).

Travel times are harder to calculate. In al-Maqdisī, the distance from the Yarmūk to Ma‘ān was covered in five stages (*marḥalah*), but for C.M Doughty the nineteenth-century trip was longer: two days to ‘Ammān, two to Qaṭrānah, one long 12-hour day to Ḥasā, and two further days to Ma‘ān – in all, seven gruelling days (Doughty 1883 [1921]: 4-18). It seems that al-Maqdisī’s stages did not represent actual travelling times, but spaced route destinations. Hence, Doughty’s trip would better represent actual travel times: that is, the minimum of a week from the Yarmūk to Ma‘ān, without a rest day.

Confirmation can be sought in the journey of Gertrude Bell from Mādabā to Wādī Mūsā in 1900, which involved two days on the mountain road to Karak and another two following the Roman road to Wādī Mūsā. Going back via Tuwwānah, the journey was spread over three days, in part due to the excessive heat (Bell 1927: 72-76).

The ninth-century AD geographical works, specifically Ibn Khurdadhbih and Qudāmah, preserve only a bare outline of the itinerary between Damascus and Makkah. The lack of absolute distances and some uncertainty over the itinerary in these works suggests that a centralized knowledge of the pilgrimage route did not match that kept for the post-roads; thus to travel on the pilgrimage road in Bilād ash-Shām, local knowledge was essential. Perhaps this situation arose after the overthrow of the Umayyads, for only with al-Maqdisī is more information provided, as he appears to have had access to sources familiar with the Umayyad system.

Al-Maqdisī stresses the pivotal role played by ‘Ammān on the route during the Umayyad Period, when this town was linked to Makkah via the oasis of Taymā’ by three postal routes (Muqaddasī (al-Maqdisī) 375/985 [1906]: 249.13–250.7). In addition to the western pilgrimage route via Ma‘ān already described, a second (middle) route passed through al-‘Auniyid, modern al-‘Uwaynid with a

3. The two mosques of Kahf ar-Raqīm, the upper (foreground) of probable Umayyad date (Walmsley).

4. Failed grandeur: the unfinished depiction of an earthly paradise on the Mushatta façade (Walmsley).

ruined fort and wadi tower, reaching Taymā’ after a long 13½ stages (D.L. Kennedy 1982: 113-28, with references; Musil 1927: 517-18). The third, easternmost, route passed by way of Wubayr, modern Bāyir, once with remains of a castle and wells, reaching Taymā’ after 12 stages (Stein, in D.L. Kennedy 1982: 255-58; King, Lenzen and Rollefson 1983: 398-99; Musil 1927: 324, 517-18). ‘Ammān’s central role in facilitating communications between Damascus and the Ḥijāz, along with other important functions, accounts for the construction of an impressive Islamic citadel complex above the classical town (FIG. 5). However, the rise of the Abbasid dynasty resulted in a greater importance for the Darb Zubaydah from Kūfah (al-Rashid 1980), and the Damascus-Ḥijāz route reverted to regional, rather than imperial, importance only, with emphasis on the Ma‘ān route. Nevertheless, under the first Abbasid caliph, Abū al-‘Abbās as-Saffāḥ (132-136H/749-75AD), the route was repaired as revealed in an important milestone dated to 135H/752AD found near al-Mafraq, the intermediary stop between Adhri‘āt, the point of measurement inscribed on the milestone, and al-Zarqā’. It is most unlikely this is the only milestone on the route through Jordan.

Tenth century AD sources pinpoint a network of roads that passed through the trading town of Zughar at the southeast corner of the Dead Sea in the Wādī ‘Arabah (FIG. 2). A route south of Zughar led to Aylah probably via Ghamr (with a road to al-Ramlah), ‘Ayn Gharandal and Ghadhian in the

5. An obligatory, prestigious and pragmatic act: embellishment of the pilgrimage road from Damascus to the Holy Cities of the Ḥijāz with the citadel palace of ‘Ammān (Walmsley).

Wādī ‘Arabah, a journey that extended over four stages (=days?) (Muqaddasī (al-Maqdisī) 375/985 [1906]: 249.12). Roads also led from Zughar to Ḥabrā and Arīḥā, and thence to points beyond such as Jerusalem and Nābulus. Another road from Zughar passed through Moab to ‘Ammān, through which town Damascus was joined to the trading markets of Zughar and Aylah. In addition to the Ḥajj (above), this connection further explains the ongoing importance of ‘Ammān, Adhri‘āt and al-Zarqā’ in the third-fourth/ninth-tenth centuries. In total, the trip from Aylah to the Yarmūk extended over eight stages (‘Aqabah – Zughar: 4 stages; Zughar – Maāb, 1 stage; Maāb – ‘Ammān, 1 stage; ‘Ammān – Adhri‘āt, 2 stages). This trip would have taken at least eight days, the ascent from Zughar to Maāb being the most rigorous. Additionally, Ibn Ḥawqal mentions a road from Zughar to the mountains of ash-Sharāh, presumably reaching Udhruḥ and, ultimately, Ma‘ān (Ibn Ḥawqal (Abū al-Qāsim b. ‘Alī al-Nasībī) ed. Kramers 1938 [378H/988AD]: 186.6-7, 186.21-22). Al-Maqdisī overlooks this route, perhaps a little bit surprising considering the close ties between these two centres and Zughar. However, it was Jarrāḥid territory and difficult to cross. Al-Maqdisī also presents a blank map for north Jordan – located in this period in a separate *jund* (that of al-Urdunn; FIG. 1) – but the gap may

be knowledge-based, lying outside of al-Maqdisī's experience perhaps due to political factors and especially the impact of the "turbulent" 'Awf tribe that dominated that area in Fatimid times (Sourdel 1960). Therefore, we can expect a road northwards from 'Ammān to Jarash and from there to Pella and Baysān/Ṭabariyyah or to Irbid/Bayt Rās and both Abil and Jadar (Umm Qays); certainly these routes operated in Umayyad times and probably later, but the roads are not mentioned by the sources.

Not to be ignored for a number of reasons is the 'Ammān – Jerusalem road. According to al-Maqdisī there were two routes that connected these important centres: one in three sections through Arīḥā and Bayt al-Rām, perhaps via Ḥisbān; and the other more a direct approach covered in two stages, probably by way of the Wādī Nā'ūr or Salṭ and with one stop at the Jordan River. The Jericho – Jerusalem leg has produced important milestones from the time of 'Abd al-Malik with distances measured from Damascus, and which confirm the early Islamic mile of 2.285kms (Elad 1999; Sharon 1997: 104-8). Early in the twentieth century, Gertrude Bell travelled the road between Jerusalem and Salṭ in two short days (Bell 1907: 4-18). Leaving Jerusalem at nine in the morning, Bell lunched at the khān associated with the parable of the Good Samaritan before camping for the night at the Jordan crossing. Next morning, after paying a toll at the Jordan River bridge, Bell had a choice of three destinations: Salṭ, Ḥisbān or Mādabā. Taking the Salṭ road, she arrived there at four in the afternoon. On another occasion, in 1900, Bell travelled to Mādabā via Jericho, Livias/Bayt al-Rām and Wādī Ḥisbān in three days, but two of those were just over half days (Bell 1927: vol. 1, 67-70).

How were roads travelled in the seventh – tenth centuries AD? The information is equally as sparse. The first point to be considered is the condition of roads. We know that the Darb Zubaydah between 'Iraq and the Ḥijāz was essentially a cleared track, suitable for foot traffic, as with many Roman-period routes in Bilād ash-Shām. Two written sources offer a glimpse of road traffic in early Islamic times. In about 685AD, the administrator of Nessana/Nastan within the district (*kūrah*) of Ghazzah, which formed part of the *Jund Filastīn*, received a demand from a superior (probably based in Ghazzah) to provide two camels and two drovers, with pack saddles and straps, to serve upon the Caesarea – Scythopolis (Qaysāriyah – Baysān) road (Kraemer 1958: 209-11, document 74). Secondly, in the late seventh century, as recounted by Arculf the pilgrim, pinewood for fuel was carried to Jerusalem by camels, for wagons and carts were rarely seen (Wilkinson 1977: 106). Clearly, pack animals (camels and mules) were the main means of transport (FIG. 6), while wagons must have been an exception, a system almost certainly inherited from late antiquity.

While patchy, the late antique and early Islamic material on travel across Jordan is generally consistent: it took at least a week (more from 'Aqabah) to transverse Jordan from north to south and a couple of days to cross the Jordan rift valley. Not surprisingly, then, in this period the material culture of the south stemmed from a clearly different tradition than that in the north, but with demonstrably east – west connections as well. As described elsewhere (Walmsley 2000), most economic networks as observed in the material culture operated effectively within a radius of 100km, or three days travel time. That allowed a journey to be completed within a maximum six-day period, which would ensure the traveller could return home in time for the holy day of the week. This arrangement reveals the practical compatibility between religion and commerce that characterised the late antique and early Islamic periods in Bilād ash-Shām.

Acknowledgement
This paper was written while I had the good fortune to be a 2006-2007 Fellow in Byzantine Studies at Dumbarton Oaks, Washington DC.

6. Camels as beasts of burden: a working camel on the vault of the reception hall of Quṣayr 'Amra (Walmsley).

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Literary and Archaeological Evidence of Trade and Travel on the Karak Plateau

In a recent article in the *Journal of Near Eastern Studies*, Nadav Na'aman (2007) draws attention to a variety of cultural topics reflected in the "Suhu Inscriptions," a large collection of eighth century BC texts from the Middle Euphrates region. For example, one text describes a governor's raid on a large Arabian caravan (with 200 camels) that was trying to avoid payment of fees as it bypassed Suhu's border. This inscription mentions the Arab tribes engaged in trade and the products they transported – e.g., blue-purple wool, iron, and possibly alabaster. Since some of the goods seized in this raid did not originate in the Arabian peninsula, the caravaneers must have acquired them en route to central Mesopotamia. Na'aman suggests that "caravans would travel along buying and selling goods, thus varying their merchandise". Na'aman also points out that Arabian caravans reached Palestine and Egypt by way of the Beersheba Valley. In general terms, this explains how a cylinder seal from Suhu, dedicated by Rimut-ilani to the deity Apla-Adad, ended up at Tel Beersheba in the Negev, though we have no way of knowing by what roundabout route the seal reached this particular site (2007: 111-112).

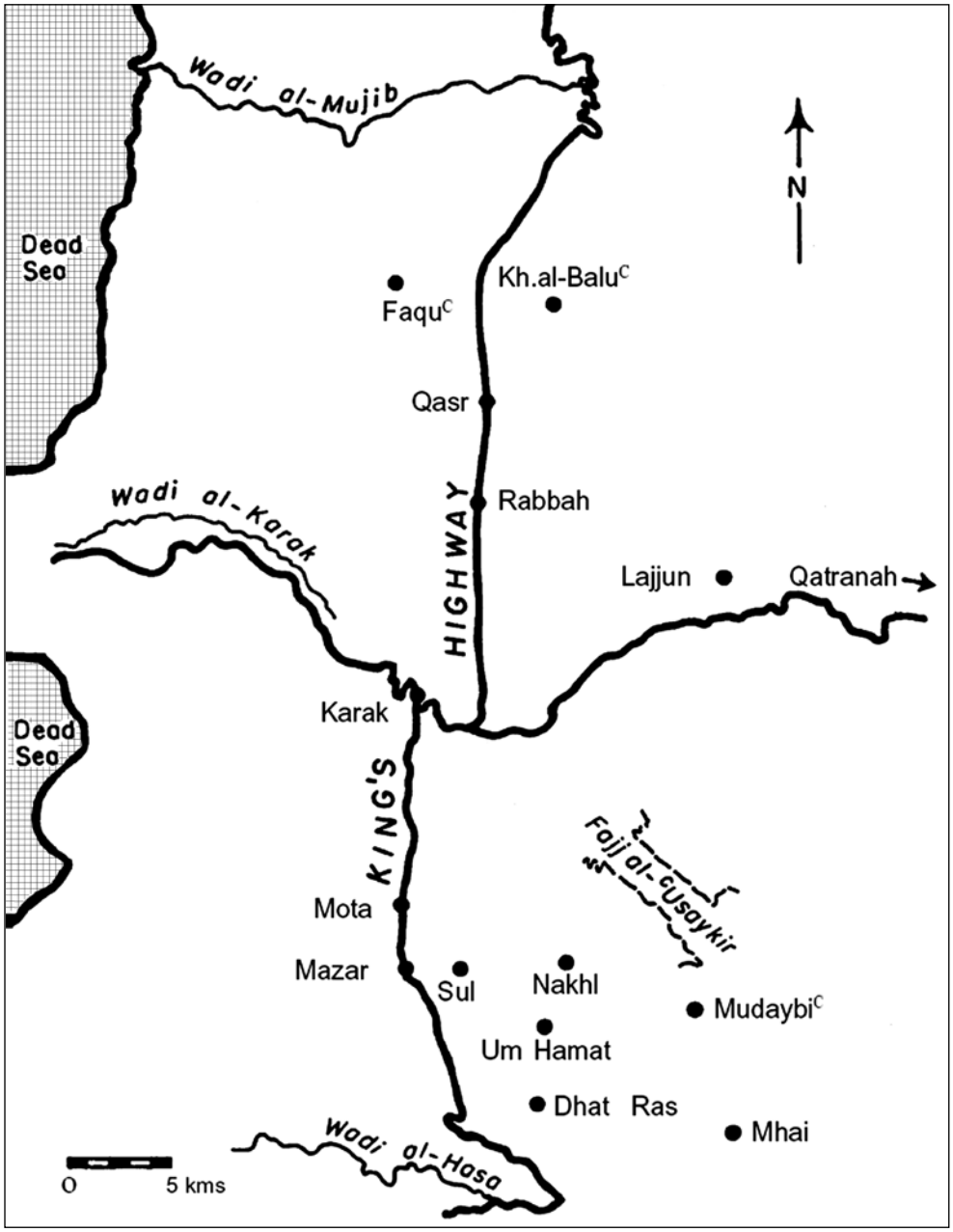
Na'aman's reference to this seal illustrates the sometimes convoluted nature of trade routes and the mixed nature of caravan inventories, and points to one of the most fascinating – and often frustrating – areas of research into ancient cultures (viz, trades items and transport routes). In this presentation, I mention several recent studies on economic theory and trade as it applied to Syria-Palestine in particular and consider ways by which we can use this approach to understand developments in the mechanisms of trade on central Jordan's Karak plateau (FIG. 1) – insofar as the routes of trade and travel are known and reports on excavated sites provide the necessary data. [For a preliminary study of raw materials and artifacts from Khirbat al-Muḍaybīʿ that reflect long-distance trade, see my forthcoming essay in the Fawzi Zayadine Festschrift.]

To begin with, we must distinguish between influences (direct or indirect) that flowed between regions and settlements and the actual objects of trade, either raw materials or finished products. For the Karak region, for instance, it is easy to compile a long list of architectural features that reflect influences from beyond the plateau – e.g., Khirbat at-Tannūr (Nabataean temple), al-Lajjūn (Roman legionary camp), al-Karak (castle from the Crusader period with more recent modifications), and Khirbat al-Muḍaybī‘ (fortress plan and monumental gateway, with fine proto-Ionic/volute capitals). Of course, pottery styles, weapons and tools, coins, and seals, and other artifactual evidence also reflect international – or interregional – influences and trade. Such influences and exchange reflect various economic, political, and military relationships, but – given the scarcity of documentary information on Karak – it is extremely difficult, if not impossible, to identify the specific means by which ideas were exchanged (i.e., to show how parallels from outside Karak were transmitted).

As mentioned above, we must also distinguish between interregional and intraregional transport and trade – i.e., the local trade of food, livestock, raw materials, and implements within the Karak region (settlement to settlement by means of local routes). While such intraregional exchange was vital, this study focuses on interregional connections, primarily long-distance trade. The reconstruction of a regional economic network – its development and changes over time – calls for a consideration of many factors (e.g., the role of Assyrian expansion and control in the economic development of neighboring states). As noted above, the scarcity of

written texts means that much remains speculative and exploratory – at least for the time being, but the subject deserves attention and cries out for comparison with neighboring regions. As for now, few scholars have examined the topic.

In 1973, T. W. Beale noted that model-building required for a regional study quickly moves beyond the process of documenting examples of trade, though that is where the study begins. Ultimately, our goal is to understand the system by asking pivotal questions about the actual mechanisms involved in a large exchange network. For example, Colin Renfrew's 1975 analysis of the integration and communication required in large-scale trade networks identified ten different systems by which objects pass from one source to another, an approach that has value for studying the Middle East over its long history – viz. (1) direct access to commodities; (2) home-base reciprocity; (3) boundary reciprocity; (4) down-the-line trade; (5) central-place redistribution; (6) central-place exchange; (7) middleman trading; (8) emissary trading; (9) colonial enclave; and (10) port of trade. This detailed "trade mechanics" perspective focuses on the available routes by which materials and products moved from one place to another, the number of



1. Map of the Karak Plateau.

times these items changed hands along the way, and the various sociopolitical circumstances and relationships that facilitated or hindered these exchanges.

For the study of trade within and beyond the Karak plateau, Beale's simple typology of trade networks remains especially useful, viz. (1) trickle trade (small quantities of materials and/or products move from distant sources and exchange hands numerous times over short distances); (2) local redistributive trade (goods move to the center of a sociopolitical network and then move out again); (3) regional organized trade (goods move directly from regional distribution centers over medium distances along natural trade routes); and (4) long-distance organized trade (a genuine "internationalization" of goods with direct trade over greater distances, from one resource area to another by means of established routes).

The title of Peter Gubser's popular 1983 book, Jordan – Crossroads of Middle Eastern Events, does not exaggerate the place of Transjordan in the larger region's historical-cultural development. The territory east of the Jordan provided space for all kinds of transactions to occur throughout history, whether the interactions required north-south or east-west movement – and allowed for contact and exchange between Syria-Palestine, Egypt, Mesopotamia, and Arabia.

Nobody has compiled a history of the Karak district's internal road network, but the plateau's surface alternates between gently-rolling countryside and frequent wadi systems that promoted and, sometimes, hindered movement (cf. Mattingly 1996; Roll 2005). Internally, some well established roads and many smaller tracks connected the region's subdivisions, while significant routes also entered the plateau from all directions. Topography minimized easy movement in and out of the Karak plateau – on at least the northern, southern, and eastern sides, but this region was never really isolated, as Karak's rich history reflects so clearly. Many writers have described the network of roads that allowed Karak's inhabitants access to interregional and long-distance exchange.

Everyone is familiar with discussions on the nature of the so-called "King's Highway" (derek hammelek) and its relation to Trajan's *Via Nova*, the *Ṭarīq as-Sulṭānī*, and the modern motor road that crosses the Karak plateau and major wadis to the north and south (i.e., the al-Mūjib and the Ḥasā). The other major north-south route, the so-called "Desert Highway," provided Karak with significant contact beyond its borders. Also known as the "Ḥajj route" and Darb ash-Shāmī ("Northern Way"), the desert route skirted along the eastern edge of the Karak plateau's agricultural zone and enabled travelers to avoid the great canyons that bounded the Karak district on the north and south (i.e., Wādī al-Mūjib and Wādī al-Ḥasā, respectively) (Kennedy and Peterson 2004: 12; Tschanz 2004: 5, 7, 9). While the King's Highway, the main north-south line of travel, linked well known sites in the Karak region – towns like al-Qaṣr, ar-Rabbah, al-Karak, Mu'ta, and al-Mazār – the Desert Highway stretched from Arabia to Syria, connecting distant points like Damascus and Mecca. It skirted along the eastern edge of the plateau and provided relatively easy access into the Karak region.

In the ninth century BC King Mesha had special interest in the road that crossed the Arnon/al-Mūjib, south of the city of Dibon, as indicated in line 27 of the Moabite Stone. Dearman (1997) and other scholars have discussed the Iron Age routes that negotiated the Arnon canyon. In a recent paper, Kloner and Ben-David described a pre-Roman stretch of road that provided passage through the Mujib's tributaries in this same vicinity (2003). [Cf. Ben-David's study in this conference volume.].

Less known are the routes followed by travelers and traders on the al-Karak plateau's western and eastern borders. Surveys by Jacobs, Mittmann, Worschech, and others have identified lines of sites along the large wadis that dissect the plateau's western escarpment and provided access between the Rift Valley and the highlands. In another paper at SHAJ X, Joseph A. Greene examined the role of seafaring on the Dead Sea from the Early Bronze Age through Ottoman times, thus demonstrating that this body of water has not represented an insurmountable barrier to trade and travel. The recent volume, *Crossing the Rift: Resources, Routes, Settlement Patterns and Interaction in the Wadi Arabah* (2006), edited by Bienkowski and Galor, also proves that the Rift served as much as a thoroughfare as it did as a boundary. Indeed, in his opening essay, Bienkowski invokes language from the phenomenology of perception to explain why most people still think of the Arabah as a border – especially because of the 1922 League of Nations division between Palestine and Transjordan.

Among the routes that entered the Karak dis-

trict on the east, we might mention the well known Karak-Qatrana road and, further south, the lesser known but important Fajj al-ʿUsaykir. The latter, a wide and flat valley – a Graben related to the Dead Sea fault system – allowed for easy passage between the Desert Highway and the central part of the Karak plateau – to the town of Karak itself, its neighboring settlements, and the Wādī al-Karak, which – in turn – gave access to the Dead Sea and territory beyond. Fajj al-ʿUsaykir offered an appealing line of movement as it intersected with the Desert Highway at a point just beyond the upper reaches of the Ḥasā canyon. The usefulness of this natural corridor was clearly recognized in Iron Age II and during the Roman and Islamic periods, as attested by the presence of numerous sites along the Fajj rims, including the large Iron II fortress of Khirbat al-Muḍaybī‘.

The Karak Resources Project has conducted three seasons of excavation at al-Muḍaybi‘ (in 1997, 1999, and 2001); this site, located on the western rim of the Fajj ca. 21km southeast of Karak, was occupied sporadically from late Iron II until Late Islamic times (Mattingly and Pace 2007). The fort measures ca. 83 X 89m and was protected by thick walls, corner and interval towers, and a massive monumental gateway (14.5m E-W x 19.7m N-S) – whose entryway was decorated with large volute capitals. At the time of its construction, perhaps late in the eighth century BC, Muḍaybī‘ played a role in securing the Moabite frontier against marauding tribes from the eastern desert. Designed to impress and defend, the fort certainly provided a safe haven for travelers and traders who passed through the Fajj – thereby suggesting that its original function was military, political, and commercial. In terms of economic geography, we might refer to Muḍaybī‘ as a “gateway community” (cf. Singer-Avitz 1999). Local, domestic economic activity at the site is reflected in pottery, *ṭābūn*(s), food processing implements, loom weights, and animal bones and carbonized seeds. The pottery assemblage from this excavation contains no obvious examples of imported wares, though archaeological survey in the Fajj has recovered Eastern Sigillata A and Nabataean Cream Ware from later times (Ayer 2006: 56; cf. numerous relevant publications by S. T. Parker). Builders of the Iron Age II gate complex probably obtained their cypress beams from the mountains in Edom. And a small number of coins, glass fragments, and some of the food remains from the Late Byzantine-Early Islamic period reflect contacts that range even further afield. Though Karak possesses an abundance of vesicular basalt, there is evidence that some ground stone tools were made of basalt from outside of Karak and brought to the plateau through normal channels of exchange. Zooarchaeological evidence from the Byzantine and Islamic periods indicates that occupants of Muḍaybī‘ participated in a trade network that gave them access to parrot fish, from the Family Scaridae, probably from the Red Sea. Parker has suggested that occupants of Roman Aila/‘Aqaba obtained wheat from the Karak plateau, which was known for its cereal crops. From an earlier period, the Mesha Inscription notes that this Moabite presided over a territory famous for sheep, which were used as payment of tribute to Israel (cf. II Kings 3:4). It is not difficult to imagine the mechanism by which grain and dried or salted fish moved between the Red Sea’s northern coast and Karak – as a way to supplement the food available through farming and large-scale pastoral activities.

Though most of the artifacts and ecofacts recovered from Muḍaybī‘ and regional survey sites were of local origin and served utilitarian functions, there is tantalizing evidence of trade in even more exotic materials and luxury products – reflecting the presence of an elite class that participated in a cultural sphere that reached well beyond the Karak area:

(1) Carnelian beads from loci dated to the Iron II, Byzantine, and Islamic periods (excavated).
(2) Mother of pearl pendants and cowrie shell beads, also from Islamic contexts (excavated).
(3) Octagonal, bronze weight in the “double keg” form that weights 30 grams, reflecting trade in valuable commodities – probably in the Early Islamic and later periods (excavated).
(4) Rectangular (10.9cm x 7-to-8cm per side) block of banded calcite/calcium carbonate that weights 1.5kg (surface find from Muraygha, located at the north end of the Fajj) – a highly-prized raw material in “preform”, “blank”, or “dummy” form as it came from the quarry.
(5) Fragments of steatite vessels (platters, bowls, or boxes) (surface finds at Khirbat al-ʿAskar, located at the south end of the Fajj, immediately west of the Desert Highway).

Such objects and materials recovered from Muḍaybī‘ and other sites in the Karak region illustrate long-distance trade, at both the trickle and long-distance trade levels (cf. Steiner 2001). Some

items, like Egyptian scarabs from Bālū‘, could reflect the presence of Egyptians or trade connections with that distant region – as references to Moab in itineraries of Thutmosis III and Rameses II might indicate (cf. Worschech 1990). On the other hand, scarabs and other valuable items or raw materials could have found their way to the Karak plateau by the same kind of roundabout route that Na’aman suggested for the Suhu seal that made its way to Beersheba. The current inventory of items obtained through trade by the Iron Age Moabites might not account for some of the tribute that the Neo-Assyrians demanded from Moab (e.g., horses, building materials, and gold), though Moabites could have provided certain kinds of building materials. Once again, the Moabites could have obtained some of the products and materials for tribute payments through trade with neighboring regions, whatever it took to satisfy Neo-Assyrian demands (Chamaza 2005: 61-132).

In 2006, Eggler and Keel published a sumptuous volume on seals, impressions, and amulets from Jordan; it presents a collection of 719 objects and includes artifacts from sites in – or immediately adjacent to – the Karak region (Bālū‘, Dhībān, al-Karak, al-Lāhūn, Rabbat-Moab). Most of the seals date to Iron Age II and were fashioned from semi-precious or raw materials not found around Karak (e.g., agate, carnelian, steatite). Once again, we should conclude that raw materials for some of these seals came from distant sources through a number of exchanges before artisans in al-Karak inscribed them with local names, human or divine.

In addition to Muḍaybī‘, some of the other excavated sites in the Karak district have yielded other items that were obtained through long-distance trade. The list of sites includes:

(1) Adir, excavated by Albright and Head.
(2) Khirbat al-Bālūʿ, excavated by Crowfoot and Worschech (ivory “Eye of Horus” amulet).
(3) Dhāt Rās / Shuqayrah, Nabataean tomb excavated by Zayadine.
(4) Khirbat Fāris, excavated by Johns and McQuitty (coins, glass, and imported Islamic pottery).
(5) Al-Karak, study of pottery from the castle by Brown (includes imported Mamluke pottery from Syria-Mesopotamia, Egypt, and China).
(6) al-Lajjūn (Roman), excavated by Parker (numerous imported small finds, including fragments of bowls made of schist from the Arabian peninsula).
(7) al-Lajjūn (Early Bronze), soundings by Chesson (no reported imported items).
(8) Khirbat al-Mu‘ammariyah, excavated by Ninow.
(9) al-Maṣna‘, soundings by Worschech.
(10) Khirbat al-Minsaḥlāt, soundings by Chesson (no reported imported items).
(11) Khirbat al-Muḍaybī‘, excavated by Mattingly and Pace.
(12) Khirbat al-Mudayna al-Āliyah, excavated by Routledge.
(13) Khirbat al-Mudayna al-Mu‘rrajah, excavated by Olávarri.
(14) Nakhl, excavated by Mutah University.
(15) Khirbat ath-Thamāyil and related sites, soundings by Routledge.

For a more thorough examination of the economic context, we can include sites from adjacent regions (e.g., ʿArāʿir, Dhībān, al-Lāhūn, Khirbat at-Tannūr).

The next step in this study is the compilation of a more complete inventory of objects and materials that reached sites in the Karak district through trade (beyond the general, initial impressions mentioned above). This might well reveal more discernible patterns of exchange – in terms of routes and prized objects and materials in particular periods; this database can expand with additional discoveries from future seasons at Khirbat al-Muḍaybī‘ and other sites in this fascinating region. Further research on this subject will require careful examination of publications from excavated sites, correspondence/interviews with the excavators, and examination of select objects in Amman and other locations. Meanwhile, we can hope that texts – like the cuneiform table from Ṭawīlān (Ṭuwaylān), in ancient Edom – will turn up in future excavations and provide more specific details concerning the Karak region’s long-distance trade relations (Dalley 1983).

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Measuring the Impact of LPPNB Immigration into Highland Jordan

Abstract
An earlier model of the Neolithic human impact on the ecological situation in the ʻAyn Ghazāl vicinity concentrated on site size as a proxy for population growth and consequent architectural needs, particularly in terms of the fuel requirements for plaster production as well as the detrimental effects of goat browsing (Rollefson and Köhler-Rollefson 1989, 1992). This model was based on two assumptions: 1) a heavy demand on local wood for fuel to manufacture plaster and 2) a consistent growth in population over time. It is clear now that both assumptions were invalid. Instead, it is now posited that 1) while plaster production used much less fuel than was originally imagined, an even greater amount of wood was needed for normal domestic use, an aspect that was overlooked in the original model 2) Furthermore, while ʻAyn Ghazāl grew at a relatively constant rate during the MPPNB, within a couple of generations after the LPPNB abandonment of farming villages in the Jordan Valley and areas to the west, ʻAyn Ghazāl and the rest of highland Jordan received a sudden and massive influx of migrants from the afflicted region. A revision of the previous model takes into account the sudden increase in human demands on resources around older settlements such as ʻAyn Ghazāl and Wādī Shuʻayb as well as on the countryside surrounding newly founded megasites such as Baṣṭa and ʻAyn Jamām after 9500 calBP.

Introduction

Nearly two decades ago the recognition of the sudden and widespread abandonment of the Jordan Valley and areas to the west at ca. 9,500 calBP by farming populations (Rollefson 1989) led to an investigation of possible contributing factors to this calamitous shift in settlement patterns. One model that was developed involved calculations of fuel considered necessary to produce the high demands of lime plaster production that was ubiquitously used in domestic structures in the southern Levant, as well as the effects that goat husbandry in the vicinity of permanent farming settlements had on fragile, local environmental balances (Rollefson and Köhler-Rollefson 1989; Köhler-Rollefson and Rollefson 1990). Based on published accounts of the constitution of the lime plaster from floors at ʻAyn Ghazāl, a clear picture of the persistent increase in deforestation around farming villages emerged, a situation that could have exposed farmland around the settlements to wind and rain erosion that destroyed the fertility of local fields.

Independent assays of MPPNB floor samples from ʻAyn Ghazāl were investigated about a decade later in two separate projects, and from the results the researchers obtained, they concluded that the quantity of lime plaster in typical house floors was, in fact, much lower than the earlier analysis indicated, and that the amount of fuel represented by the creation of plaster floors themselves would not have affected tree stands around settlements to any significant degree. Was this the death knell of the "environmental degradation hypothesis", and must one return to Kenyon's climate change explanation (Kenyon 1957: 76, 1979: 50)? We submit that environmental degradation is still the most likely reason for the massive translocation of populations from the Jordan Valley and Palestine into the Jordanian highlands. In essence, this was an early example of unintentional "ecological suicide" or "ecocide", a process by which people in fragile ecological systems inadvertently destroy the resources their societies depend on for survival exploitation practices (Diamond 2005).

A Post-Mortem on an Earlier Environmental Degradation Hypothesis

There were two problems with the environmental degradation hypothesis as it was developed in the late 1980s for the MPPNB evacuation of farmers from the southwestern part of the Levant and, by extension, to the eventual disaster at the end of the LPPNB in highland Jordan. The first has already been mentioned: the amount of lime production by burning limestone was substantially less than was suggested by the information from the Smithsonian study. But a second difficulty was an assumption, based on the first few seasons of excavation at ʻAyn Ghazāl, that population increase was gradual, "normal", and steady (cf. Rollefson and Köhler-Rollefson 1989: TABLE 1). As the scope of excavation expanded at ʻAyn Ghazāl in 1988-1989 and 1993-1996, it became clear that this view of population growth was not correct.

Some publications on the excavations at PPNB Yiftahel (Garfinkel 1985, 1987) revealed how much plaster was involved in the construction of PPNB houses in the southern Levant. Analysis of a couple of samples of lime plaster floors from ʻAyn Ghazāl (Kingery *et al*. 1988) indicated that the floor plaster was composed of 50% lime ($CaCO_3$). This made

TABLE 1. Population growth and deforestation in the vicinity of ʻAyn Ghazāl for the purposes of construction, fuel, and other purposes (modified after Rollefson and Köhler-Rollefson 1992).

Century BC ending	Population	Families	Growth rate/ century	n houses	n trees, structural	n trees, fuel and other	Depleted hectares	Depletion radius (km)	Cumulative radius (km)
8,250	[a]300	60		[b]78	[c]312	[d]13,100	131	0.4	0.4
8,150	350	70	16.7%	88	352	15,300	153	0.5	0.9
8,050	410	82	17.1%	103	412	17,900	180	0.6	1.1
7,950	480	96	17.1%	120	480	21,000	210	0.7	1.2
7,850	565	113	17.7%	141	423	24,600	246	0.8	1.5
7,750	660	132	16.8%	165	495	28,800	288	0.9	1.7
7,650	770	154	16.7%	192	384	33,600	336	1.1	2.0
7,550	900	180	16.9%	225	450	39,300	393	1.3	2.3
7,450	[e]1800	360	100.0%	450	[f]1800	78,500	785	2.5	3.7
7,350	2105	421	16.9%	526	2104	91,900	919	2.9	5.4
7,250	2465	493	17.1%	616	2464	107,600	1,076	3.4	6.4
7,150	2885	577	17.0%	721	2884	125,900	1,259	4.0	7.4
7,050	3375	675	17.0%	844	3376	147,300	1,473	4.7	8.7
6,950	3950	790	17.0%	988	3952	172,400	1,742	5.5	10.2
totals					[g]14,780	917,200	9,191		

a – 300 people represent the population at the end of the first century of occupation at ʻAyn Ghazāl.
b – The number of structures includes 20% that were abandoned or otherwise uninhabited.
c – This column represents structural elements such as posts to support ceilings/roofs that incorporate wooden beams. The number of trees or "tree equivalents" begins with six per house, but the ratio per house decreases over time as interior room walls increasingly replace posts to support ceilings or roofs.
d – This column represents the amount of wood used as fuel at the rate of 4.8 tons per household per year over 100 years (cf. Vermeulen *et al*. 1996: 487).
e – Sometime during the middle of the 8th millennium the size (and thus the population) of ʻAyn Ghazāl doubled.
f – The structural needs for trees is now related principally to beams in the ceilings and roofs of structures that are often (if not always) two-storied.
g – Note that the structural total represents only about 1.6% of the total number of trees used at ʻAyn Ghazāl; most of the structural elements were probably used for fuel when they had to be replaced.

it possible to convert the tonnage of floor plaster reported by Garfinkel into the fuel requirements for producing such large quantities of burned lime.

Using the figures provided by Garfinkel and by Kingery *et al*., calculations were undertaken, and the implications of lime production turned out to be momentous. Together with a model of population growth on a century-by-century basis, we concluded that the wood needs for structural elements of houses and as fuel to manufacture the plaster used for floors and the whitewashing of interior walls resulted in a persistent deforestation around the immediate vicinity of ʻAyn Ghazāl, amounting to as much as 3,200 hectares over the more than 2,200 uncalibrated radiocarbon years that the site was occupied (Rollefson and Köhler-Rollefson 1989: 74-79). This "environmental degradation" model would explain the decline in wood and fauna in the ʻAyn Ghazāl inventory over time without resorting to a climatic change, for which there was no evidence. Furthermore, the deforestation was irreversible, since the browsing habits of goats would have prevented natural reforestation around the settlement (Rollefson and Köhler-Rollefson 1989: 78).

But then other investigations of the nature of the ʻAyn Ghazāl plaster samples themselves emerged. Testing of plaster samples from throughout the Near East, including several samples from ʻAyn Ghazāl, did not repeat the results of the Kingery *et al*. analysis: the amount of lime plaster in the floor samples was far lower than the 50% figure Kingery *et al*. had indicated (1988: Table 1) (Affonso 1997; Teflah and Kafafi 2003), and the amount of fuel necessary to produce the actual amount of lime to use in floors was not enough to influence the environment in terms of deforestation (Affonso 1997: 207, 213). How much less lime was involved is not clear, but the calculations based on the original Kingery *et al*. criteria obviously were incorrect.

It was stipulated by Rollefson and Köhler-Rollefson article that the calculations in their 1989 study "should be viewed with considerable reserve in terms of the absolute values they contain, but they were reasonably derived" on the basis if the available evidence (Rollefson and Köhler-Rollefson 1989: 86). The reasonable derivation may have been fine, but the foundations they relied on were not. One point that should be made at this point is that the environmental degradation of local forest resources was based solely on the use of fuel for structural timbers and as fuel for lime production; nevertheless, 60% of the use of wood in the original calculations was based on structural timbers and roofing (Rollefson and Köhler-Rollefson 1989: 78), so the 40% of the impact erroneously attributed to lime production might be withdrawn, but the structural wood still remains a vital aspect of potential environmental impact, at least for the Middle PPNB (MPPNB)[1].

One factor in the environmental equation that was not addressed originally was the impact of local population demands on nearby wood resources for simple domestic uses, especially as fuel for cooking and to provide light. Studies in Mesoamerica have shown that lime plaster production in the Maya region (where it was lavishly applied to public structures) or for use in residential construction was minimal in terms of environmental impact, but the use of wood for domestic fires greatly exceeded, by staggering amounts, industrial plaster manufacture or structural timbers (Abrams and Rue 1988). This aspect of deforestation was not considered in the original environmental degradation model, but clearly this approach to environmental exploitation must be examined more closely in the Levantine area.

At the present state of research, there is clear evidence that sometime around 7,500 calBC, the size of ʻAyn Ghazāl (and thus also the number of residents) doubled, probably within a few generations (Rollefson 2005a: 6), and this ushered in the Late PPNB (LPPNB) "megasite" that reached ca. 14-15 hectares in size by the end of the LPPNB. Due to the massive in-migration of refugees from the west (who possibly claimed kin relationships to one degree or another with the original inhabitants of ʻAyn Ghazāl), there was an unprecedented campaign of new housing construction, including the establishment of two-story residential "apartment complexes" for the first time (Rollefson 1997: 289-291). We suspect that these buildings housed related families and reflected extended family residences that

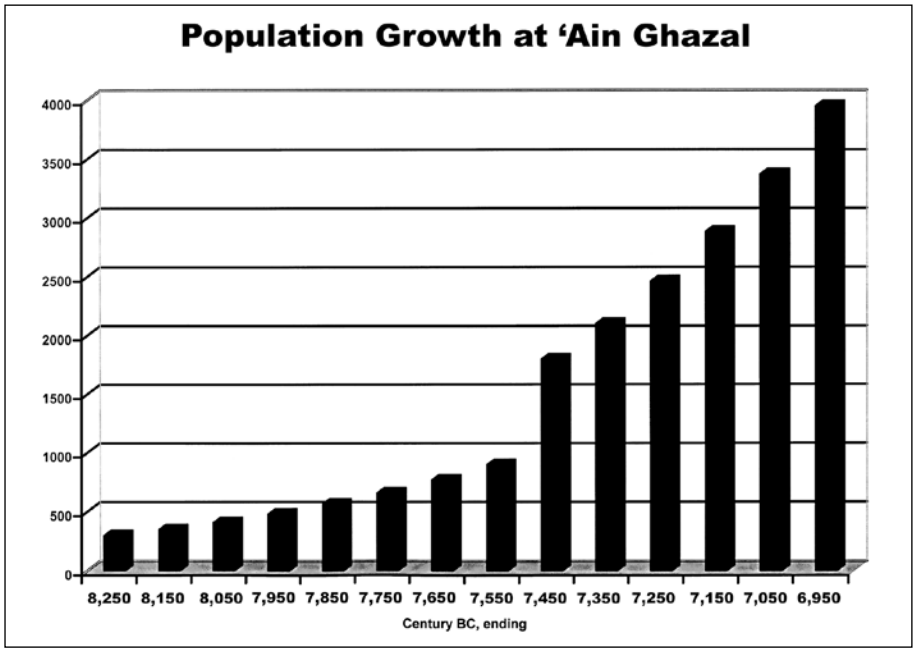
[1] The use of tree trunks as posts to support ceilings/roofs continued throughout the MPPNB, although they decreased in diameter over time; more and more of the ceiling/roof support function was being assumed by interior walls that divided the floor space into discrete walls (cf. Rollefson and Köhler-Rollefson 1992: Table 1). By the onset of the LPPNB at ʻAyn Ghazāl, ceilings and roofs no longer used wooden posts for support. Of course, ceiling/roof beams of wood continued to be used in LPPNB structures just as they had in the MPPNB.

shared not only domestic space, but also pooled the products of their economic contributions. This was a massive departure from the previous small single story, single-family structures during the MPPNB. MPPNB houses were clustered relatively close to each other, and the LPPNB multi-story structures continued this "packing" of populations into considerable housing density. A similar situation appears to have transpired at MPPNB Wādī Shu'ayb (Simmons *et al*. 2001).

Similar huge residential conglomerations appear to be the norm for settlements established for the first time at the beginning of the LPPNB in highland Jordan, presumably by migrants from the west, including Basṭa (ca. 12 hectares, Nissen *et al*. 2004: 22), Ba'ja (Gebel *et al*. 2006), aṣ-Ṣfayya (ca. 12 hectares, Mahasneh 2001: 121), 'Ayn Jamān (8-10 hectares, Rollefson 2005b) and Basīṭ (ca. 8 hectares, Rollefson and Parker 2002). Estimating population sizes for prehistoric communities is a risky undertaking, but we are likely dealing with an influx of people into highland Jordan that is in the neighborhood of several thousand people at the minimum, all of them translocating to earlier MPPNB settlements (e.g. 'Ayn Ghazāl and Wādī Shu'ayb) or founding new ones near permanent springs (Basṭa, aṣ-Ṣfayyah). With individual settlement populations ranging from one to several thousand residents shortly after the beginning of the LPPNB, there was a sudden and growing stress on resources immediately surrounding permanent water sources. While the "lime plaster environmental degradation hypothesis" may be a failed explanation, the likelihood that environmental degradation as a cause for 1) the abandonment of MPPNB farming villages in the Jordan Valley and Palestine at the end of the MPPNB and 2) the ultimate population collapse at the end of the LPPNB in Jordan at the end of the beginning of the 7th millennium calBP remains a strong, vibrant probability.

Population Growth Before and After the 9.5 k.y.a Event

Estimates of population growth rates for prehistoric populations are admittedly a practice that is fraught with many hurdles, but we offer the figures in TABLE 1 as a starting point for discussion. We suggest that expansion of settlement area can be used as a proxy to represent population growth. At the end of the first century of occupation at 'Ayn Ghazāl, ending at ca. 8,250 calBC, families at 'Ayn Ghazāl were spread over a small area, and that the number of families approximated 60, and with a projection that three children would reach reproductive age, this would total ca. 300 people. During the next century, we propose that 10 more families would be added to the community, numbering 350 by ca. 8,150BC, a growth rate of 16.7%; this centurial span represents something like 6 generations, or a growth rate of 2.5% per generation, and further, this reflects a 0.2% growth rate per year (FIG. 1).



1. Population growth at PPNB 'Ayn Ghazāl at a rate of 0.2% per year (16.7% per century).

The population growth rate today is between 0.1% to ca. 3.0% (Anon 2003), and we have intentionally selected the lower end of the scale, which is in keeping with many of the Developing Countries, although much higher rates exists as well.

We have assumed that, in the absence of any particular catastrophe (such as possible epidemic disease or natural calamity), the rate of increase in ʻAyn Ghazāl inhabitants would have been reasonably constant, ranging between 16.7-17.7% over each century. The number of families is augmented at this steady rate under the assumption that as many mates may leave the community as those who are added from the outside, regardless of marriage and residence rules (patri-/matri-/neolocal), and if there were little exchange with other communities, the growth rate may be lower than the current model predicts.

The number of families per century should be placed in relation to the amount of space a household might need. Test pits indicate that the earliest part of ʻAyn Ghazāl was probably not larger than 2-2.5 has (Rollefson and Köhler-Rollefson 1989: 73). This figures to a mean space for each household of ca. 300m^2, including floor space of the dwelling itself, which was not more than 50m^2 (Rollefson 1997: 288). This seems to be entirely plausible. At this rate the estimated number of family houses by 7,550BC would imply that the site would have extended over 5.4 has, which was the original indication in the original model (Rollefson and Köhler-Rollefson 1992). The departure from the earlier model is that the growth rate in population was not steady, and that ʻAyn Ghazāl (and Wādī Shuʻayb, among other established MPPNB settlements in the Jordanian highlands) suddenly expanded to about twice their sizes within a small number of generations. Thus, there is a "bump" in the population curve (FIG. 1) by 7,450BC, so that in the more than 10 has by 7,450BC, family numbers had doubled to 360, comprising a total of 1,800 people.

As one continues along the population and families columns in the left-hand columns of TABLE 1, there is a notable discrepancy between the number of projected families and the maximum size of ʻAyn Ghazāl by 6,950BC. Surveys and test pits reveal that the preserved areas of ʻAyn Ghazāl did not exceed 14 has by 6950BC, but the number of families predicted for this time would have "required" almost 24 has. This incongruity is explainable in part by the appearance of multi-family two-story buildings, which could have housed 3-4 nuclear families each (Rollefson 1997: 303). Of course, it is also possible that the ca. 17%/century growth rate had decreased considerably sometime during the LPPNB, and that a population plateau may have been reached sometime between 7,350-7,250BC. The probability seems relatively low that almost 4,000 people lived at ʻAyn Ghazāl by 6,950BC (see below), although there is proxy evidence that the 12 ha site of Baṣṭa may have hosted 4,000 people at its maximum size (Gebel, pers. comm.).

A New Regard for Deforestation and Environmental Degradation

We would like to iterate that Kenyon's climatic hypothesis is not supported by the situation in the middle of the 8th millennium: if climate deteriorated sufficiently to make agriculture unpredictably reliable in the Jordan Valley and Palestine, then the abandonment of those farming villages should have been matched by contemporary agricultural settlements in highland Jordan. They share the same climatic regime at the present time, and there is no evidence that the situation was different in the past. So, if not climate, what else should be considered?

Despite the overturning of the first model of environmental degradation that was based on immense demands of wood for lime plaster production, the model itself remains intact, albeit with a different foundation. In essence, we claim that the needs of fuel by Neolithic groups and the deleterious effects of goat husbandry were still responsible for a growing ecological calamity in a fragile part of the Levant. While Kenyon was correct in describing the ecological fragility of the region, we maintain that human, and not climatic issues, were responsible for the evacuation of the western southern Levant and the ultimate population collapse of LPPNB highland Jordan.

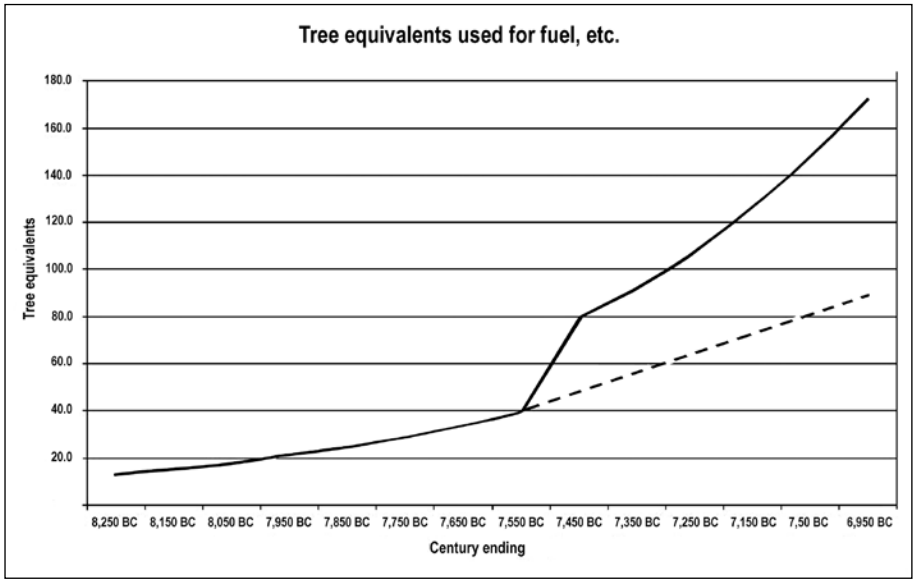
One factor in the environmental equation that was not addressed originally was the impact of local population demands on nearby wood resources for simple domestic uses, especially as fuel for cooking and to provide light. Perhaps because it is ubiquitous in all societies, the use of wood for domestic needs has received little attention. In rural areas across developing countries, it has been claimed that domestic fuel needs account for 75-89% of total fuel wood consumption (Agarwal 1986). Even in tropical regions of Latin America, where forests

are dense and extensive, rural, non-industrial needs amounted to approximately 1.5 tons of wood for cooking and light per person per year (or 9 tons of wood per year for a household of six people), and in tropical Kenya the same rate of domestic wood use was measured (Abrams and Rue 1988: 389). In the "hot and equable climate" of Malawi, a family of six consumes a minimum of 1.56 tons of wood per year for cooking alone (Biran *et al*. 2004: 11), although in Tanzania a survey of Maasai households the rate was 1.4 tons per year for the same size household (Biran *et al*. 2004: 12). The wood use for domestic fuel in Zimbabwe ranges from 4.3 (poor families) to 10.3 tons of fuel per year (Vermeulen *et al*. 1996: 488), but that overall the average rate of wood fuel consumption was 4.8 tons per year per six-member household (Vermeulen *et al*. 1996: 487).

The density of tress is difficult to gauge for prehistoric times, of course, and such data are also relatively rare in the anthropological literature. In Zimbabwe the degraded study area had a wood biomass of only 20.6 tons per hectare, although in a nearby protected state forest, the mean wood biomass was more than triple (67.9 tons/hectare) (Vermeulen *et al*. 1996: 489). For 'Ayn Ghazāl, in the current model we have assumed a tree density of 100 trees per hectare (as opposed to the 17 trees/ha in the original model: Rollefson and Köhler-Rollefson 1989: 79), despite the proximity of 'Ayn Ghazāl to the 250-300mm isohyet, which is at the 4th edge of the steppic zone. To see if this estimate is acceptable, we calculated the weight of this kind of distribution by multiplying the volume of oak trees ($h\pi r^2$, with h = 3.5 m, r = 0.5 m; cf. Rollefson and Köhler-Rollefson 1989: 77-78 and references) times the density of oak (0.8), which results in 2.2 tons per tree (the "tree equivalent"). This would convert to 220 tons/ha, and at the close of the century ending 8,250BC, this equals the use of 131 has x 220 tons = 28,820 tons for the entire century, or 288 tons per year. In relation to the number of families at the end of the century, this corresponds to 4.8 tons/ household/year.

Considering the estimated density of tree stands around 'Ayn Ghazāl, the depletion of trees around 'Ayn Ghazāl is detailed in right side of TABLE 1. There is a slow but constant increase in the number of deforested has per century, but again, this rate of deforestation suddenly doubles at 7,550-7,450BC (FIG. 2). The growth of the depletion radius would not likely be recognizable on a generation-by-generation assessment: over one person's lifetime the increasing distance that people needed to walk to obtain fuel wood probably was probably unnoticeable.

The last column in TABLE 1 is the decisive set of data that supports the environmental degradation hypothesis. In a millennial overview of changes in ecological circumstances in the Mediterranean region, Blondel relates that many ecologists have concluded that there has been severe human-caused deforestation and over-grazing, but that there are areas that are "resilient" to ecological system disturbances (Blondel 2006: 714). That the fragility of the southern Levantine area is prone

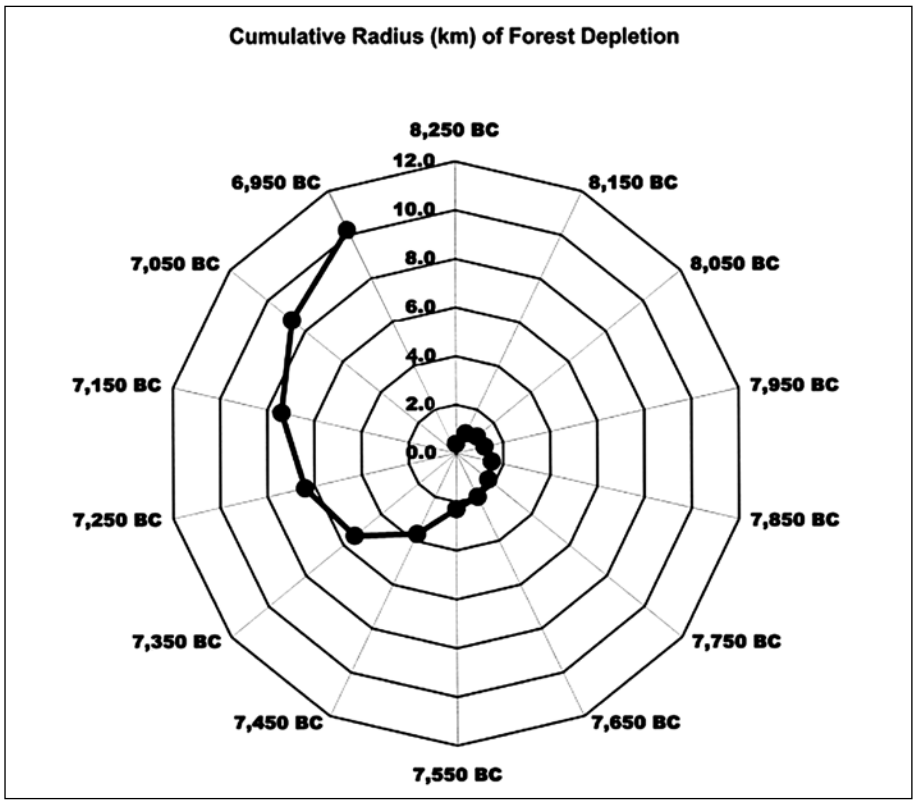


2. Use of wood as fuel, calculated as "tree-equivalents", at the rate of 4.8 tons/year per household. The dashed line represents the projected increase in fuel use if there had not been a major increase of immigrants into 'Ayn Ghazāl ca. 7,500 calBC.

to ecological disturbance is probably unanimously admitted, but resilience in some areas is probably less vigorous than in others, particularly in those territories where permanent water sources (especially springs) are scarce and where the demands of population growth of sedentary agricultural and herding communities approaches the limits of sustainability. The last column in TABLE 1 is a consequence of this fragility in the sense that not only does the area of deforestation increase every century, but that as the result of goat herding, the deforested area is additive every year and century due to the browsing habits of goats. In essence, resilience is prevented because browsing goats prevent the natural reaction to reduced tree stands due to their predilection to eating newly erupted seedlings (Rollefson and Köhler-Rollefson 1992). As a result, the distance people would have had to travel for fire wood approached an absurd level by the end of the LPPNB around 6,950BC: surely, the need to travel up to 4-10km and back to obtain the fuel for household needs must have resulted in accommodations by the inhabitants (FIG. 3). The use of animal dung as fuel at ʻAyn Ghazāl does not appear until well into the 7th millennium BC (Reinder Neef, pers. comm.), so other adjustments were necessary.

While the labor involved in obtaining fire wood may become more and more onerous over time, this drawback paled in comparison to the results of the deforestation itself. Since reforestation was not possible in view of the importance of goat herding to the local economies, more and more open space was exposed to the effects of wind and rain, which removed valuable topsoil every season. Fields that had been in use over long periods of time became less and less productive, and while new areas suitable for crops were opened by the deforestation, the distances to the new plots became so burdensome, especially at harvest time, that it would have been more effective to have moved the settlement to the new fields if there had been permanent water sources in the vicinity.

Based on both factors (the availability of fire-wood and distance to new fields), it is likely that a population plateau at ʻAyn Ghazāl was reached at around 7250-7350BC, and as Gebel presciently predicted as early as in 1997 (Gebel 2004: Fig. 1 and 5-11), when this plateau was reached at northern mega-sites, excess population was siphoned off to newly founded communities established at previously under-exploited springs or other permanent sources of water, such as those found in southern Jordan at Baṣṭa, aṣ-Ṣfayyah, and others.



3. Cumulative radial distance of deforestation based on population growth and fuel demands of the people at ʻAyn Ghazāl.

Closing Remarks

Communities were not abandoned because people had to travel long distances to obtain firewood. Instead, the extensive deforestation that was necessitated by huge demands for fuel resulted in the exposure of farmland to erosion, and this resulted in reduced crop yields over time. Eventually, the cost-benefit ratio for farmers became so imbalanced that new solutions had to be adopted, which in many cases meant forced migrations into other parts of the Levant. Eventually, population growth could no longer be accommodated even at the newer farming communities, and the entire southern Levant appears to have witnessed a major dispersal of population during the PPNC and into the Pottery Neolithic periods, when many of the families once associated with farming began an increasingly segregated pattern of nomadic pastoralism (Köhler-Rollefson 1992; Rollefson 1997: 305, 2001: 94-95).

Large population concentrations would not recur until the Chalcolithic period[2]. Notably, the appearance of domesticated pack animals (the donkey) may have alleviated the drudgery of fetching firewood to a great extent, for pack animals could have brought firewood from great distances in large quantities. (Donkeys could also have made fields at greater and greater distances from the settlements less of a problem during harvest time). Whether this meant that there were families who specialized in fuel acquisition and distribution or not can't be resolved at the moment, but it is an element of village- and town-based economies that should be investigated intensively in the future (cf. Levy 1995: 229-235; Quintero *et al*. 2002: 45-46).

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Five Years (2003-2007) of Excavation on Tall Zar'a

The 'Gadara Region Project'

The Biblical Archaeological Institute in Wuppertal directed by Dieter Vieweger, started the 'Gadara Region Project' in 2001. After an intensive archaeological survey in the Wādī al-'Arab and the Wādī az-Zaḥar southwest of Gadara in the first year, it was decided to undertake more detailed work on Tall Zar'a, the most prominent archaeological site in this area. In 2002, the tall was scrutinized by a thorough survey and geophysical prospections (Vieweger 2003). A test trench dug by Karel Vriezen in the northwest part of the tall, completed the initial research (Dijkstra *et al*. 2005). In the following year, the excavations started on the northwest slope of the tall (Area I) north of the test trench (Vieweger 2002).

Tall Zar'a

Tall Zar'a (map reference 2119.2252) is a settlement hill 4.5km as the crow flies south-west of the ancient Decapolis city of Gadara. It is situated at the confluence of the Wādī al-'Arab and its tributary, the Wādī az-Zaḥar. The tall rises about 25m above the surrounding area. Its highest point is situated at -17m below sea level. The settlements were built on top of a natural limestone hill, which has a diameter of about 240m at its base and 160m on the plateau. The ancient cities or villages on top of the hill were protected by sheer rock faces on its eastern and northern sides. The southern flank offers the best opportunity to overcome the 22–25m height difference comfortably via a 150m long, ascending track from west to east. The tall was inhabited from the Early Bronze Age up until about 1900AD. The cultural layers of these habitation activities are approximately 12m thick.

The importance of the tall stems from two facts: First, there is an active artesian spring on top of the tall. Being an interesting and surprising aspect today, it must also have been an attractive, beneficial and wondrous phenomenon in the past. The other fact is the tall's strategic position along an ancient and highly important trade route.

Two lower cities belonged to the settlement on the tall. One was located on a terrace on the western, the other on the northern base of the tall. Both areas were protected by deep truncations into the Wādī al-'Arab. However, the north terrace was recently bulldozed for a new olive orchard, and the archaeological remains have thus been seriously disturbed.

The history of exploration, the historical background, the aims of the project, and the results of each campaign have been published elsewhere (Häser and Vieweger 2005, in press; Vieweger 2006; Vieweger and Häser 2005, 2007, in press).

This article shall give an overview of the results of five years of excavations on Tall Zar'a between 2003 and 2007 which were carried out by the Biblical Archaeological Institute, and since 2004 as a joint project with the German Institute of Archaeology under the joint directorship of Dieter Vieweger and Jutta Häser.

Area I

Natural settings and geophysical investigations showed that the west slope of the hill was a promising site to rapidly expose the stratigraphy of the tall. Accordingly, Area I was opened in 2003 and enlarged to 825 sqm in the following campaigns. A depth of 4m of the proposed 12m of cultural layers has been reached in most of the excavated area. In terms of cultural layers, we are currently in the latest phase of the Late Bronze Age. For logistical and especially security reasons, the earlier strata can only be excavated after the whole area has been

exposed at this level.

In order to show the development of the architectural features from the Early Bronze Age to the Roman-Byzantine period, the excavation results will be explained, beginning from the lowest layer reached to the surface of the tall.

The Early and Middle Bronze Age

The survey of the tall showed a high concentration of Early Bronze Age pottery in Area I. However, only the outer layer of a massive Early Bronze Age fortification wall could be excavated in the step trench beyond the Late Bronze Age city wall.

So far, the remains of two Middle Bronze Age strata with residential buildings have been uncovered in the same part of Area I, 2m below the Late Bronze Age casemate wall. Actually, it is not possible to say anything definite about the Middle Bronze Age culture before the still unexcavated Late Bronze Age level and further strata have been exposed. It is a unique case in northern Jordan that we have the opportunity to observe the transition from the Middle to the Late Bronze Age culture.

The Late Bronze Age

In the Late Bronze Age (14th–13th century BC), at least two consecutive settlements existed on the tall. For the time being, only the latest Late Bronze Age stratum could be exposed (FIG. 1). Several facts indicate that the tall was the centre of a Late Bronze Age city state: The strong fortifications, the massive architecture, the high percentage (5 %) of imported pottery from Cyprus and Greece as well as the numerous noteworthy small finds.

The most remarkable building of this stratum is the massive casemate wall which fortified the settlement at the north-west flank. A charcoal sample from the collapsed walls gave a radiocarbon date between 1450 and 1300 BC with 95.4 % probability. Five rooms in the casemate wall could be excavated. A sixth room could be confirmed.

Three drainage channels from the residential area ended in one of the casemates — originally covered with flat stone slabs. At this point, the water flowed into a semicircular basin from where it drained into a deep, almost circular shaft lined with undressed stones. The three channels substitute an older channel from the earlier Late Bronze Age stratum which was overbuilt by the casemates of the city wall of the later Late Bronze Age stratum.

South of the casemate wall, a large tower was uncovered. This inward-built tower was divided into two rooms paved with small pebbles. The northern room was connected to the southern part of the casemate wall. It was probably used by a guard. In a later building phase, the southern room was divided by a small wall with two column bases. They probably originally supported wooden columns to carry the roof. A large stone — worked on its base and tapered at the top – found in this room might be a *mazzebe* (cultic stone). This find and the special layout of the room point to it serving as a small gate sanctuary.

South of the tower, a gate chamber with a width of 2.75m was discovered. It was the gateway to the two lower cities to the north and the west of the tall. To the south of the city gate is a room with a paved floor and, in it, the opening of a remarkable bell-shaped 'pit'. The opening was covered by a round, carefully hewn stone, measuring 1.2m in diameter. The 'pit' has been excavated to a depth of 2.60m. However, the bottom has not yet been reached. Remarkably, a lot of interesting finds have been discovered in the surrounding area, including some bronze objects and sherds of a painted pottery jar. The layer with these finds can be dated between 1440 and 1300 BC with 95.4 % probability.

At the end of the 2006 spring campaign, remains of residential buildings of the Late Bronze Age period were found on Tall Zar'a for the first time. Already now, it is possible to say that the architecture, which is different from that following in the Iron Age period, is remarkable in size and quality. The thickness of the walls warrants the assumption that the houses originally had a second storey.

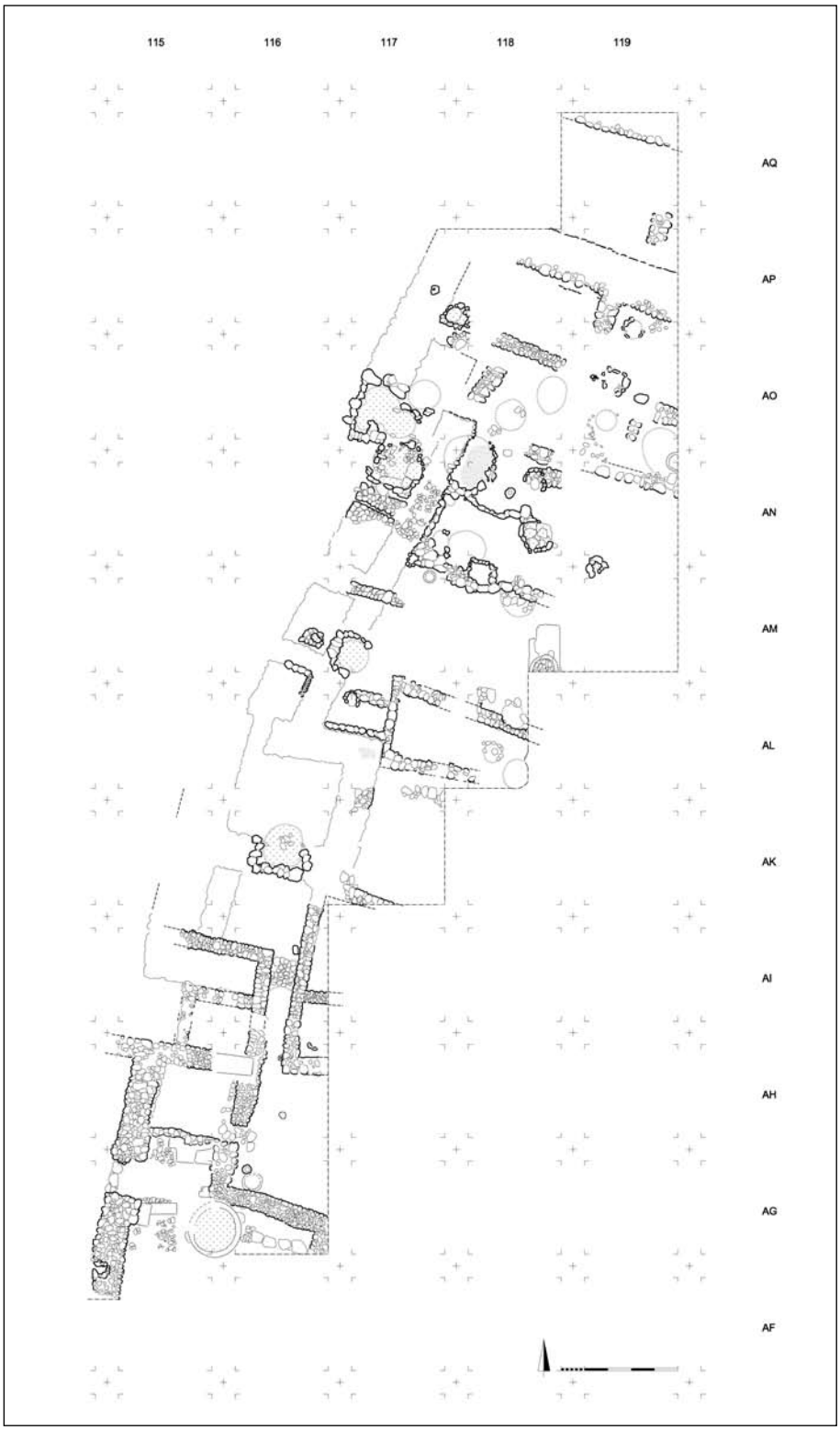
Some very interesting objects were found in this stratum, e. g. 24 cylinder seals, two scarabs, a bronze pendant, and different kinds of beads.

The Iron Age I

The Iron Age I (12th–11th century BC) settlement displays a very clear change of culture. We did not find fortifications for this period. It is obvious that the inhabitants of the Early Iron Age did not create their own settlement pattern, but used the walls of their Late Bronze Age predecessors.

The architecture is very distinctive (FIG. 2). In the northern part of the excavation area, the inhabitants of the tall dug several large pits for grain storage, built small walls for stables with some installations and joined simple huts to older walls. In the southern part of Area I, an exceptionally large storage pit made of mud was found in the centre of the

1. Plan of the latest Late Bronze Age stratum (drawing by J. Kröpsch).



2. Plan of the Early Iron Age stratum (drawing by J. Kröpsch).

area. In addition, there is one large building with carefully constructed walls, made of two or more rows of undressed stones. Its entrance was paved with stones. Larger areas have to be uncovered before we can confirm the assumption that this building was either used for administrative purposes or as a residential building for a high-ranking person. Two charcoal samples give a radiocarbon dating for this stratum of 1220 to 970 BC and 1270 to 1040 BC with 95.4 % probability.

Iron Age IIA and IIB

The architecture of the Iron Age IIA/B stratum (10th–8th century BC) suggests that the tall's population increased in this period and that the settlement developed an urban character. Even though the fortifications are not as strong as those of the Late Bronze Age, the Iron Age II settlement was protected by a city wall. During the Iron Age II, various modifications to the houses were made so that two building phases (an early and a late one) can be distinguished. Until now, building remains of the Iron Age II settlement give the impression that the architecture was densely agglomerated. There are not only residential buildings but probably public buildings as well. The outer walls of the houses are connected to the zigzag-like settlement wall.

There are two exposed areas that show that the Iron Age houses were separated from one another by a double wall so that the boundaries of buildings and property are clearly visible. One of these houses — house 2 — had a workshop area comprising of four longitudinal rooms/courtyards. They yielded interesting finds: a stone built fire place with a crucible — probably for glass melting – still *in situ* in the south-eastern room, and a well-constructed fireplace and work surface in the north-eastern room. In the south-western room a *ṭābūn* was discovered, and the north-western part contained some clay loom weights and four more ovens which might have been used simultaneously. Close to a paved courtyard and another room with three, high column bases made of field stones a large storage vessel and a cultic stone (*mazzebe*) were standing *in situ*. A radiocarbon sample gives a dating between 1270 and 980 BC with 95.4 % probability.

The building layout of the later phase of Iron Age II is characterised by an obvious re-arrangement of the houses, though not the city wall. In the public area the depot for oil *pithoi* of the older phase had apparently been closed and the large storage pit changed into a paved courtyard with a massive working stone. A radiocarbon sample from this layer gives a dating between 1120 and 900 BC with 95.4 % probability.

In the northern and the southern squares, the architecture is densely agglomerated. At least four houses have been identified so far. One of them can be identified as a workshop. It was furnished with a bench along the wall and a large cylindrical, very carefully cut limestone workbench (60cm in diameter). Very close to this stone, a semi-circular stone basin, two 'industry pots', a spindle whorl, and an egg-shaped tool of clay were found on the ashy floor.

Some small finds from this stratum are quite noteworthy like a small bronze figurine of the god El. The burnt layer could be radiocarbon dated to between 1270 and 980 BC with 95.4 % probability. This is the *terminus ante quem* for the deposition of the El figurine.

The Hellenstic and Early Roman Period

So far, no signs of habitation were found on Tall Zar'a for the latest phase of the Iron Age and the Persian period. During the Hellenistic-Early Roman period (4th century BC–1st century AD) Area I was used but not inhabited. It was predominantly utilized for waste disposal facilities. Three large pits had also been dug and carefully lined out with stones for the storage of grain.

The Roman-Byzantine Period

In the following time of the Roman and Byzantine periods (2nd–7th century AD), there are again intensive building activities recognisable on the tall. Five houses can be distinguished, some of them with elaborate room arrangements. A stone-paved street following the contour line of the slope divided the buildings into a western and an eastern section. This street was blocked by the construction of a house in a later building phase.

A thick wall of dressed stones constructed with stretchers and headers which is visible halfway down the slope to the east of the tall, might suggest that the settlement was fortified during the Roman and Byzantine period. In fact, it is possible that the fortification of such a densely inhabited settlement was necessary from the 3rd/4th century onward when the political situation in Palestine became more unstable. Two coins from this stratum have been dated, one to the time of Hadrian (117–138 AD), the second to between 400 and 450 AD.

The Umayyad Period

During the spring campaign in 2007, Area I was extended to the north and south. In the southern part directly at the edges of the original test trench, two layers of an Umayyad stratum were uncovered. In small areas, the remains of houses with paved floors and an oven could be excavated.

Area II

A second area (Area II) was opened in spring 2006 and measures 400 sqm after two seasons of excavation. It is located on one of the highest points of the plateau and is protected by a steep slope to the north. This prominent position is the most outstanding location on the tall. It was chosen for digging because of its potential for yielding administrative and/or cultic buildings.

After two campaigns, an Umayyad and a Roman-Byzantine stratum could be distinguished. In the Roman-Byzantine era different building phases are recognizable. So far, two large courtyards of an enormous building with adjacent rooms have been exposed. This shows already the immense importance of this habitation place.

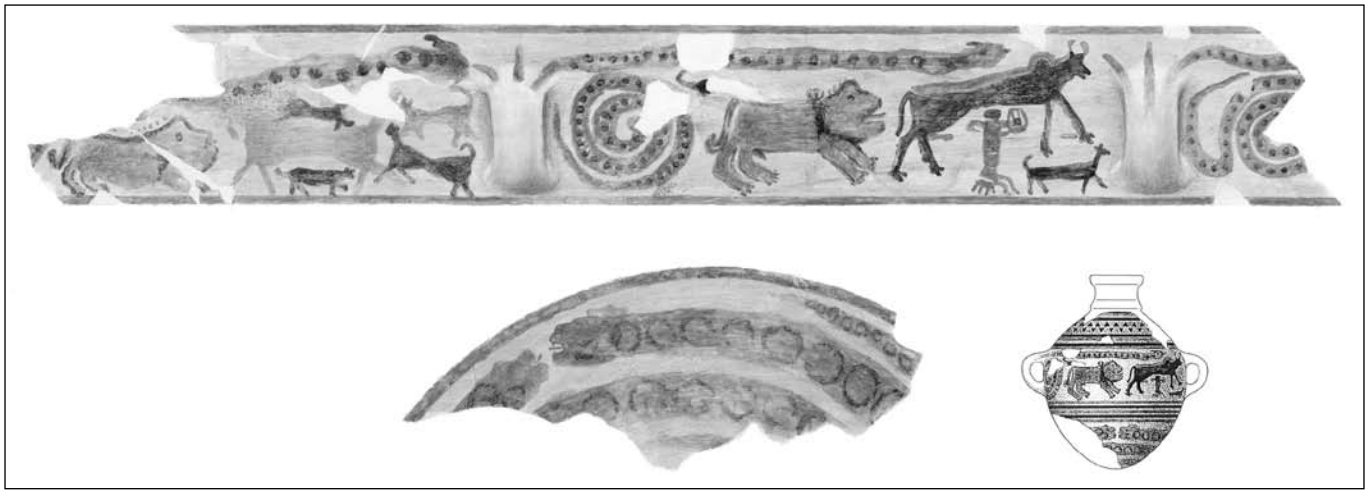
The Finds

According to the subject of the conference entitled 'Crossing Jordan', some finds shall be presented below which demonstrate exemplarily the special location of Tall Zar'a in a contact zone between the Levant and Egypt to the west and south and Syria and Mesopotamia to the north and north-east.

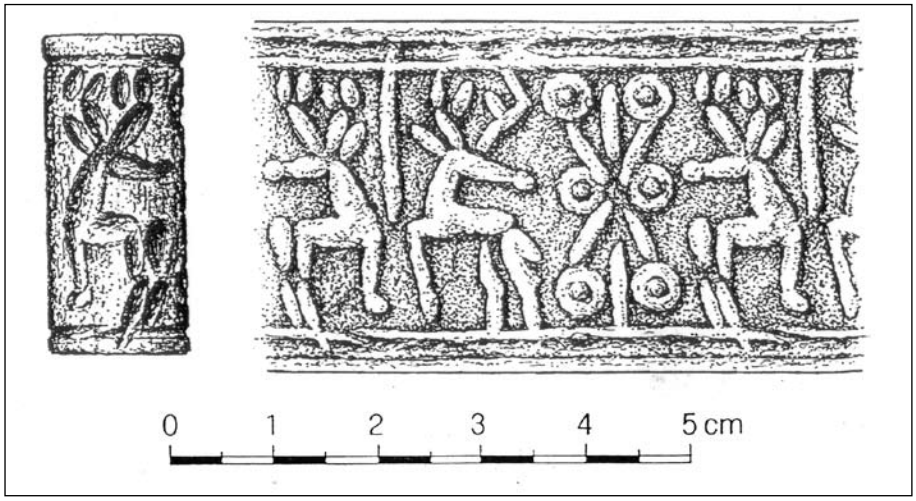
Sherds of a **painted jar** were found scattered around a stone lined pit in the later Bronze Age stratum which can be dated between the middle of the 15th and the 13th century BC. The painting on the jar shows a scene with two lions with upraised mane, a bull, a flock of goats, a scorpion, a fish, as well as coiled-up and stretched-out snakes and a human figure resting on a chair and playing a lyre (FIG. 3). These interesting scenes probably depict a story, maybe a legend or myth. The only comparison can be drawn to the so-called 'orpheus vase' which was found in Megiddo and which has been dated to the 11th century BC.

26 **cylinder seals** were found in the Late Bronze Age stratum in 2006 and 2007. 24 of them are of the so-called 'Common Style' of the Mitanni glyptic. Only few seals of this type have been found in Jordan before. 20 seals were discovered very close together in a large building with massif walls of the latest stratum of the Late Bronze Age city. The first one has been detected in a stone-lined pit in 2006 (FIG. 4). It measures 3cm in height and 1.3cm in diameter. It is made of faience and covered with a green glaze. It shows two stags which are slightly reared up with their heads turned backwards. They are separated by a vertical line and turn their back on a plaited band. The seal belongs to the western group of the so-called 'Common Style' of the Mitanni glyptic and can be dated to the 14th-13th century BC. (Salje 1990: 103). A very close parallel is a seal from Gezer which was also manufactured in faience and has a green glaze (Salje 1990: 219 Nr. 15, Tafel VII 124). This piece has been dated by the excavators later than the 16th century BC.

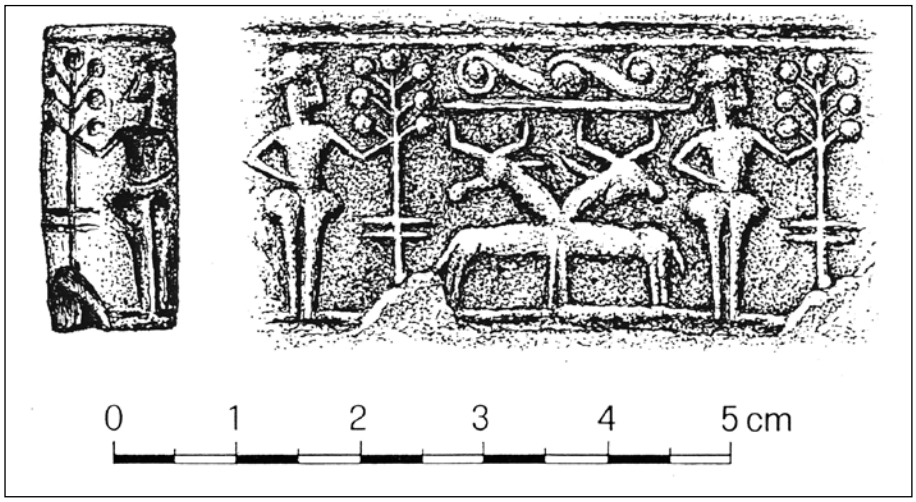
Another cylinder seal of this type was found in a layer of the earlier phase of the Iron Age II stratum (FIG. 5). It is 2.4cm high and has a diameter of 1.0cm. Two stags are depicted which are confronting each other. The upper parts of their bodies are merged and the heads are turned back. A standing person holds a so-called 'bouquet tree' (Salje 1990: Tafel XIV,271). Like the cylinder seal mentioned above, this seal can be classified as part of the western group of the 'Common Style' of the Mitanni glyptic. It can be dated to the 14th-13th century BC. Since it was found in an Iron Age II context,



3. Bichrome painted jar of Late Bronze Age date (drawing by E. Brückelmann).



4. Seal of the Mitanni glyptic (drawing by E. Brückelmann).



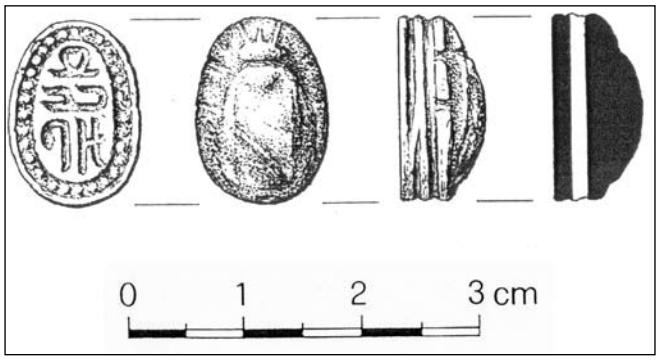
5. Seal of the Mitanni glyptic (drawing by E. Brückelmann).

we are probably dealing with an 'heirloom'.

All other cylinder seals of this type as well as two seals of Mesopotamian origin are still under study.

Another interesting find comes from a layer of collapsed walls. It is a 1.3cm large scarab (FIG. 6). It is inscribed with the prenomen (A-wsr-re) of the Hyksos-ruler Apophis (ca. 1590-1550 BC). We are certainly dealing with a product of the Second Intermediate period and therefore, it can be seen as heirloom. On account of the modest workmanship, it can be assumed to have been made by a local craftsman.

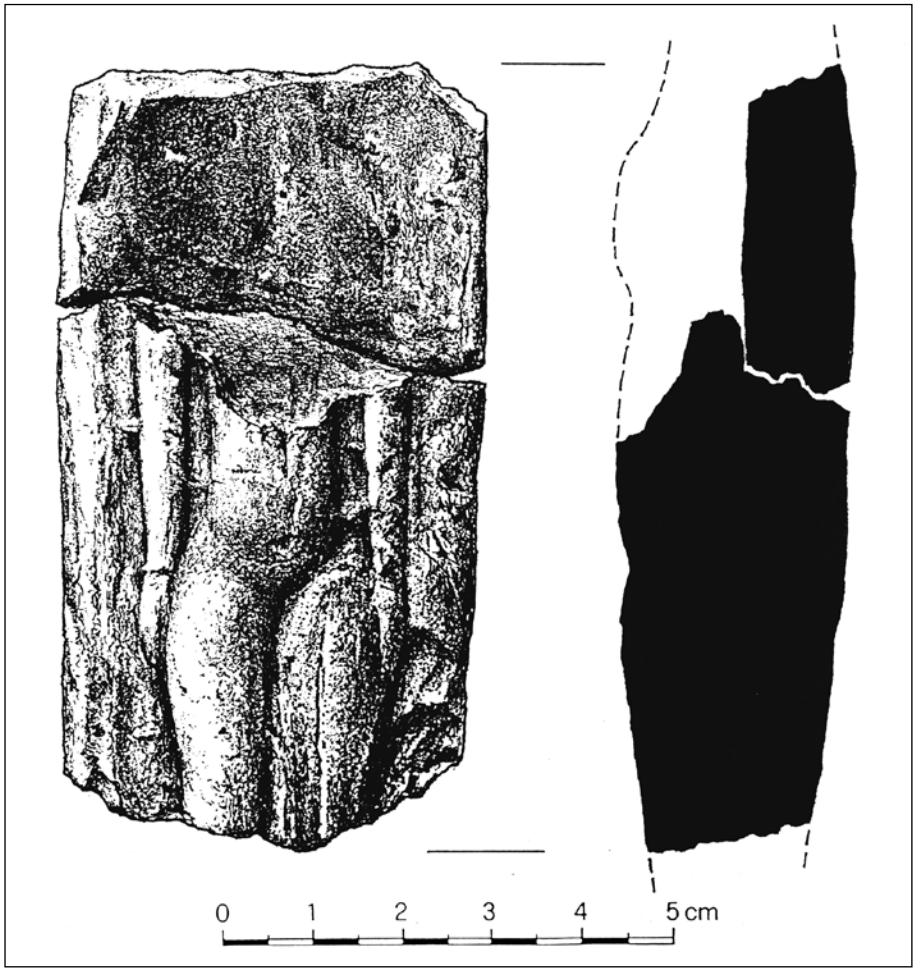
Several fragments of terracotta figurines were found. The **middle part of a terracotta figurine** was found on a floor together with many pottery sherds, bones, fragments of bronze objects, and a broken bone handle of a tool. This figurine depicts the fertility goddess Ashtarte/Ashera in upright position with her arms hanging down along the sides



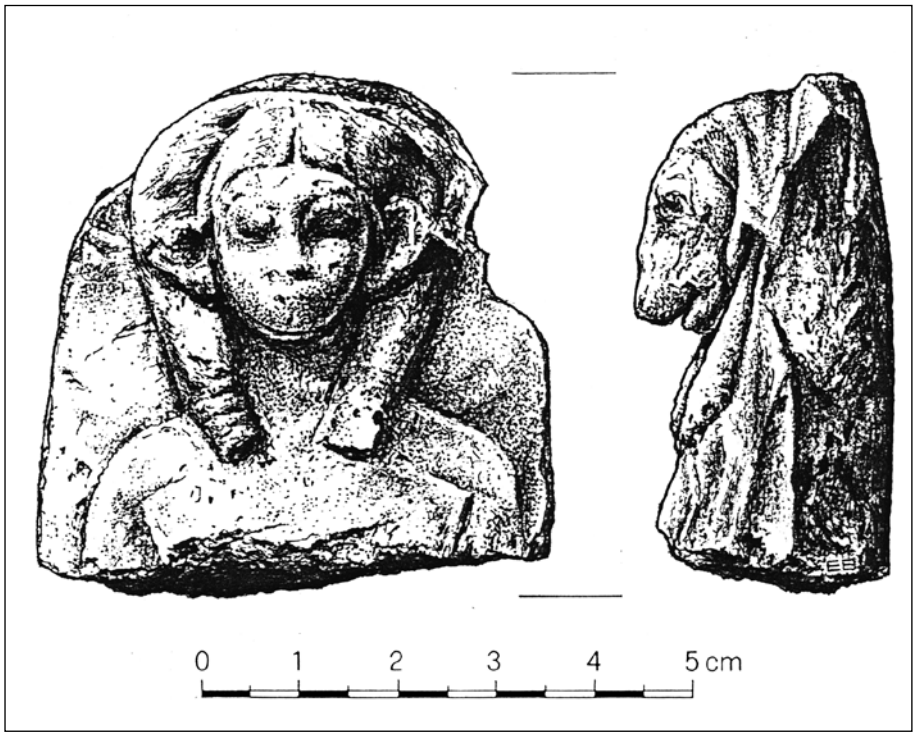
6. Scarab with the prenomen of the Hyksos ruler Apophis found in Late Bronze Age context (drawing by E. Brückelmann).

of her body (FIG. 7)

Another very intriguing find is the head of a terracotta figurine (FIG. 8) found in the earlier phase of Iron Age II-stratum. It is a depiction of the **goddess Ashtarte with a Hathor wig**. A specific feature is the shape of its face. The frontal view shows



7. Terracotta figurine of a standing Ashtarte/Ashera (Late Bronze Age) (drawing by E. Brückelmann).



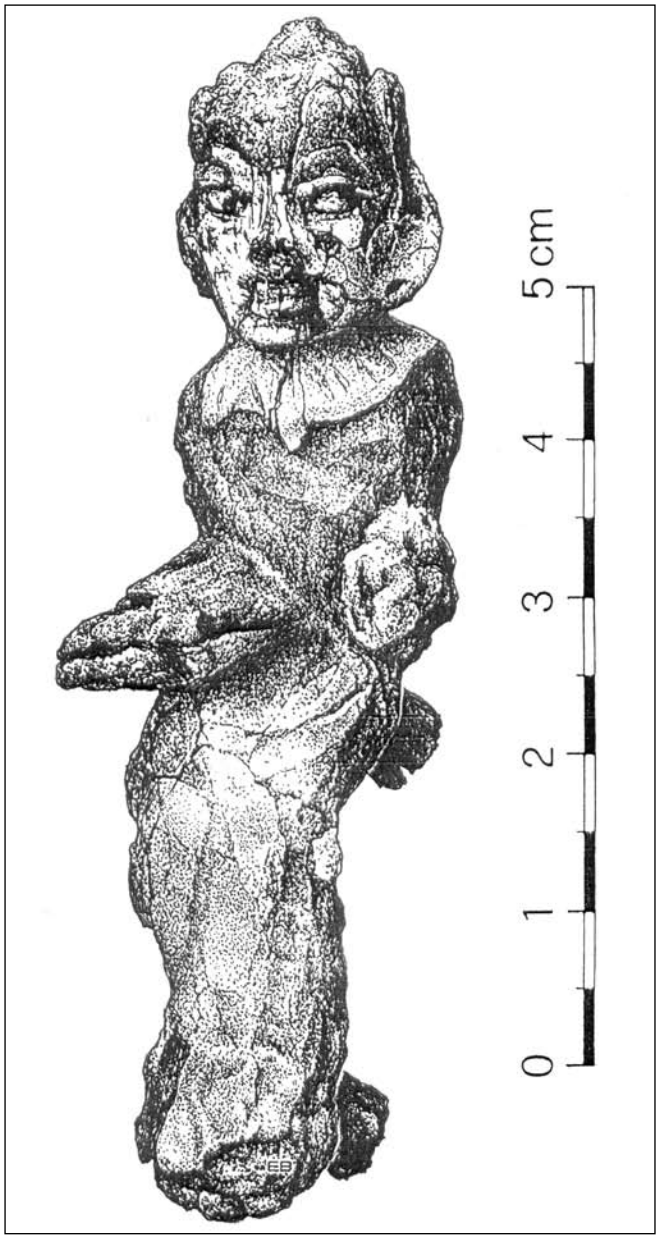
8. Head of a terracotta figurine depiction Ashtarte/Ashere with Hathor wig and Shehmets face of a lioness in side view (Late Bronze Age) (drawing by E. Brückelmann).

the face of a woman, while the side view shows the profile of a lioness. This kind of presentation is unique in Palestine. The closest parallels are two Ashtarte figurines with Hathor wigs which, however, do not have the face of a woman but of a lioness. They were found in Tall Massad al-Jisl (Rahmani 1959, 184-185 Pl. XXIV 1-3) and in Bayt She‘ān (Rowe 1940, Pl. LXVIII, 3). These figurines present a combination of the goddess Ashtarte with the Egyptian goddesses Hathor and Shekhmet.

Another interesting object is a c. 7.5 cm high, seated **bronze figurine** with gold application (FIG. 9). It belongs to the so-called El-type. It was discovered beneath a wall of the Iron Age IIB-stratum above a burnt layer. Maybe it was a building offering, no offering pit was recognizable, however. Due to its stratigraphic position, the figurine can be dated to the earlier phase of Iron Age II. Now, the burnt layer could be dated by radiocarbon to between 1270 and 980 BC. with 95.4 % probability. This is a *terminus ante quem* for the deposition of the El figurine.

A **seal impression** (3.5cm x 2.7cm) was found in the same square above the burnt layer. It shows a male figure standing on a bull, lifting its left arm (FIG. 10). The figure depicts the weather god Ba‘al or Óadad. Neither seal impressions nor seals with such a motif have been found in Jordan before. However, it is a typical motif of the Aramaic culture of Damascus area. The reverse bears three impressions of a perpendicular fastening. Due to its stratigraphic position, the find can also be dated to the earlier phase of Iron Age II, i.e., the 10th/9th century BC. This piece came probably attached to a tightly closed vessel with a special content to Tall Zar‘a.

These finds give insight in the intensive exchange of objects and ideas on Tall Zar‘a and here especially in the religious diversity in a contact zone of different cultures.



9. Bronze figurine of the god El found in the Iron Age II stratum (drawing by E. Brückelmann).

Conclusions

The excavations on the Tall Zar‘a have shed new light on the settlement and economic history the Early Bronze Age to the Islamic period in Jordan and beyond. The prominent tall is one of few in northern Jordan with such a continuous habitation, and therefore, with an extensive range of stratigraphy. The excavated building phases from the Late Bronze Age to the Umayyad Period show the change of settlement layout and the changing importance of the site. Many finds demonstrate the influence of different cultures and political entities and the tall’s location in a contact zone between the Levant, Syria, Mesopotamia and Egypt.

Acknowledgements

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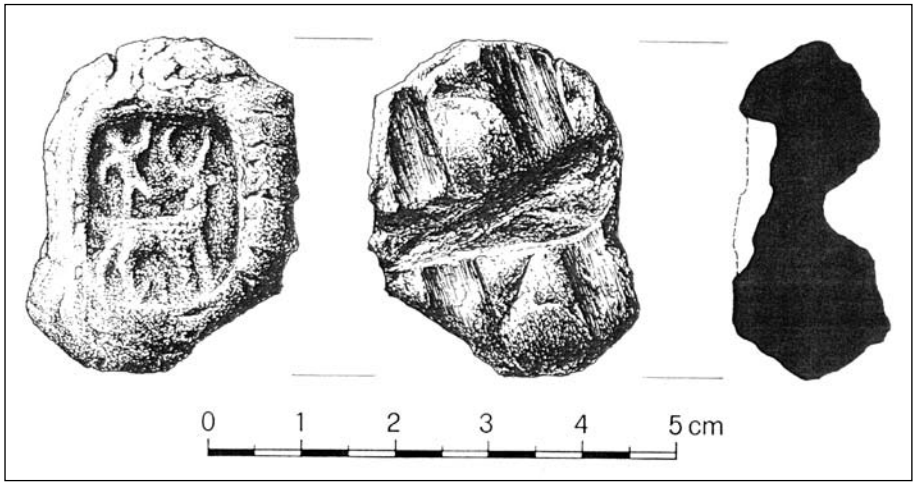

10. Seal impression with the depiction of the god Ba'al standing on a bull (Iron Age II) (drawing by E. Brückelmann).

of the Biblical Archaeological Institute in Wuppertal. We thank the Hugo-Gressmann-Foundation for the support of young scientists who worked in our project. We were energetically supported by volunteers of the Protestant Academy in Bad Boll and the Thomas Morus Academy in Bensberg.

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Ina Kehrberg

Byzantine Ceramic Productions and Organisational Aspects of Sixth Century AD Pottery Workshops at the Hippodrome of Jarash

Introdution

The exhaustive excavations from 1984 to 1996 of the Gerasa Hippodrome Project directed by Antoni Ostrasz and undertaken together with the writer, have turned out to be unexpectedly rich with, at times, unique and unparalleled copious material evidence (FIG. 1). Our resulting study of the building and the archaeological remains have chronicled the history of its architectural origin as a Roman circus in the 2nd century, its adaptations to different uses over time and the people it housed from the 3rd to the 7th century AD (Ostrasz 1989; Kehrberg and Ostrasz 1997; Kehrberg 2006).

Decisions of governments, whether by citizens of Gerasa, or by their overseas masters, popular trends, commercial enterprise and natural disasters are each attested at the site by their accumulated deposits left behind before and throughout the occupancies of the circus building. As the utilizations of the hippodrome shift and overlap, so are their associated artifacts a direct result of the mainstream cultural, economical and political events modifying successive communities of Gerasa and later Jarash.

The secondary history of the circus began almost simultaneously with its end as a chariot racing course: The process of transformation began sometime in the 3rd century when *cavea* chambers were equipped to suit pottery workshops and tanneries of that same century (Kehrberg and Ostrasz 1997). Traces of pottery kilns, extensive remains of workshop installations as well as simple dwellings, and even more so the expanse of pottery waste products and other artifacts discarded in the chambers and spilling onto the periphery, leave no doubt that the monument had become an industrial quarter (FIG. 2).

Evidence suggests that Gerasa probably developed into the biggest centre of pottery production of the Decapolis cities (at least east of the Jordan). Parallel to this development, the hippodrome grew into the main compound or *"potters' sūq"* from the later 3rd to the beginning of the 7th century, with scattered workshops co-existing inside the walled city from the same period on. The existence of a *sūq* within the hippodrome building was not only determined by its location outside the city walls suitable for large scale operations of pottery kilns and their workshops. A common requirement in antiquity was for larger pottery kilns or complexes to be situated away from the city centre because of fire hazards, smoke and industrial waste. That the monumental site became the industrial quarter is also manifested in the fact that the pottery manufacture at the hippodrome grew at an extraordinarily rapid pace, mass-producing vast amounts of ceramics that ranged from tiles and pipes, to storage ware, plain and decorated common and fine wares, as well as moulded objects like lamps and figurines. The ceramic waste products filling the *cavea* chambers and spilling onto the periphery metres high, blocking the original doorways to the chambers, are about 25-30% of the merchandise sold locally and exported. These huge quantities alone speak for the enormous output of the kilns over centuries.

The Hippodrome Potters

The subject of this paper does not permit going into details of the hippodrome workshops whose installations are represented here by two examples of west *cavea* chambers W2 and W6 (FIG. 2B, C). The workshops indicated on the ground plan (FIG. 2A) belonged to the tanneries and pottery ateliers of the Late Roman and Early Byzantine periods manufacturing their products from the later 3rd to

1995: excavations and restorations in progress (looking south)

1999: after 1984-1996 excavations (photo D.Kennedy and R.Bewley)

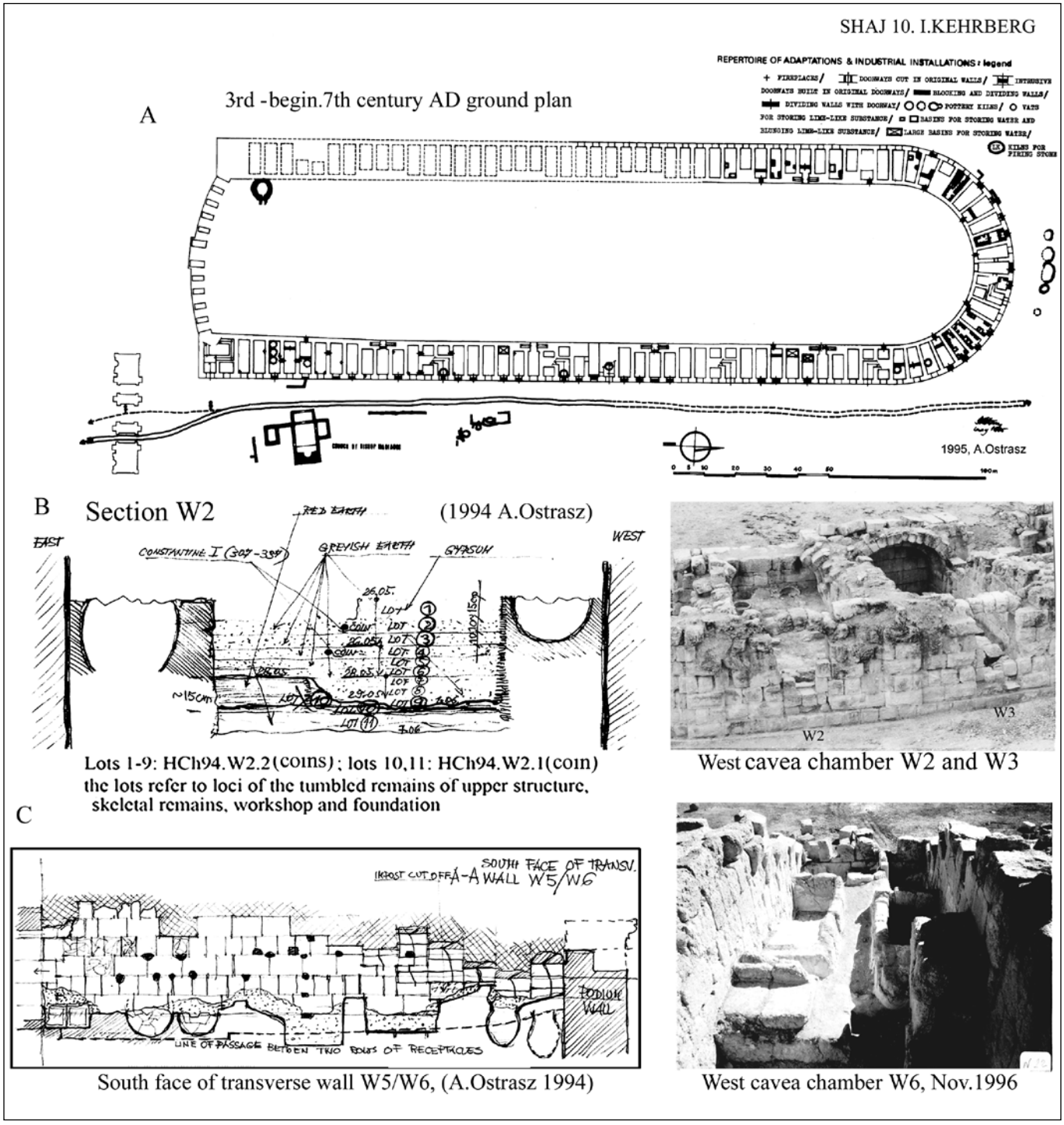
1. The extant excavated remains of the Gerasa / Jarash Hippdrome (photos A.A. Ostrasz; D. Kennedy and R. Bewley).

the 5th century AD (Kehrberg 2001).[1] In some instances the shops were recycled in the Late Byzantine period, but more often they were simply buried under successive mounds of discarded pottery waste and other rubbish produced by the Late Byzantine potters.

These last generations of hippodrome potters (before they deserted their quarters at the beginning of the 7th century) and their wares are the subject of this paper. Many products of their prolific output must have dominated Jarash markets and export trade in the 6th century: the famous *Jerash Bowls* and *Jerash Lamps* — and in some cases including ordinary pots[2] — could be found as far as Petra and

[1] See also Kehrberg 2007, where I discuss the Late Roman tanneries and pottery workshops at the Hippodrome in specific regard to supplying frontier stations along the *limes* in Jordan with their commodities.

[2] When I examined pottery from the French /IF[A]PO-Damascus excavations at Bosra in 1997, I observed that when Late Byzantine deposits contained imported *Jerash Bowl* and *Jerash Lamp* fragments they were often accompanied by other non-local fragments of what appeared to be typical 6th century cooking pot ware from the Jarash Hippodrome or other Jarash workshops. I remarked on that phenomenon to J.-M. Dentzer and P.-M. Blanc, directors of the excavation, suggesting the possibility that these pots could have been used as packaging of perishable goods bought at Jarash together with the *Jerash Bowls* and *Jerash Lamps*. Laboratory analyses would have to ascertain my proposition and their provenance.



2. A. Ground plan of the Hippodrome, occupancies; B. workshop in *cavea* chamber W2; C. workshop in *cavea* chamber.

Bosra, at Pella, Scythopolis, Bayt Rās, Philadelphia and Gadara, in short at the other Decapolis cities which also produced and sold their own wares.

Two *cavea* chambers serve as good representative examples. They contained the whole chronological range of particularly rich material evidence which not only wraps up the history of the monument, but also provides valuable insights into organisational aspects of pottery manufacture itself. The schematic stratigraphical and chronological chart of chambers W2 and W3 (FIG. 3) reflects the sequence of events and activities that took place at the hippodrome from its foundation to the last occupancies followed, after the site's abandonment,

Schematic stratification of the hippodrome as represented by the chronological sequence of archaeological contexts in west *cavea* chambers W2 and W3			
DATES	JARASH /GERASA	Events at the HIPPODROME	
13th century	Massive earthquake destructions	Final collapse of remaining scalaria in the northern half	
AD749/50		collapse of *carceres* and *cavea* seating sealing the mass graves	
Mid-7th cent.	Bubonic or pneumonic plague → (contemporary literary source)	Over 200 plague victims buried in *cavea* chambers W2 and W3 placed on top of abandoned workshops and Late Byzantine pottery kiln waste dump	
AD 636	Islamic conquest	Sporadic non-structured occupancies	
	End of Byzantine era	Potters community abandoned hippodrome site, their pottery workshops and associated dwellings	
6th – early 7th cent.	Reportedly mid-6th century plague (literary source, but no archaeological evidence) Late Byzantine period	**W2**	**W3**
		Large pottery workshops waste with unfired forms, see FIGS 4 and 5a	Smaller dump of Late Byzantine pottery, spill-over from W2
Ca mid-4th to end 5th cent.	Early Byzantine period	Workshops continued	Transition of Late Roman to Early Byzantine pottery kiln dump and workshop installations
Ca mid-3rd to mid 4th cent.	Late Roman period	Workshop installations of potters and tanners See FIG. 2	
Later 2nd & early 3rd	Roman era-transition to Late Roman period	Chariot Racing (chariot race victor dedicated altar to Julia Domna/ Septeminus Severus)	
From ca mid-2nd to later 2nd cent.	Roman era, Hadrianic plan of urbanization/ building monuments continued	Foundation and construction phases of the hippodrome Racing started	
Late 2nd/1st cent BC to early 2nd cent. AD	Late Hellenisitc Gerasa, gradual romanisation of Decapolis city, Hadrian's visit AD 129: expansion of urban Gerasa and building of city wall	Necropolis phase of site with hypogean temple tombs, closure of SW necropolis in beginning of 2nd for building of the Arch and the Hippodrome	

3. Schematic chronological chart of the Hippodrome complex.

by the mass-burial of the mid-7th century plague victims, and finally by the earthquake tumbles (Ostrasz and Kehrberg 1994).

The wasters and misfired 6th century pottery on Figure 4a are only a sample of the large deposits found under the pile of human skeletal remains in chambers W2 and W3 which were in turn buried under the collapsed masonry that covered the others chambers of the east and west *cavea*. Not counting the two tower structures, the majority of the 106 chambers were designated as workshops and / or filled with accumulated waste from the workshops and domestic rubbish. A limited number, about 1/5th of the *cavea* chambers had been converted into simple dwellings and fitted out for domestic purposes (FIG. 2A).[3] As already mentioned above, by the end of the 4th century the Late Roman tanneries had gone out of use; either simultaneously or a little later in the 5th century the Early Byzantine pottery kilns were demolished; the chambers were then either reoccupied by potters' families or filled with their domestic and mostly industrial waste which peaked together with their production in the 6th century.

A brief explanation is necessary to explain why so many of the Late Byzantine potters did not continue to make use of the earlier installations, or indeed did not continue as family concerns, some of which may have begun in the 3rd or early in the 4th century. A revivalist movement in the 5th century of Roman imperial institutions reclaimed the hippodrome as a public arena for games; as a result the industrial installations in many chambers of the *cavea*, including the kilns, were deliberately destroyed and one must conclude that the activities ceased. However, inscriptions on seat stones and other evidence attest that only the northern part of the circus had been reclaimed for more modest public games than chariot or horse racing. Pottery evidence from industrial waste in the chambers of the south-east *cavea* made it clear that the southern half of the hippodrome was not used for games and continued to function as a potters' *sūq* in the 5th century. The difference was that kilns and workshops had now to be built on the outer periphery of the circus and no longer inside the *cavea* chambers.[4]

The Early Byzantine revival of games at the hippodrome was short-lived because by the beginning of the 6th century the whole building was again occupied by the potters demonstrated here mainly with finds from chambers W2 and W3 next to the main gate at the northern end of the *cavea* (Ostrasz 1994; Kehrberg and Ostrasz 1997; see FIG. 2B). Continuing from the 5th century edict, the Late Byzantine kilns and workshops were built around the periphery of the circus building but as before, the arena was left clear of permanent structures; while some chambers continued to function as dwellings the multitude absorbed the enormous by-products of waste (about 30% in the production process) a normal ratio in any large-scale manufacture of ceramics for local and export trade.

Misshapen and discoloured pottery from misfiring, wasters and slag are common and well known features at any excavated pottery kiln site, but the discovery of unfired pottery in *cavea* chambers W2 and W3 is a rare phenomenon due to its fragility. Exposure of unfired forms over such a long period of time usually leads to weathering and disintegration. So far the hippodrome is the only kiln site at Jarash that has provided us with a whole set of unfired pottery forms (albeit many perforated with worm holes) typical of the 6th century repertoire. We have also obtained a number of unfired sherds from earlier hippodrome kiln dumps, and there are known finds from Umayyad kilns in Jarash (inside the walled city) with unfired pottery, but the quantity and typologically complete range of the assemblage in the 6th century deposit of W2 and W3 are so far unparalleled in Jarash and elsewhere for this period.[5]

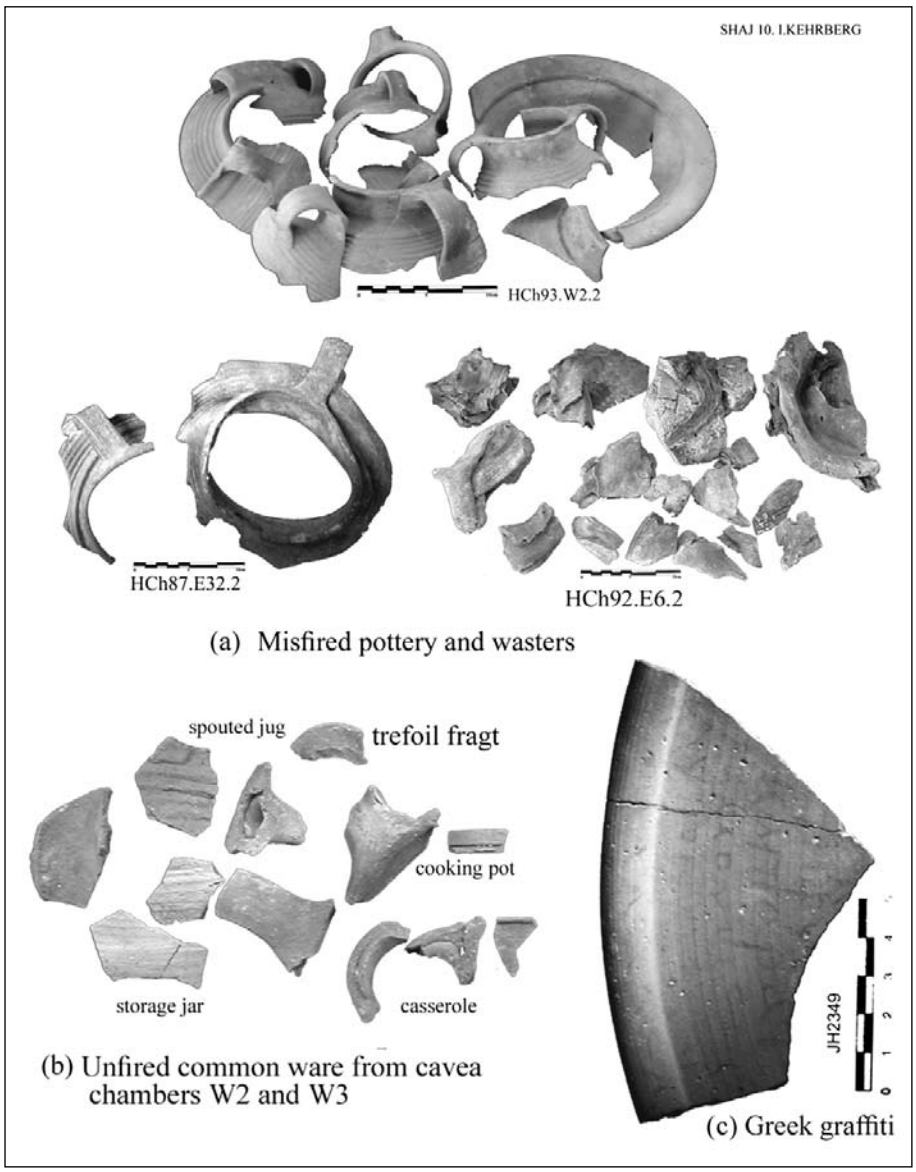
[3] Two *cavea* chambers near the E-S tower of the *carceres* (Ostrasz 1995) had been refurbished and designated as rooms for the 'deacon' of the chapel or church of Bishop Marianos, dated by an inscription to 570AD (Gawlikowski and Musa 1986); Antoni Ostrasz was the architect of the Polish Mission which excavated these chambers and the church opposite in 1982-83 as part of the International Jarash Project. It was his pivotal role in this Polish (Warsaw University) excavation of the church and exploration of parts of the hippodrome which led to Ostrasz's own Hippodrome Project sponsored by the Department of Antiquities from 1984 until his untimely death in October 1996.

[4] One is dealing with a restrictive measure rather than reclaiming the whole hippodrome for public festivals; the restrictions by the authorities to the southern half of the building may have diminished the potters' output but it appears evident from the excavated deposits that this did not cause a gap in the flow of ceramic production, see Kehrberg 2001.

[5] In fact, the discovery was fortuitous: as our pottery washer was needed in the excavation, I washed the pottery in our quarters at the Jarash Archaeological Camp. The first sherds I rinsed were *Jerash Bowl* fragments and instead of seeing the familiar red burnished slip and painted decoration emerge, they began to dissolve between my fingers!

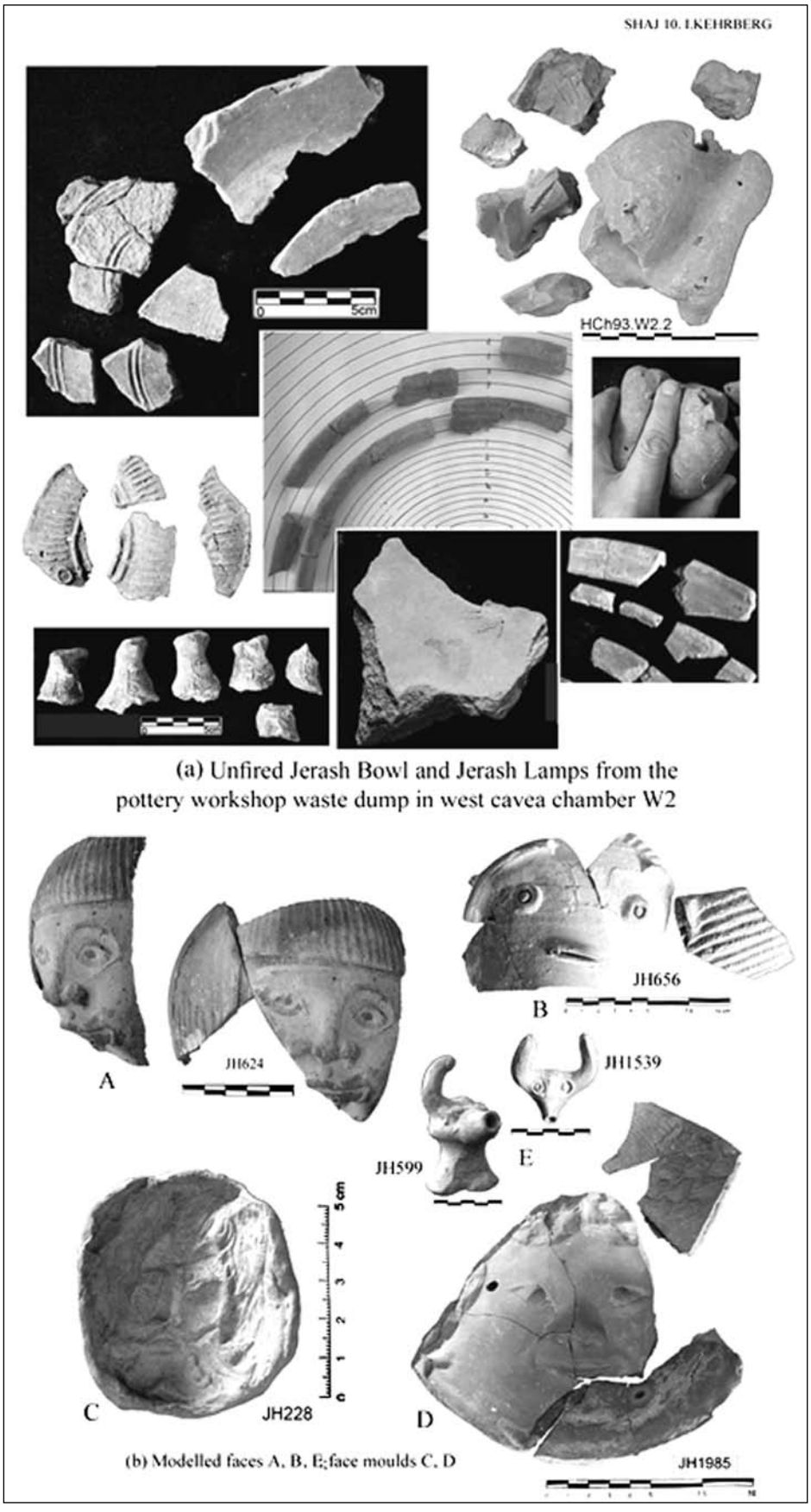
After identifying and counting the unfired fragments I realized that the survived deposit may have belonged to one unfired kiln load. There were several thousand small and larger unfired pottery fragments among a much larger quantity of misfired pottery from the same workshop (FIGS. 4b and 5a). The forms of the unfired ceramic made up the same range of types as the fired waste, among them the most distinctive *Jerash Bowl* and *Jerash Lamp* fragments. The finds are particularly interesting because they show the fabric before being tempered through firing[6] and inform on methods of manufacture: all decoration had been applied before firing and the colours did not change with firing: the motifs were painted on the wet body for adherence and impressed designs were stamped at the leather-hard stage (FIG. 5a).

The other unfired pottery types range from cooking pots to jars, bowls, casseroles, lids, jugs, including pipe segments and tiles. They are the same range of wares as the discarded fired forms with which they were found. Whilst the fired pottery dump had accumulated over time, the disposal of the unfired lot was clearly a single action and represents one



4. Discarded pottery (a, b); *Jerash Bowl* sherd with Greek cursive writing (c).

[6] We asked Eric Lapp to carry out a laboratory examination of our unfired Jarash Bowls. Lapp's analysis proved what could only be supposed with the naked eye: the hippodrome Jarash Bowls were not made from tempered clay; the clay was pure and had only natural stray inclusions from the clay site and preparation floor (see Lapp 2001).



5. Unfired *Jerash Bowl* and *Jerash Lamp* fragments (a); discarded moulds, pyxis lid and zoomorphic vases (b).

assemblage from the same workshop. That the lot was ready and had been prepared for one firing by a single workshop is also evident from the entirety of the assortment of types, the same fabrics and their leather-hard (ready for firing) state of preservation. The understandable frustration of the potter at having lost one big kiln load (evident by the number of fragments) was expressed by one find: he had squeezed one pot into a tight ball with one fist before he threw it onto the heap (FIG. 5a).

The unfired group enables us to estimate the composition of one kiln load with some accuracy. It consisted of all standard ceramic goods that were stacked in a kiln according to their volume. Perhaps more importantly, this discovery proves beyond doubt that individual workshops at the hippodrome did not specialize in particular wares but manufactured the whole range of ceramic products in demand. It puts to rest also speculations that Fine Wares like the *Jerash Bowls* and mould-made objects like figurines and lamps required greater skill and specialized workshops.[7]

Lastly, the massive amounts of discarded pottery, the wasters and the unfired pottery leave no doubt that the hippodrome potters were the main producers and that Jarash was indeed the centre where the *Jerash Bowls* originated together with the *Jerash Lamps* and from whence they were exported.[8]

The Corpus

The following presents examples of the 6th century pottery from the hippodrome workshops which have put Byzantine Jarash at the forefront of pottery trade across Jordan. The figures illustrate some of the extraordinary quality that was characteristic of the hippodrome potters and not uniquely confined to one workshop.

*Jarash Bowls (*FIG. 6*)*

For want of space only a few select scenes and images painted on the bowls are shown on Figure 6; the subjects are manifold and were often accompanied by floral motifs and linear patterns which can be seen on some fragments. The majority of the bowls carry motifs painted in darker shades of red with some white and pale yellow painted details applied directly on a burnished bright red slip or onto a white painted tondo in the centre of the bowl (FIGS. 5a and 6). A variation of the rim can signal a variation of a browner fabric and burnished slip, but with the same dark red to brown and white painted decoration. Some bowls have only impressed linear (FIG. 5a) or stamped figurative decoration, often a cross or a bird, in the centre. A smaller number are hybrid productions combining the decorative variants on one bowl; one sherd (FIG. 6a) illustrates the application of different techniques of painted and impressed decoration.[9]

The Hippodrome potters' scenes range from natural presentations of flora and fauna, like the palm fond and partridge, the lion flanking a kalyx crater, to linear and symbolic motifs like the cross (FIG. 6a) and other biblical references like baskets filled with bread or fish. A unique find has been an incomplete bowl providing, however, an almost complete narrative (FIG. 6b: JH631): it shows a scene in an amphitheatre[10] in which two Christians are about to be killed by a lion. The depiction of the scene itself and the rendition of emotions captured in the facial and bodily expressions is remarkable (not to say melodramatic). The sketchy yet accurate detail applied to the figures and such features as the gate (entrance from the corridor into the arena) behind which one Christian is hiding from the lion is equally skilful. The partridge on bowl JH 634 reveals the same professional skill and artistic flair which is replicated on most bowls from different hippodrome workshops.

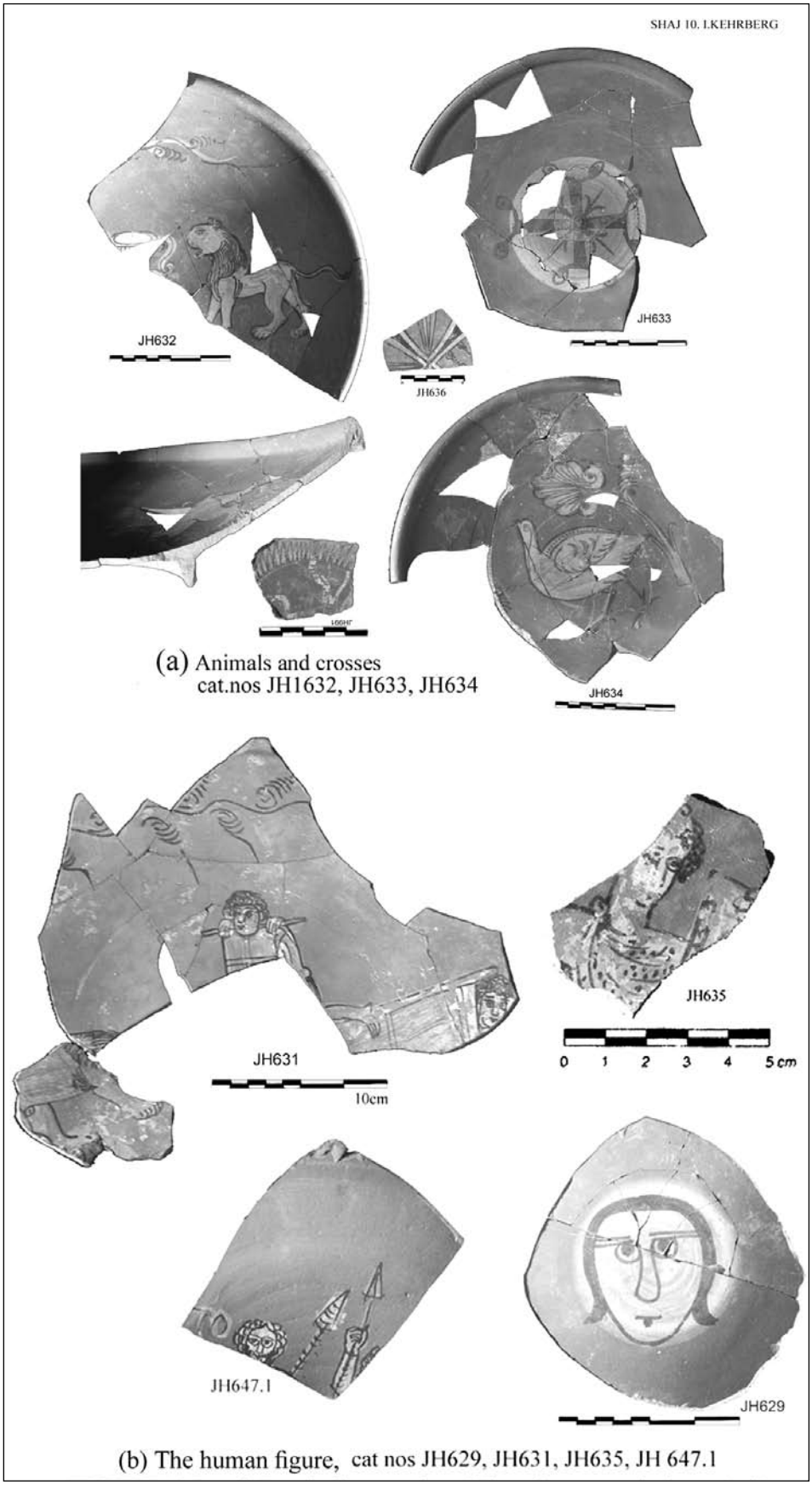
That the fragments on Figure 6 come from various hippodrome workshops is identified by their

[7] In contrast to Gerasa and later Jarash, pottery workshops in the western provinces are well known for their specialisation in wares like terra sigillata and lamps like the '*fabrica'* both of which were exported and further disseminated by the Roman garrisons who bought them. A hallmark of specialization is often the signature or 'label' and the above products could be traced by the potters' stamp. This was not the case in Jordan but one can discern qualitative differences in execution of styles and in fabrics between the potters of the hippodrome and other 6th century pottery made at Jarash, for instance the pottery from kilns at the Zeus Sanctuary (Rasson and Seigne 1989) and the Macellum (Uscatescu 2001). Lacking a signature, this has significant implications with regard to identifying workshops and their clients or trade mentioned later on.

[8] The bowls, their origins and styles have first been studied in detail by P.Watson (1989) in whose footsteps A.Uscatescu (2001) closely followed. Both scholars undertook their theses before our finds in chambers W2 and W3 during the 1992/3 excavations, and we can now provide the missing archaeological evidence.

[9] I will publish the complete corpus of *Jerash Bowls* with the corpus of the other pottery in the second volume of the Gerasa Hippodrome publications; a concise version will appear in my chapter in volume one on the architecture of the Gerasa Hippdrome, by A.A. Ostrasz.

[10] Perhaps the picture alludes to other known depictions on mosaics since there were no amphitheatres in the Decapolis cities of Jordan, the nearest was in Scythopolis.



6. *Jerash Bowls* from various Hippodrome workshops (a, b).

separate find spots and their distinctive styles but the superb craftsmanship is manifest in each example. Each of the human faces on figure 6 show different styles but they have in common the Byzantine facial features of heavy brows and narrowly set large protruding eyes characteristic of sculptures and mosaics of this period: the style alone could date the bowls. The facial expressions range from the sketchy realism on JH631, to a caricature on JH647 and almost abstract on JH629, contrasted by the classicism of the likely portrait of a Greek hero on fragment JH635. These images are often accompanied by Greek inscriptions painted in red and often highlighted with white lines identifying the figures and scenes which allude to their Classical origin; two Greek letters …TO are still visible on fragment JH647.

Face Moulds and Modelled Vases (FIG. 5b)
The human figure and often only the face occur not only frequently on *Jerash Bowls* but are also favourite subjects for other objects shown on figure 5b. Like the bowls, the moulded, modelled and painted pyxis lid JH624 and moulds JH228 and JH1985 share their stylistic renditions with figures in contemporary mosaic floors of 6th century churches at Jarash which were no doubt familiar to the potters. Mould JH228 depicts a miniature ¾ view of the bearded head of mature Dionysos encircled by vines. The image is a close copy of the same head shown in scrolls framing several 6th century mosaic floors at Jarash and elsewhere in Jordan. The hippodrome potter has undoubtedly replicated the design he saw on the mosaic floor of a local church.[11] We are similarly reminded of mosaics in the hippodrome potters' depictions of Greek heroes, saints, ethnic clothing, animals, floral and other motifs.

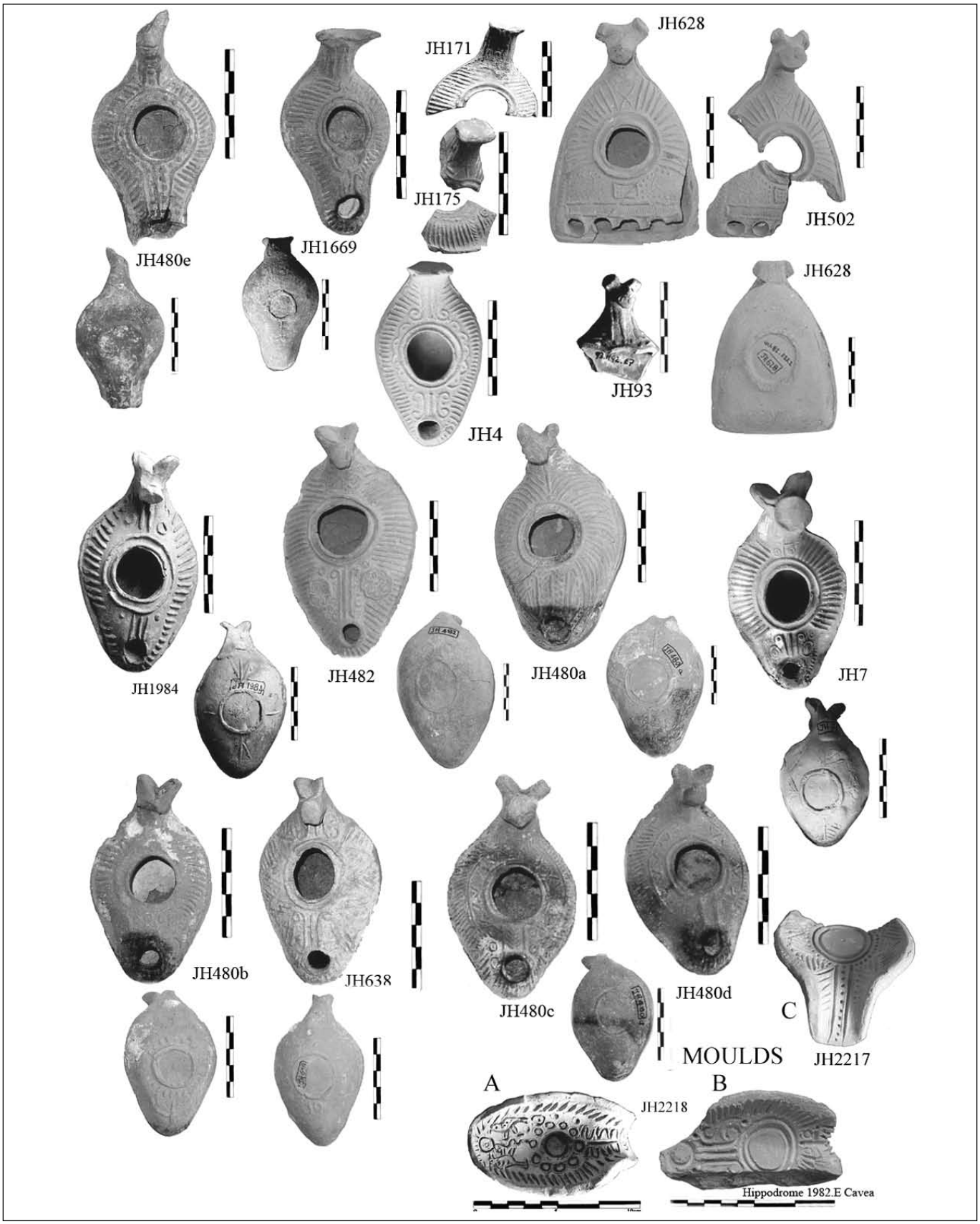
The allusions seem obvious and intentional and portray a certain erudition among the artisans whether they worked from copybooks or other sources. This should not be surprising, and it is not totally irrelevant to consider the Classical Greek heritage re-emerging in pottery such as the 6th century AD *Jerash Bowls* where narrative was important and the vase surface treated as a canvas. The hippodrome is the manufacturing site and cannot provide evidence about the patrons, whether they were the clergy or civilians, or both. But a study of workshops analyzing the fabrics and styles of their wares does not only identify their exports elsewhere but could also help determine the buyers by examining the context of the exported finds.

Zoomorphic vases have been a continuous part of ceramics in Jordan for millennia and are not missing in the hippodrome workshops.[12] They range from elaborately decorated fish vases to the most commonly rendered bull vase found in some quantity (FIG. 5b: B, E). They have also been found in Byzantine levels at other excavations in Jarash. The hippodrome examples, as are all the finds shown here, are directly associated with their place of manufacture and only a clay analysis and stylistic predilections could determine whether vases found elsewhere had been bought at the hippodrome shops.

Jarash Lamps (FIG. 7)
The identification of workshops and their local and export trade is made easier with regard to lamps, in this case the mould-made Late Byzantine *Jerash Lamp* which so often accompanies finds of *Jerash Bowls* (*supra*). In the absence of fabric analysis examinations are helped a great deal by small faults, irregularities and the state of wear of the ceramic moulds with which the lamps are made. Occasionally the cast is further decorated with additional features stamped on top of the moulded décor (see lamp JH482, FIG. 7). A stamp may bear equally distinctive marks, not unlike keys of a typewriter. Minor faults or impurities of the mould and stamp negative leave unmistakable positive impressions which are a "DNA" that can trace the lamps back to the workshop. Selecting lamps by their fabric alone is not a sufficiently strong criterion by which to isolate workshops because several workshops at the hippodrome may share one or several clay sources. A potter may use a buff and red ware fabric for

[11] Or taken from a mosaicist's copybook. One such border is on a grand mosaic floor in the 6th century church of Bishop Isaiah immediately west of the North Theatre (Clark 1986: 310, fig.4). But since the church suffered severe damage from the iconoclasts the face and other images have been removed. They would have been of the same generic type as those on the mosaics of the Chapel of Elias, Maria and Soreg in Jarash, or at the Church of the Apostles in Mādabā (Piccirillo 1993: photo 99, p.296 photo 570). The churches date to the first half or around the middle of the 6th century AD. The mask of Dionysos usually occupied the corners of the border.

[12] The earliest locally wheel-made animal vases, 3 camel models, at Gerasa come from the mid-2nd century BC tomb discovered during our city wall excavations in the 2001 season, cf. Kehrberg and Manley 2002: 197-199, Fig. 2.



7. Mould-made *Jerash Lamps* and their moulds (A, B, C) from various Hippodrome workshops.

one mould, but at the same time it is not surprising that groups of lamps made from the same mould are made more often than not, made from the same fabric.

A third and distinctive "marker" of the potter's hand is the so-called zoomorphic handle of the *Jerash Lamp*. A piece of clay is attached to the lamp's original tongue handle, illustrated by three moulds (FIG. 7: A, B, C) after the two lamp halves have been joined. The clay is then pinched and pushed into shape by three simple movements of thumb, index— and middle finger. The unfired handle fragments (FIG. 5a) show that the heads all bear the same tilt towards left. This is the result of multi-repetitive movements when making dozens of lamps in one batch and is the mark of a potter's 'hand'; it could probably also indicate whether the potter was right-or left-handed. In addition, the 'animal heads' appear to be of the same peculiar style.[13] Other such family groups of lamp handles frequently match the mould pattern, type and size: Multiple nozzle lamps JH628, JH502 and fragment JH93 at the top, and lamps JH480a and JH480d at the bottom on Figure 7 are the most obvious and classic examples combining the listed criteria which can pinpoint the place of manufacture.

In addition one could examine the lamps by their fingerprints. This type of study has already been done on Alexandrine lamps (Dzierżykray-Rogalsky and Grzeszyk 1991), but in view of the hippodrome potters' vast output related securely to their original contexts, a forensic examination appears not essential for the basic grouping of lamps. However, looking further afield, the hippodrome *Jerash Lamps*, as indeed the preceding products, provide the necessary data to intensify a lychnological study including fingerprints which may ultimately lead to identifying family members of or relationships between workshops, how many 'hands' were working in one workshop and trace lamps back to their actual maker.[14]

Other Common and Coarse Ware Ceramics (FIGS. 8-10)

The following presents a selection of ordinary common and coarse ware pottery made by the same workshops that produced the *Jerash Lamps, Jerash Bowls* and other objects shown above (FIGS. 4-7). As outlined earlier ('The Hippodrome Potters') the unfired fragments match the types of the misfired and discarded pottery shown here and with which they were found. The waste deposit of one workshop has demonstrated conclusively that the repertoire prepared for one firing consisted of all forms and wares current in 6th century Jarash.

Jugs, Juglets, Dipper Juglets and Cups (FIG. 8)

One of the most frequently occurring forms of the common table ware are jugs; most hippodrome potters focused on two basic forms: one type continues with a variant of the earlier standard trefoil mouth as a pouring device (Kehrberg 2007: Fig. 9); the other, and more common 6th century form shown on Figure 8 has a circular mouth with an accentuated everted lip and a tubular spout attached at the shoulder opposite the handle.[15] The second type occurs also without an added spout and like contemporary jars, has occasionally large white circles painted on their red ribbed bodies (FIG. 8: A, B). The slim collar off-setting the neck and shoulder are shared by both and occasionally the trefoil-mouthed jug. The jugs are usually finished with a thin slip or slip-wash or slurry, and like the body mostly in red but occasionally in a semi-transparent creamy wash. The rounded base is omphalous-shaped like other closed vessels and bowls of this period (*infra*).

Some miniature juglets are copies of larger jugs with the difference that their bases are pinched and that they were probably carried on a belt or put on

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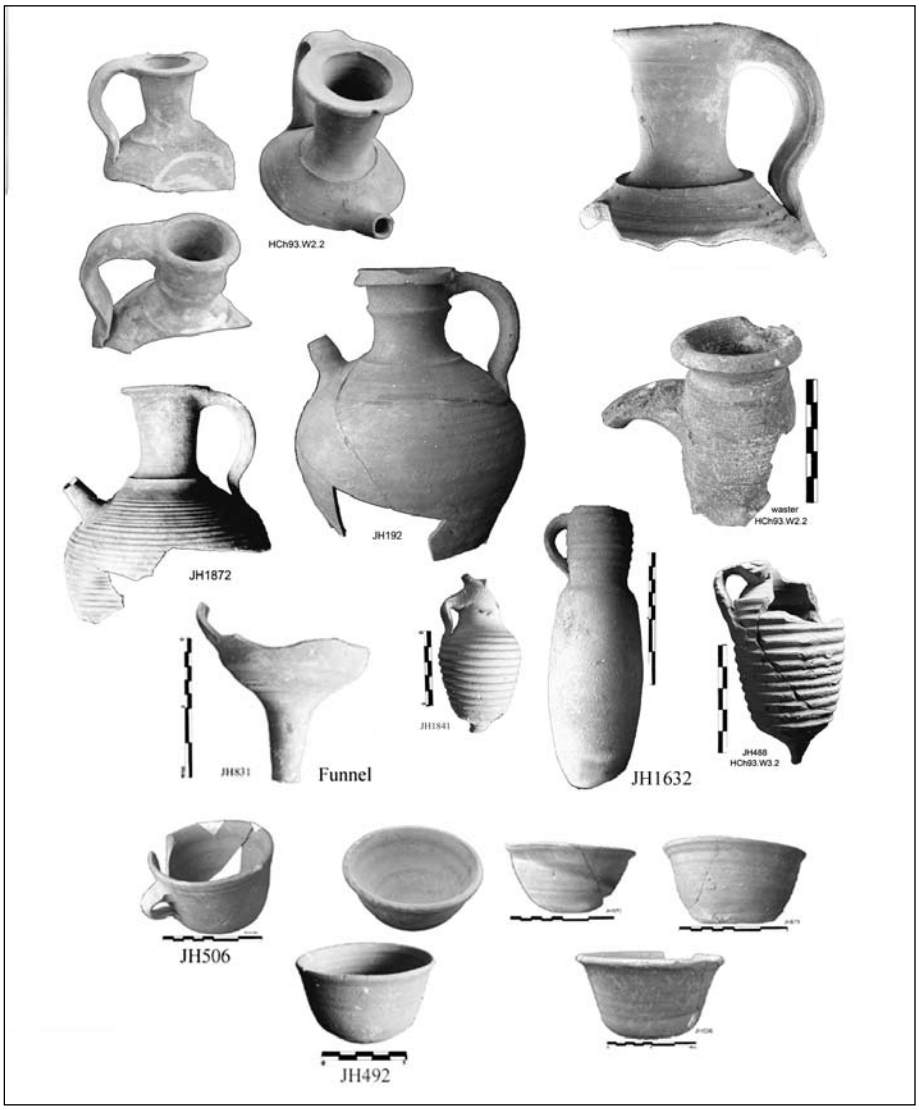
[13] In my study of lamps from the North-Theatre complex (Australian Excavations 1982-83), I have first noted these features peculiar to groups of Jarash Lamps in conjunction with casts from particular moulds, and 2nd generation mould-copies made from lamps (Kehrberg 1986). I was able to build a cluster of 1st and 2nd generation lamps from diverse loci. On the lamps from the hippodrome workshops see also Kehrberg 2008, in the press.

[14] Establishing a fingerprint database would not only isolate individuals, whether adults or children, but could be an appropriate alternative to spectrographic analyses of lamps as well as other mould-made objects when one cannot extract samples for fabric analyses. It is also useful in regard to the one or two *Jerash Lamp* moulds having been found outside Jarash. They may have been 2nd generation moulds made from imported lamps; alternatively they could have been left behind by an itinerant potter from Jarash because it is doubtful that a potter would sell his mould which is the patented blueprint for his trade.

[15] The latter is still the standard water jug in Jordan today with the difference that pottery jugs are less popular and mould-made plastic models dominate in any *suq*; they are especially used in outdoor activities away from the table like farming (or excavations); the water is poured directly, but without touching the lips from the shoulder spout into the mouth.

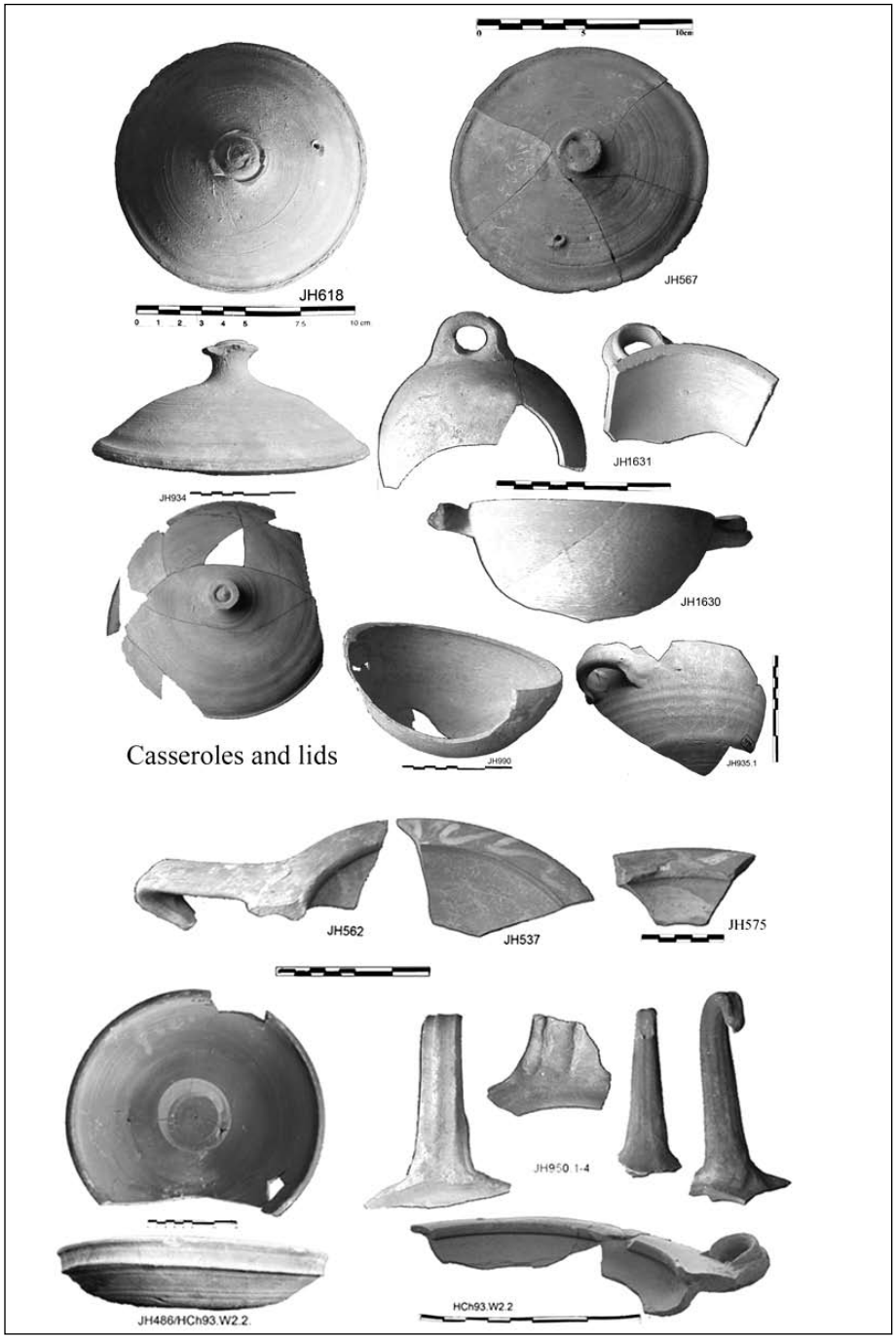


8. Common table wares: jugs, juglets and cups -'humus bowls'.

a stand. Two examples of a variety of these small vessels, JH1841 and JH488 represent popular types and, not unlike perfume bottles, their small size seems to advertise a precious content. A larger form is the 'dipper juglet' JH1632 which, like the large jugs, has an omphalous base or occasionally a conical base, but the ribbing is usually reversed: here it is the neck that is ribbed and the body left plain. This reversal of plain and ribbed surfaces harks back to the small filler— or strainer-jugs with a wide ribbed neck and plain body produced by Hippodrome potters of the Late Roman period (see Kehrberg 2007: 42, Fig. 9).[16]

The dipper juglets are not infrequently found together with larger jars which may have contained liquid, indicating their primary use which also gave them their name. Less frequently identified are funnels like JH831 which may be partly due to their similarity with contemporary bowls: one could not distinguish between rim and body sherds of a funnel or a bowl. On the other hand, like in modern households, funnels occur singularly and they were

[16] Variants of this strainer jug continue into the Early Byzantine period at the hippodrome. It is not surprising that the Late Byzantine potters at the hippodrome and elsewhere in Jarash continued in general with the Roman to Early Byzantine trefoil mouth jug form, dictated by function as well as tradition. Selective features emerging in later variants are the distinctive chronological breaks with earlier traditions. This could undoubtedly be said about most basic forms used in the kitchen and at table, excepting omissions of some types like the Late Roman-Early Byzantine bottle (Kehrberg 2007, Fig. 9) which had disappeared by the 6th century and was probably replaced by the miniatures.



9. Common kitchen ware and serving dishes: casseroles, frying pans and platters.

much less likely to have been produced in large quantities even for shops or eateries.

Figure 8 does not represent a complete range of jug variants, but judging by their quantitative occurrence these types are the most commonly produced and used forms in Byzantine Jarash. The same may be said about the cups or small bowls on Figure 8. The small bowls come with a plain rounded bottom or an omphalous base like the large version of a similar type bowl made from the same ware (see above comments on the funnel); occasionally one may find a cup with a ring foot and these rare examples tend to be accompanied by a more slender bell-shaped cup. The fabric varies from the standard ware, like the jugs and juglets, fired in grades of red, and a softer buff ware ranging from light orange to pastel brown (also preferred for the larger bowls); both wares occur often with a darker thin red to orange slip running over the outer rim; others have white irregularly painted bands running or

'dripping' down the inner side of the bowl.[17] Their ware and slip as well as the style, and it is a deliberate style of sketchily painted application, are the same as on the larger vessels. It characterizes the generic type as well as differentiating workshops. It also denotes mass-production of the cheaper everyday table ware.

From Stove to Table: Cooking and Serving Dishes (FIGS. 9 and 10a)

The flat-bottomed platters like JH486 on Figure 9 are easily distinguishable from the *Jerash Bowls* (FIGS. 5a and 6) with which they occur at the hippodrome workshops. The common ware dish belongs to the same group of red fabric as the jugs shown on Figure 8: depending on the firing, the platter has usually a thin red to orange to pastel slip and is decorated with a white painted circle or a number of circles in the centre of the flat dish. The brush strokes and perfect circle reveal that the painted tondo is applied while the dish is being turned on the wheel. The sparse design and sketchy application speak again of quick mass-produced pottery already noted for the jugs (*supra*) and other bowls; their large numbers at the hippodrome and frequent occurrence at other sites mark them out as the regular serving dish in Jarash throughout the 6th century. The form evolved recognizably from earlier dishes, but the platter also represents deliberate stylistic changes breaking with the Early Byzantine tradition of flat bottomed dishes; the simple white-painted decoration remains the same throughout their production.[18]

The other pots on figure 9 illustrate some of the kitchen and serving dishes. The casseroles with their lids and the 'frying pans' had as today dual functions, at once for food preparations in the kitchen and serving dishes. These forms in particular have a longevity going back to the Roman kitchen. Small changes in their appearances are more due to generational adaptations by potters than intentional style changes. The string-cut method of separating the rims of casserole bowls from lids or another bowl, and not removing the often untidy bits, remains the same with the earlier thicker walled and the later larger and thinner variety. This in itself is a clear indication of the rudimentary level of the dish in the repertoire of kitchen and table crockery. The other feature is the simple slurried surface on the fabric ranging from reddish to pastel brown often leaving messy finger impressions where the knob has been attached as seen on lid JH618. The lids are usually plain with one small hole, see JH 618 and JH567, pierced from either side with little or no attempt of tidying the piercing, another carelessness of execution where only functional aspects and speed are essential. The hole serves as air-vent while cooking, there may be two depending on the size of the lid and pot (quantity of the content); the rounded base of the casserole is adapted to fit the stove rather than the table.

The massive output of the hippodrome workshops from the 3rd to 6th century has shown that with the majority of pots their function remained the main criterion for form tradition, associated with food storage, preparation in the kitchen, serving at table and the meal itself.[19] The painted decoration on the broad rims of frying pans JH562 and JH537 shows that they were also designated as serving dishes. The shallow flat-bottomed saucepan from Chamber W2 which has two horizontal handles like the casseroles but the same type of folded over

[17] The red body and drip-painted white bands inside the bowls recall the traditional pottery bowls used today when serving a meza, especially for humus and other dips. In fact, the running streaks of superfluous humus and tahineh after dipping appear to be copied in the painted decoration. Like the spouted jug, this bowl is nowadays made in plastic including the decoration, bearing witness to the survival of an old form tradition which may also reflect on conservatism of dietary habits. I have called the cups shown on Figure 8 'humus bowls' in my Jarash pottery corpus to express this strict adherence to tradition where modern materials like plastic, invented for use with simpler moulded forms, is applied to conform strictly to the original pottery model; this does not rule out multiple uses for the modern plastic copies or indeed for the ancient prototypes.

[18] While continuing 4th/5th century or even earlier Late Roman local and/or workshop traditions many of the 6th century forms were ultimately derived from attempted copies of or were inspired by imported pottery. This cannot be discussed here but will be examined in my final publication of the hippodrome corpus. In previous publications on pottery I have, however, already remarked on early Gerasa's internationalism with regard to local pottery manufacture by its adherence to main trends in ceramics (see e.g Kehrberg 2007). Watson traced the relation between these common ware bowls and the Fine Ware *Jerash Bowls* in her thesis, cf esp. the rim form (Watson 1989).

[19] Quantitative seriation or 'fashion charts' of types produced by generations of hippodrome potters demonstrate a lack of innovation and clear preference not to alter the forms intentionally for non-functional purposes. This dominance of functional aspects in household vessels also reflects on the clients and cultural-cum-culinary habits of the society in general. On the latter see especially the study on Tel Anafa pottery by Andrea Berlin (Berlin 1997). The charts and other tables and aspects of pottery workshops and their markets will be part of the final publication, see note 15, above.

and everted rim (reminiscent of large glass dishes of the same period) as the long-handled pans belong to the common ware repertoire as the platter JH486 and can generally be described as table ware. The frying pan with its long hooked handle and deeper bowl and smaller lip first appears in the Late Roman workshops, but their popularity peaks in the Byzantine period at least at the hippodrome workshops.

The small painted jars on Figure 10a join the above group of decorated common table ware. Their red fabric and slip with circular white painted decoration group them together with the jugs and platters (FIGS. 8 and 9). The small size and thin-walled delicate make seem to suggest careful handling and like other amphoriskoi, may indicate a prized dry or liquid content like a special sauce or herb. The other two-handled jars and cooking pots are not as precious; their plain fabric is essentially the same as the jugs ranging from red to shades of orangey and pastel brown usually with a slurried surface. The middle row shows typical 6th century smaller jars churned out by the dozens at any one firing of one of the hippodrome workshops. The greater part are slightly thicker walled, especially the softer buff ware jars of the pastel coloured range; the thin-walled larger cooking pots or containers are usually of the harder red ware and sometimes decorated like the amphoriskoi and jugs.[20]

The rims and necks of the 'cooking pots' and smaller jars tend to vary in their accentuation of the inverted 'S' or '?' curve; some are almost flat like JH1625 and JH1623, others have deeply indented curved necks and rims like JH1493. A large number, represented by the large cooking pot or jar JH1918 characteristic for the period, have the rims completely rolled over or folded outward and pressed into a sharp edge again reminiscent of techniques for glass vessels (FIG. 5 wasters and unfired fragment).[21] It is important to note the diversity of rims found together at the same workshop dumps. At other sites in Jarash or somewhere else where the jars are found in contexts in which they were employed (after purchase), rim variants occur necessarily at random. This may lead to over-classifying the same generic type due to unawareness of the irregular quality of production. There is no chronologically appreciable difference between the various inversed s-curves of 6th century cooking pots; at most there are slight differences between hippodrome potters. Other irregularities are due to drying and firing processes, sizes and thicknesses of the jars and necks/rims which can be shown statistically. Coming from their place of manufacture at the hippodrome workshops and in large quantity has enabled me to eliminate artificial typological groupings based on rim variations. I was able to observe that small differences occur mostly haphazardly and can vary from one firing to the next.

The lighter two-handled jars or cooking pots probably had dual or multiple uses in the household or shop. The thin walls of the larger jars were economical and it did not seem to matter that many were not very well turned out: like their rounded bottoms they made cooking much faster having to use less heat (and fuel). They were also easily breakable, but judging by the masses that were produced or rather thrown away, the jars seem to have been inexpensive. The jars may also have been used as packaging for the transport of perishable dry goods like herbs (and dried yoghurt?); this would explain why these basic Jarash pots were found together with the main exported items — the *Jerash Bowls* and *Jerash Lamps* — at sites like Bosra (*supra*, and nn. 2) which produced their own everyday common or plain wares. According to the quantity of waste produced by the hippodrome kilns — in average a 25-30% loss per load prepared for firing — their number outweighed by far the demand of jars by 'thermopolia' and other public kitchens.[22] The jars are too small and too fragile for long-term use and as permanent storage containers in retail shops. In fact, they could be compared with modern plastic containers or plastic bags used for carrying certain goods and recycled within the household or shop. The unusually large number of same-sized smaller

[20] The white painted Byzantine decoration on jugs and jars developed into pendant loops and spirals in the Umayyad period when decoration increases with more pronounced carinated shoulders and stronger accentuated profiles in general. A similar trend can be observed with painted wavy lines which became often parallel pendant lines and criss-crossing the ribbed surface.

[21] The rim is made by the technique used for glass vessels as noted above for the frying pan rims. The mode of 3x folding for a variety of rims is more suitable for pliable glass than being thrown on a potter's wheel; like other smaller cups and the rarer stemmed pottery goblet, glass seems to have provided occasional models at the height of the Byzantine era.

[22] Excavated by R. Parapetti and his team at the north cardo (cf. Parapetti 1998: 366, Figs 8, 9) I examined the pottery and other finds of the public eatery or kitchen.

jars could also indicate their use as quantity indicators of their contents, bought at a shop. At the pottery workshops broken pots were recycled by grinding them finely for inclusions in the clay fabric prepared for another batch of manufacture. Ground pottery particles were found in most fabrics of the hippodrome wares.

Pipes, Tiles and Large Storage Jars (FIG. 10b)
Ceramics often overlooked but equally important are the pipes and tiles for substructures of buildings and the infrastructure of industries, public water supply and drainage. Pipes such as JH617 and JH491 (FIG.10b) were produced in great numbers at the hippodrome and of these many were dumped after failed firings. The pipes are fairly thin-walled and usually reddish brown (JH617) or mottled grey (JH491) due to misfiring or stacking in the kiln; many pipes are somewhat overfired evidenced by slightly warped shapes, small bubbles and hairline cracks in the fabric, but many were still used for installations. The same pipes have been excavated still encased in mortar in the ground in various parts of the civic centre of Jarash which incidentally attests to the maintenance of previous Roman public water supply systems like public fountains and baths. To these were added new pipelines for private houses and new baths in the Byzantine period. Sewage was undoubtedly another use for pottery pipes not yet uncovered by excavations.

The small block-like tiles JH2009 with finger markings on the obverse (FIG. 10b) were used for hypocaust structures and for kilns. The striated wood grain impression on the upright sides shows that the tiles were prepared in a wooden frame, probably a set of squares, which was removed after casting, aerating the tiles left to dry for firing; the bottom side of the tiles show that the frame rested on a dirt floor when it was filled with clay.[23] The clay is the same as that used for *Jerash Bowls* but with added inclusions making the fabric coarser and heat resistant. The tiles and the *Jerash Bowls* and other unfired fragments (FIG. 4b and 5a) came from the same workshop dump.

The large storage jar JH2334 is the common form in the Late Byzantine period (see e.g. Rasson and Seigne 1989: 7, Fig. 11) throughout the Levant and is not only used by merchants transporting their wine and oil, but also found in shops and eateries (*supra*; Parapetti 1998). Larger households also kept large jars in their kitchens or larders, in particular if they harvested their own produce at their farms situated in the surrounding countryside.[24] The hippodrome was a major producer of these jars, also attested by unfired fragments with preserved standard decoration of white painted thin horizontal lines on the main body (FIG. 4b). The ware is usually buff fired either beige or pastel brown to grey.

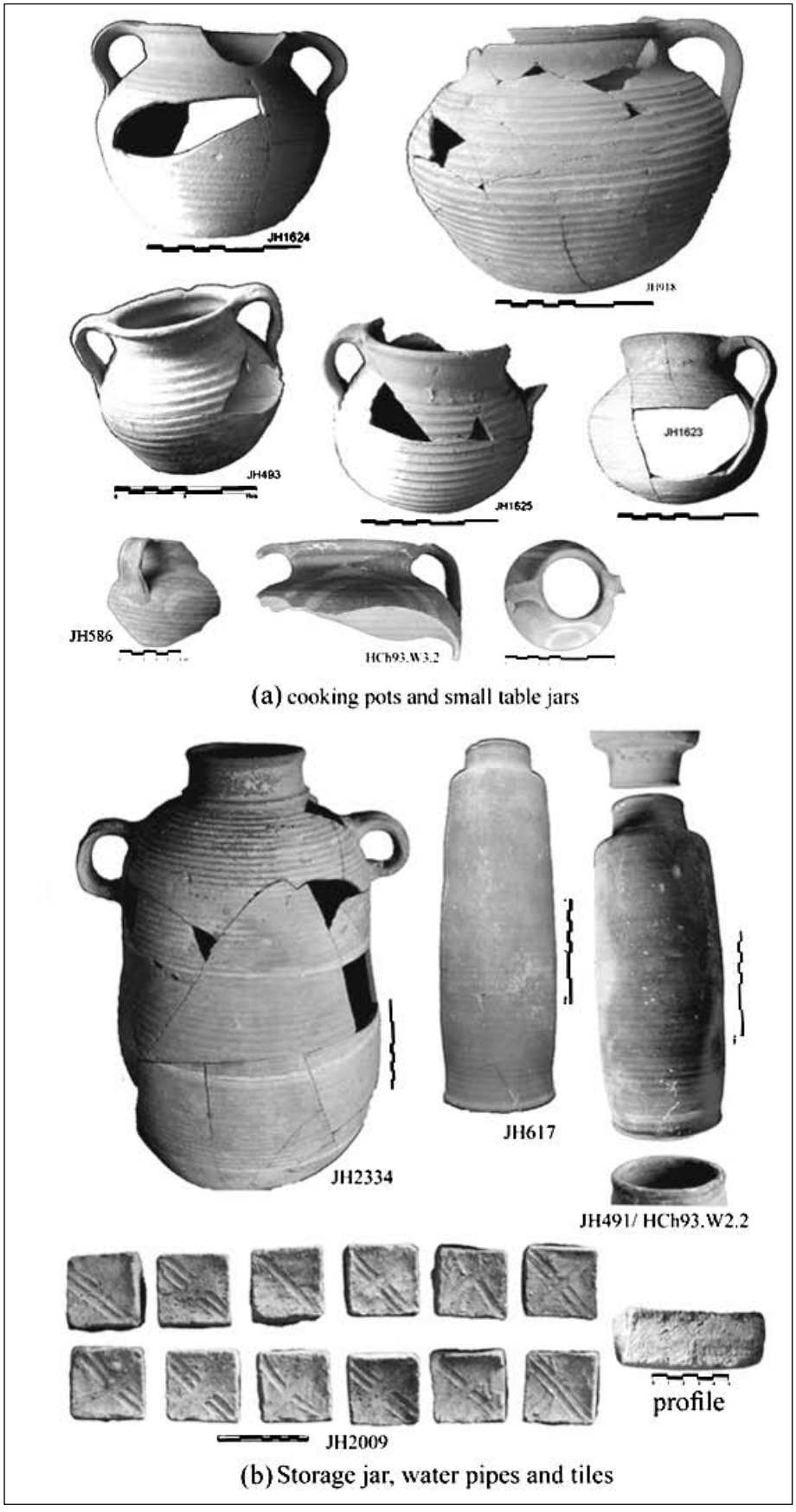
6th Century Greek Grafitti on a Jarash Bowl Sherd (FIG. 4c)
Under the section on *Jerash Bowls* and face moulds (*supra)* I briefly portrayed the skill of the Hippodrome potters whose sophistication is revealed in the rendition of painted scenes and moulded objects. It is also evident that some (probably a good number), were able to write. I have also posited that this was not an alien concept if one considered Gerasa's artisanal history as part and parcel of the transmitted Hellenistic and Roman cultures whose contemporary artisans had often been literate.

It is not entirely improbable to suggest that some of earlier Gerasa's potters could have been immigrants encouraged by their current governments to settle in the newly acquired territories.[25] Like retired soldiers and engineers, craftsmen accompanying the Greek and Roman armies respectively could equally have settled in the Hellenised and Romanised Levant; it was after all a policy that was

[23] I have noted the same method in brick making in Egypt at Saqarra in 1978.

[24] See the Umayyad house complex with its kitchen larder fitted out with a shelf to hold large jars. Antoni Ostrasz, architect of the excavations and restorer of the building maintained that the house began as a residence or villa in the Late Byzantine period which expanded into a substantial complex in the Umayyad period (pers. Comm.). 1980s surveys in areas between the Sūf village in the north and the southern end of the Zarqā' valley (Wādī Jarash) brought to light evidence of substantial Late Roman and Byzantine farmsteads including olive presses. We explored the areas east and west of Jarash and the road towards 'Ajlūn initially looking for quarries for the hippodrome and found installations dating from the Roman to the Byzantine period. The 3rd century was prominently represented as a possible result from Gerasa's trade with the Roman frontier stations, see Kehrberg 2007.

[25] One is reminded of the deliberate policy of early Greek settlements abroad and especially potters who were encouraged to move to the new colonies in the 8th and 7th centuries BC. The settlements in southern Italy were invigorated in the late 5th and 4th century BC by new waves of potters from Greece resulting in the famous red-figure South-Italiote pottery. Among Romans were artisans from Greece who could also have been brought to the Decaoplis cities like Gerasa and ultimately settled there, establishing guilds of 'western-style' artisans.



10. Common kitchen ware and coarse ware ceramics: cooking pots, and jars (a); storage jar, tiles and pipes (b).

for a while actively pursued by Alexander and by the Roman Senate for their western provinces. Importing ideas and ideals, as Hadrian and Antiochus before him had had clearly in mind, can also mean importing the people necessary for their grass-root implementation and material expression.

However speculative this may seem, we did find irrefutable prove that at least one of the hippodrome potters was able to write and others able to read cursive Greek. A cursive Greek text had been written with a fine paintbrush in red dye on both sides of a large *Jerash Bowl* sherd after firing, obviously taken from a broken bowl; it was the same red dye and brush he had used for decoration on the bowls before firing. The script is well written but faint because it was not fired and had been exposed to elements in the dirt and was washed by our well-meaning pot washer with a little too much vigour. It is a miracle that any of it survived.

The inscribed sherd was found among discarded pottery waste of other *Jerash Bowls* shown on Figure 6 and other pottery, and the text provides a glimpse into a potter's life. Papyrologists and epigraphists[26] examined the writing and suggested that the text could constitute some form of contract in a formula common to the Byzantine period. Unfortunately, too much is missing or too faint to be precise and on the other side one can barely make out letters, but it was stipulated that the possibility of a simple contract like a marriage contract could not be ruled out. The piece must have held some personal significance because the sherd or what is left of it (the broken-off text indicates a larger piece) had been decorated by the scribe: a zigzag pattern had been carefully painted on the plain rim of the bowl to frame the text. If this was so, it gives the piece a personal touch suitable for a marriage contract that could have been drawn up between two potter families working and living side by side at the hippodrome. The practised hand shows that the person was an experienced writer and not merely a copy artist as one may have otherwise suggested for the Greek painted inscriptions on the *Jerash Bowls* (*supra*).

The Byzantine pottery made by 6th century Hippodrome potters goes far beyond the repertoire of pottery types and their decorations shown in this paper. Having kept count of the entire quantity of the excavated pottery masses, and instead of separating wares, having retained the pottery finds together with the whole assemblage related to their contexts, has given us valuable clues to manufacturing methods and workshop organizations. This will ultimately allow the possibility to trace their commercial activities. The hippodrome excavations and the finds have also offered glimpses into a potter's domestic life and his education, reflecting in general on the township of 6th century Byzantine Jarash.

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[26] We owe our thanks to T. Gagos and others of the ACOR papyrology team who are examining the Nabataean Byzantine papyri found by P. M. Bikai's team in the excavation of the Petra Church. Unfortunately the text on the sherd remains inconclusive due to its lacunae and the missing fragment.

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Cremation Burials in ‘Ammān, Jordan

Introduction

The incineration of human remains has been practiced as a funerary rite in the Old (Hermann 1989; Ribot *et al*. 2002; Meacham 2004) and the New World (Reinhard *et al*. 2002) since at least the Neolithic and probably earlier (Scarre 2002; Bowler *et al*. 2003), with wide variations in customs and rate. Cremation was a major and distinctive characteristic of some cultures, such as the Urn-field culture in central Europe (Müller-Karpe 1959), and widespread in others, for example during the Hellenistic period (Morris 1987). Nevertheless, on the whole cremated interments represent a small fraction of burials as a whole.

During the first Century BC and first Century AD cremation was the preferred form of burial in Rome and its provinces, from the British Isles to beyond the River Danube. The custom was regulated in the Twelve Tables code of Roman law that allowed for variations in the details. The ceremony was carried out outside urban areas. The pyre or *rogus* was erected on a ca. 2 x 1.5m platform, using wood that had not been cut with an axe. The deceased would then be laid out on the *rogus*, which would burn for 3 to 4 hours. The fire was extinguished with diluted wine or milk and the incinerated remains of the deceased were collected. These were sprinkled with oils and perfumes. Two basic types of cremation can be distinguished: *bustum* and *ustrinum*. In the first, the pyre was erected over the burial pit. In the second, the incinerated remains were collected from the pyre and buried elsewhere (Toynbee 1971). Bechert (1980) has put forward a detailed classification based on how the cremated remains were buried. Many types of container were used as urns or *ossaria*. Ceramic vessels were the most common. Though cooking pots were often used, in some Roman provinces special ceramic urns were produced for this purpose (Williams 2004). Urns were also made of stone, glass, copper, lead, leather and even cloth. Burials took place in a shallow pit (80 to 100cm deep) or in underground tombs or *colombaria*. These could be built or carved into bedrock. Glass perfume flasks and lamps were the most common offerings. Roman cemeteries were typically located between 150 and 300m outside town limits (Sommer 1988), especially alongside main highways, e.g. the *Via Appia* in Rome. In the countryside, small family necropoli would often be placed near residences or main roads (Toynbee 1971; Altjohann 2001).

In the Eastern Mediterranean region, the earliest cremations are thought to be those from Tall Sabi Abyad in Syria, which date to 1250-1200BC (Akermans 2006). Excavations at many Iron Age sites have exposed cemeteries with incinerations, particularly along the Levantine coast, from al-Mina and Tall ‘Arqa (Wooley 1938) in northern Syria, through Tyre in Lebanon (Seeden 1991) and down to Gaza in Palestine (Culican 1973). Other sites are situated inland, for example Ḥama in Syria (Riis 1979) and the Old ‘Ammān Airport temple in Jordan (Hennessy 1985). The latter is the only Iron Age cremation site so far found in Jordan. All the above sites date to between the 12th and 6th Centuries BC. After this time, incineration seems to have disappeared from Levantine funeral rites, although it was maintained in the west ‘Phoenician’ settlements along the coasts of south Europe and north Africa (Gras *et al*. 1991). It was not until the first Century AD that cremation returned in the Levant, albeit infrequently. So far, no authentic cases have been reported from Syria or Lebanon, and the two examples known from Palestine have been attributed to Roman soldiers (Hershkovitz 1989). In Jordan, Roman cremations have been reported in

burials at Tall al-'Umayrī (Boling 1989) and Ḥisbān (Mitchel 1992).

Owing to a relative abundance of water and other environmental factors, the area known today as greater 'Ammān has been settled since at least the Neolithic period. Excavations have yielded evidence for the presence of agricultural communities in many periods, e.g. at Neolithic 'Ayn Ghazāl (Rollefson and Kafafi) and Iron Age to Mamluke Khilda (ASGA: Abu Dayeh *et al*. 1991; Najjar and Said 1994; Abu Shmais 2000 and 2003). Some cultural features were consistently maintained over many different periods. The geology of the area is dominated by soft limestone and rock-cut tombs were common from the Bronze Age onwards (e.g. Abu Shmais and Nabulsi 2004). Builders targeted this easily-worked stone and prepared architectural elements appropriate to their needs.

Many cave burials were excavated between 1948 and 2006, most of them on the hills of western 'Ammān (TABLE 1). During the Roman-Byzantine period, cave tombs consisted of a semi-square ritual chamber (2.5-3.5m) with radiating *loculi* or burial chambers. A small rectangular entance, sealed by a flat stone slab fixed by means of small clinkstones, typically gives access to rock-cut steps leading downwards. The height of the chamber is usually around 1.7m, but headroom is sometimes increased by means of a central standing pit surrounded by benches. Arched burial *loculi* (about 55 x 65 x 200cm) are carved into the walls above the benches. Small triangular niches can be cut into the upper walls, where lamps have regularly been found *in situ*. These were placed at the time of burial and may have been left burning. The *loculi* typically contain a single burial, although multiple, consecutive interments have also been observed, suggesting that family members may have been buried together over a number of generations[1].

This study describes two cave tombs, located on the western plateau of greater 'Ammān at the sites of Umm as-Summāq al-Janūbī and Ḥijra (FIG. 1). These sites were the subject of rescue excavations carried out by the Department of Antiquities of Jordan. Both are rock-cut tombs containing inhumations and cremation urn burials. The archaeological analysis, concentrating on a comparative study of candlesticks, and osteological observations are presented here. The results are discussed in relation to the dating and archaeological significance of these two sites.

The Rescue Excavations

1- Umm as-Summāq al-Janūbī (2002 to 2003)

The cemetery of this site is located east of a Roman agricultural village (Palestine Grid 231411 144033, elevation 978m. a.s.l.), ca. 14km from 'Ammān city centre and presently within an NRA housing project. This area has previously been described as a Roman-Byzantine village constructed on a large plain on the limestone plateau (Rashdan 1984, ASGA 1991), across which Roman-Byzantine rock-cut tombs are widely scattered.

The tomb was discovered during excavations carried out by the local Water Authority along a main road. The tomb ceiling had collapsed but the carefully cut shaft leading into it remained intact (FIG. 2). The fieldwork was aimed at cleaning out the ritual hall, which measured 3.85-4.10m. A low wall was found along the east side of the burial chamber, confirming its reuse during the Early Byzantine period. Eighteen burial *loculi* were identified. Artefacts were found in front of *loculi* 4 and 7. These included two badly damaged lead containers that had apparently served as urns. Charred bones were found scattered around them. One of the urn handles was present, as well as a knob base. In addition, two candlesticks and two oil lamps were found in the triangular niche above the *loculus*. Fragments of a basalt incense burner and two pottery bowls were also found (FIG. 3). The chamber contained one stone sarcophagus with a broken lid and a quantity of ashy bone. The presence of metal nails in one *loculus* may represent the remains of wooden coffins.

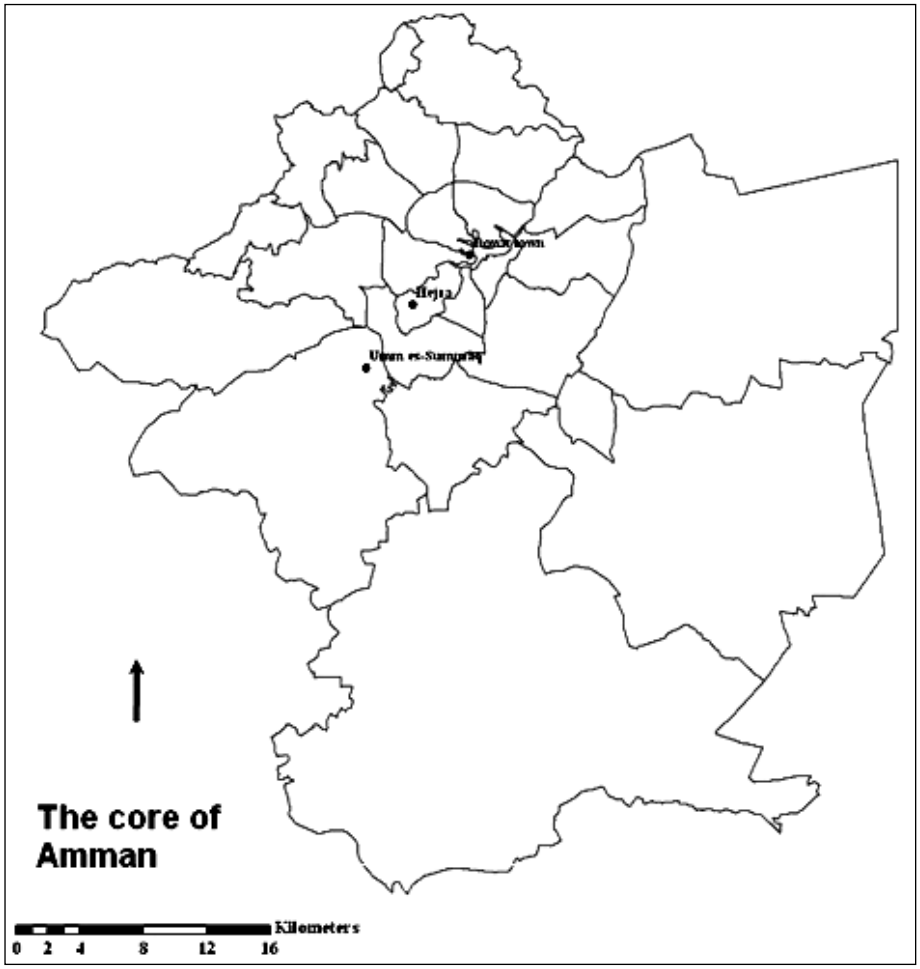
Candlesticks are typically earthenware, consisting of many parts joined together before the clay had dried. These parts include:

1- A wheel-made fuel saucer, with circular lines on the external face.
2- A socket, made of a rolled piece of clay attached to the centre of the fuel saucer and pressed smooth around the join. The rim of the socket appears to be pierced.
3- A base made on a slow wheel, with a simple rounded rim similar to the neck of a jar.
4- A ridged loop handle attached to the base, irregularly finished and ear-shaped in profile.

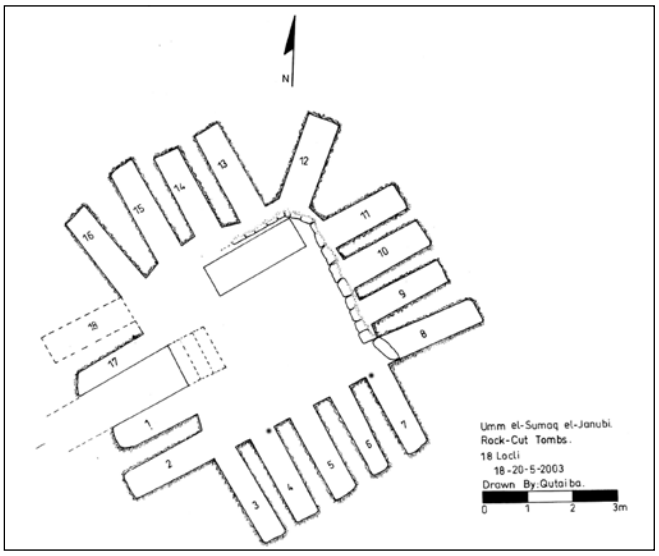
[1] Data collected from archaeological reports available at the DAJ registration office in 'Ammān.

TABLE 1. Rescue excavations during the years 1948-2006 at ‘Ammān area.

No	Excavations	Date of Excavation	Historical Period	Place of Artifacts	Bibiography
1	Jabal Amman Tomb	1943	Nabataean, Ist century BC. – Ist centary AD.	Museum store	L. Harding, “Nabataean Tomb At Amman, QDAP XII(1946) P.52-62
2	Jabal Amman Tomb		Roman	Museum store	L.Harding, ‘Two Iron Age Tombs from Amman ,” ADAJ 1 (1951), P 37.
3	Roman Tomb at Jebal Amman – 6th circle/ Swafiyeh	4/8-5/8/1982	Early Roman first cent. AD		Registration Center Wael Rashdan (Excavation of the Roman tomb in Amman (Jebal Amman ,6th circle), ADAJ XXVIII (1984) P. 23-24(Arabic Section)
4	Jabal Jofeh Tomb		Early Roman Ist.cent. BC.		L. Harding , ‘QDAP, XII (1946) P. 105-106
5	Jabal Jofeh Tomb	1962	Late Roman 2nd-3ed . cent. BC		ADAJ .VI - VII (1962) , P III.
6	Jabal Jofeh el-Shargi Tomb	May 1972	Late Roman		G. Bisheh “A Cave burial Tomb from Jabel J.Sh in Amman ” ADAJ,XVII(1972), P.81-83.
7	Jabal Jofeh Tomb	14/2/1978	L.Roman/Byzantine		Registration Center
8	Jabal Jofeh Tomb	12/2-31/3/1979	Roman		ADAJ,XXIII(1979 –Arabic Section) P.18.
9	Jabal Jofeh Tomb Roman Theatre area	3/12/81	Byzantine		ADAJ, XXVI (1982- Arabic Section) P.10-12.
10	Wadi el-Haddadeh Tomb North of Amman Citadel	26/7/1980	Late Roman 2nd- 3ed Cent.AD.		A. Hadidi “A Roman Family Tomb At Amman citadel Hill” ADAJ,XXVI(1982) P.287-288.
11	Jabal Husein Tomb	1971	Late Roman/Byzantine		ADAJ, XVI (1971), P.5-7 (Arabic Section)
12	Jabal Husein Tomb front of Jabal Husein police station.	10/4-18/4/1980	Early Roman second half of Ist cent. AD.		ADAJ,XXV (1981) P. 341.
13	Jabel Qusur Tombs	1/10/1975	Late Byzantine		ADAJ,XX(1975-Arabic Section) P.15.
14	Jabal Luweibdeh Tomb	9/7/1970	Roman		S. Da’na. “Luweibdeh Roman Tomb” ADAJ,XV (1970), P.37-38.
15	Shmesani Tombs	1982	Early Roman		ADAJ.XXVI(1982 Arabic Section).
16	Jabal el-Akhder Tombs	3/6-5/6/1975	Roman		ADAJ,XX(1975-Arabic Section), P.15.
17	Jabal Nazzal Tombs	1978			Registration Centre .
18	Jabal Nazzal Tombs	10/9/1974	Late Roman		Registration Centre .
19	Yadudeh Tombs	3/10/1979	Late Roman/Byzantine		Registration Centre .
20	Um el-Hanafesh Tombs /on Amman Madaba Road	1949	Byzantine		ADAJ,IV-V(1960- Arabic Section), P.29
21	Khirbet Yajuz Tomb	1972	Roman		H.Thompson , “A tomb at kh. Yajnz ,” ADJA,XVII (1972), P.37-41.
22	Tell Siran Tombs	April 1980	Iron Age /Roman / Islamic .	Amman Museum	Registration Centre.
23	Tab Kra’a Tomb	22/3-30/3/1980	Roman		Registration Centre.
24	Abu Nuseir Tomb	1982	Byzantine /5th cent.AD.		Registration Centre.
25	Queen Alia Airbort Tomb	1979	Late Roman. 2nd –3 ed cent. A.D		ADAJ,XXIII(1974 Arabic Section). P 20.
26	Qweismeh Lower church	1989	Late Roman /By2/ Umayyad		Amman Antiquities office ACOR, Emsaytif and Robert check.
27	Nwayjees Excavtion 1984	24-10/31-10/1984	Roman	Antiquities store	Registration Centre. Excavation Emsayhf Suleiman.
28	Derbiat Tombs /wadi Seir	1/1-13/1/1984	Roman/Byzantine	Amman Museum	Emsaytif Suleiman, “Hy Derbiat Tombs/Wadi es –Seir ” ADAJ, XXVIII (1984) P.17-21 (ArAbic Section)
29	Jabal EL-jofeh um teeneh el-Janubi Amman	1983	Late Byzantine Tomb	2 candlestisk museum store	Registration Center
30	Khlida el-Garbi	4-8/6 2003	L.R. Rock cut Tomb	5 Candlestick one oil lamp Antiquities store	ADAJ,Vol.47 p87-92.Adeib abu Shmais
31	Rujum el Kharasheh/ umm qatana	10/6/2004	E.R Rock cut tomb	Nothing	Information center
32	Umm es-Summaq el-Janubi	10/52003	E.R Phase II	4 candlesticks 2 bowls 2 oil lamps	Ancient lamps of the Bilad esh-Sham 2005 (IFPO)
33	Yajouz/ Tal’et Nimer	7/3/2005	L. R Rock Cut Tomb	Pottery sherds	Nothing documented
34	Zaboud Hisban	15/1/2006	EB. Cave,Roman reused	Pottery sherds	Nothing documented
35	Hejrah al-Yasamen area	12/3/2006	E.R Phase II Rock cut tomb	2 Leaden box/Urn 2 candlesticks 2 tearing pottles	Un published yet



1. ʻAmmān region showing the sites.

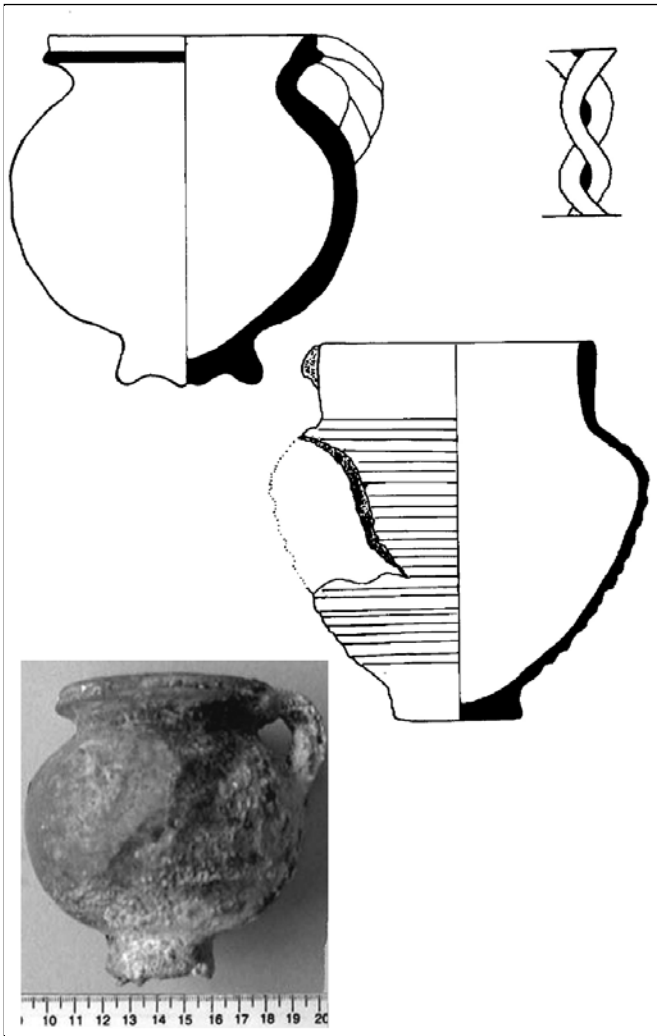


2. Top Plan of Umm as-Summāq family tomb.

The fuel saucer was attached to the upper part of the base by pressing the undried parts together and smoothing off the join. As a result of this method of assembly, these components are warped and irregularly shaped. It should also be noted that the diameter of the base is half that of the fuel saucer.

Candlesticks are a type of lamp often used in funeral rites. This tradition is thought to have started during the Chalcolithic and continued through the Middle Bronze and Iron Ages and into the Hellenistic, Roman and Islamic periods. They display different forms and shapes that make them useful indicators of cultural relationships and archaeological dating.

At Umm as-Summāq two types of candlestick were found, one short (125mm) and the other elongated (200-245mm). The short type (represented by Reg. No. II, FIG. 4), which has an upright stand, lightly ribbed saucer, stump base and no handle, is reddish-yellow in colour (Munsell 7.5 YR 7/6) with red slip. Warping is restricted to the fuel saucer. The elongated type (represented by Reg. No. I, FIG. 4) has a warped stand; the ware is an evenly fired well-levigated clay with fine inclusions and a



3. Late Roman pottery bowls.

red slip.

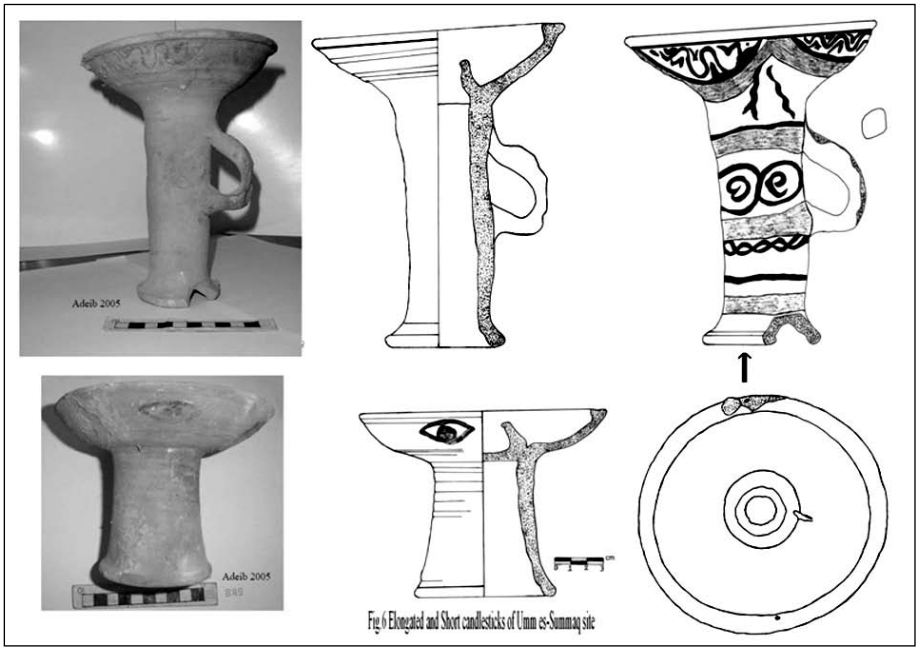
These candlesticks retained traces of decorative red paint on the outside of the fuel saucer. There were also spiral decorations in black paint, including one of a serpent (Reg. No. I, FIG. 4). The other painted motif was eye-like drawing on one of the short candlesticks (Reg. No. II, FIG. 4).

2 -Ḥijra site (2006)

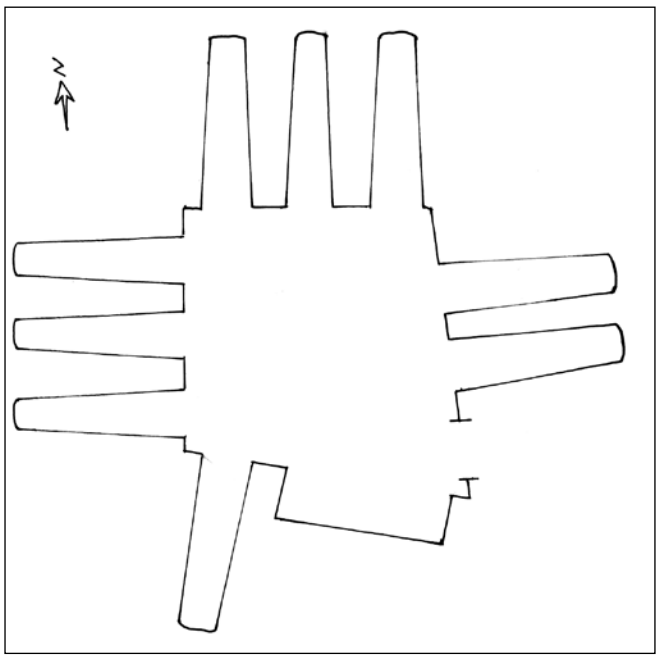
This site is located south-east of Khirbat Ḥijra, on the western plateau of greater ‘Ammān (Palestine Grid 234332 148040, elevation 916m. a.s.l.). The tomb was unearthed during road works. West of the entrance was a small niche (180-10 x 5cm) with a flat shelf large enough for a body to be laid upon. This was probably a badly damaged burial place (*loculus* 1) (FIG. 5). An intact spherical lead urn filled with burned human bones was found in front of *loculus* 8. A further intact lead box was also found to contain incinerated human remains. A Herodian-style oil lamp and two candlesticks stood in front of the *loculi*.

Candlestick Reg. No. I, FIG. 6: diameter of fuel saucer 18.5cm, height 24cm, diameter of wick socket 3cm. This candlestick had painted zones that were separated by black bands. One zone was decorated with zigzag and another with intersecting black-painted lines, both on a red background.

Candlestick Reg. No. II, FIG. 6: diameter of fuel saucer 15cm, height 19.7cm, diameter of wick socket 2cm. The outside of the fuel saucer was



4. Umm as-Summāq candlesticks.



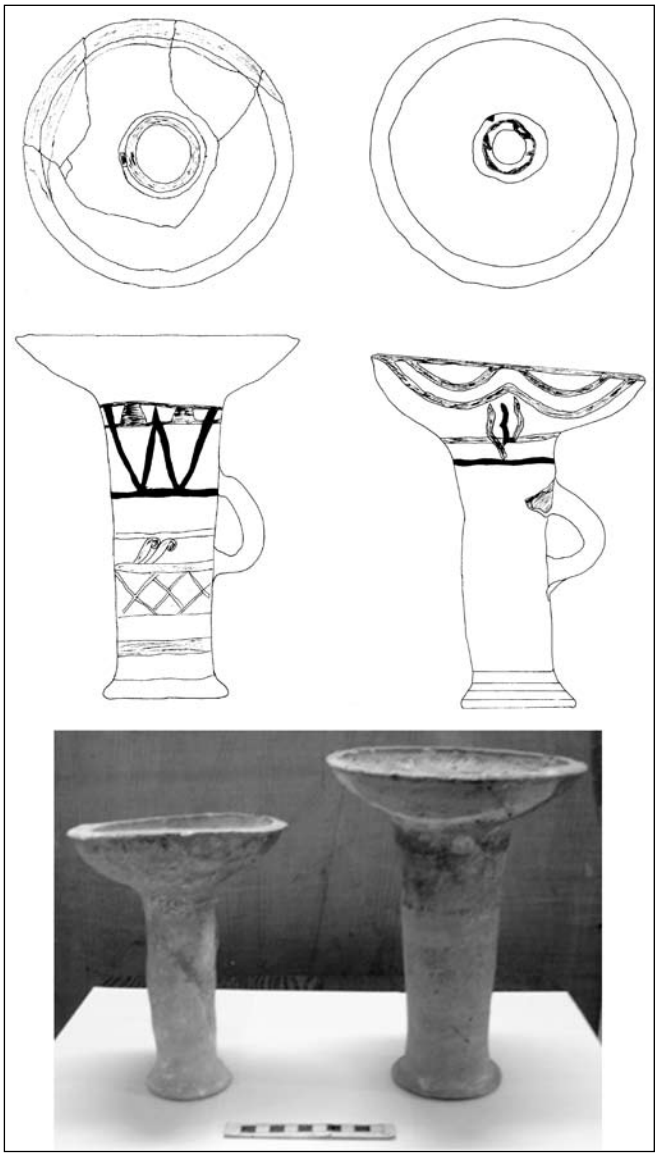
5. Top Plan of Ḥijra family tomb.

decorated with wavy black-painted lines on a red background. The stand has three vertical painted lines. Similar examples were found in the Umm as-Summāq tomb.

Parallels for the Umm as-Summāq and Ḥijra candlesticks include: Umm al-Ḥayrān Reg. Nos J13315 and J13314 [2], Late Roman examples from Khirbat Jil'ād, examples from the al-Rājib tombs that have been dated to the third Century AD (Bisheh 1972) and al-Karak Museum store Reg. No. 9/10.

Other pottery items include bowl Reg. No. III, FIG. 3 from the Umm as-Summāq al-Janūbī tomb: diameter 6.5cm, height 9.1cm. It has a flattened angular rim and thin ribbed body with a conical wall profile and short-footed string-cut 0.5cm base. A similar bowl, Reg. No. IV, FIG. 3, has a flattened angular rim, twisted loop handle and short-footed concave 1cm base. This style of bowl is dated to the end of the second Century AD. A Herodian-style lamp from Ḥijra with a circular ring base, Reg. No. III, FIG. 6, is believed to be an imitation of imported early Roman oil lamps.

In Jordan, previous examples of candlesticks have typically been found in non-religious locations. Parallels are rare, especially for those with handles.

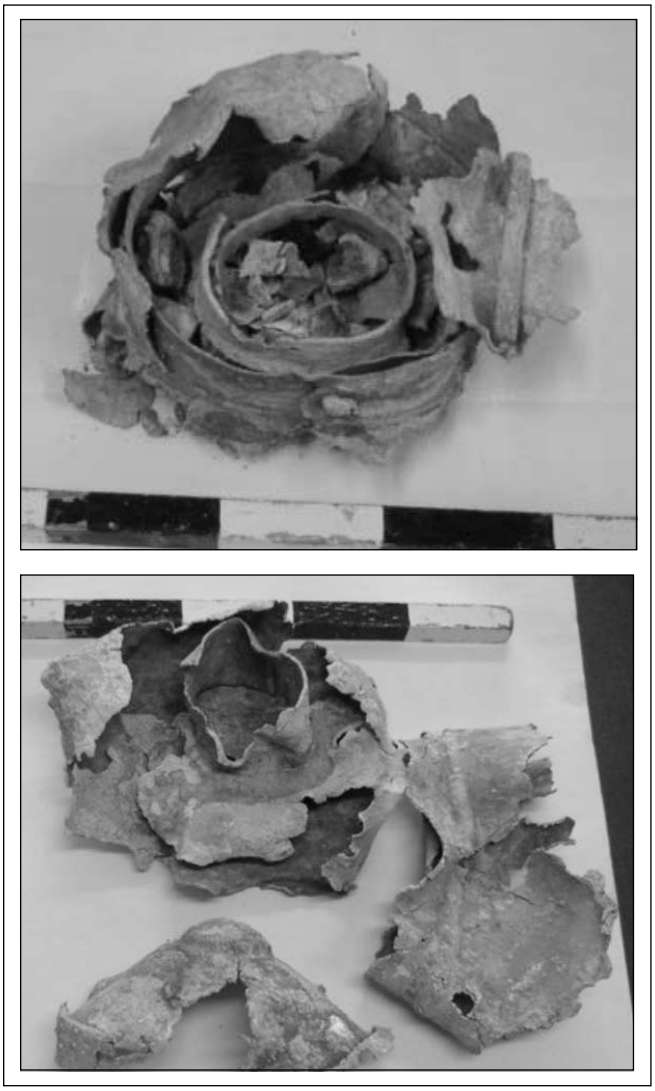


6. Ḥijra Candlesticks.

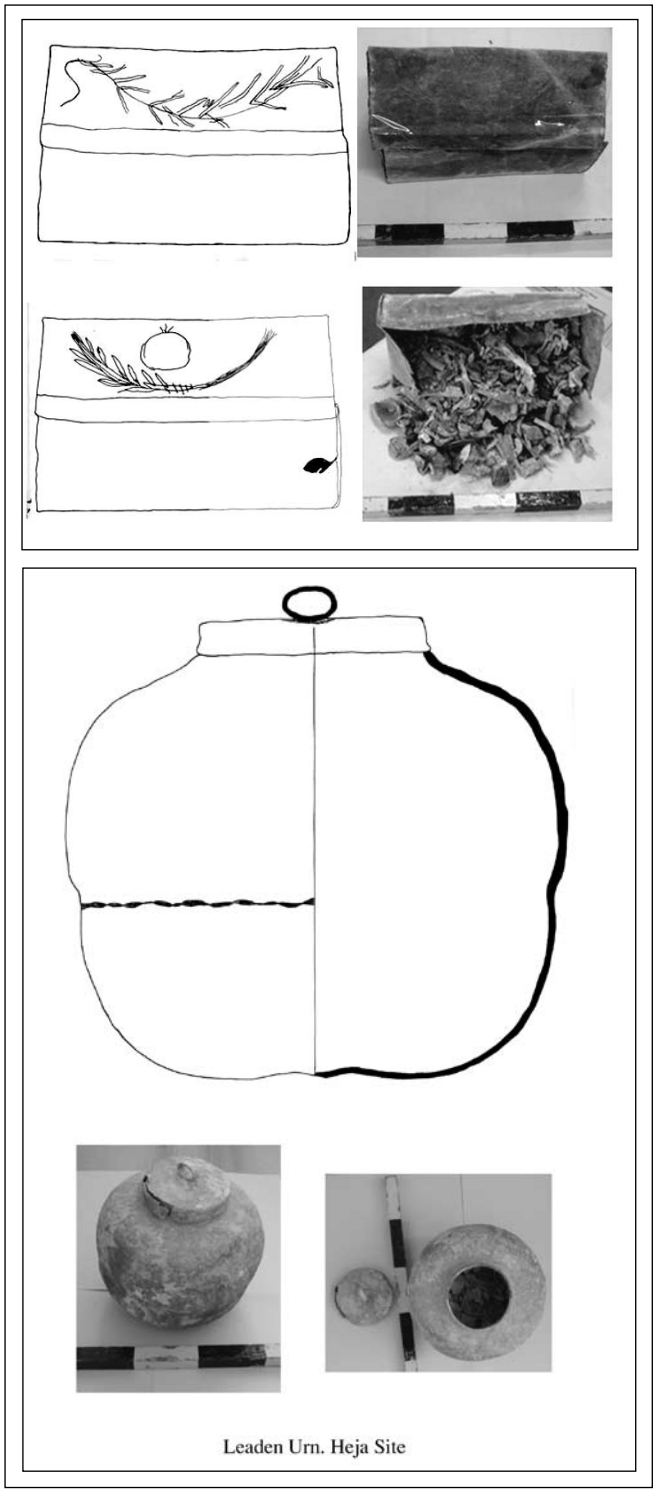
The Lead Urns

A total of four lead urns were retrieved: two broken examples from Umm as-Summāq al-Janūbī (Urn 1, Reg. No. V and Urn 2, Reg. No. VI, FIG. 7) and two intact examples from Ḥijra (Urn 3, Reg. No. IV and Urn 4, Reg. No. V, FIG. 8). Urn 3 has a rounded body approximately 25cm in diameter and 30cm high, with a 10.5cm diameter rim covered with an 11cm diameter lid. A ring handle is attached to the middle of the outer surface of the lid. This *olla*-shaped urn was made of two hemispherical parts connected by a pressed metal ring. The lower part is pushed slightly inwards, thereby providing firm

[2] 'Ammān archaeological museum. Roman tomb/Umm al-Ḥayrān with handle. Harding1969 Records of Jordanian Archaeological Museum.



7. Two fragmentary Leaden Urns, Umm as-Summāq Tomb.



8. Two intact leaden Urns, Ḥijra Tomb.

stand. Owing to the damage they have sustained, it has not been possible to reconstruct Urns 1 and 2 with any degree of certainty. However, the fragmentary evidence available, including one handle and a knob base, suggests that they were similar to Urn 3 in shape and manufacture (FIG. 8). The spherical shape of these examples is similar to the storage jars that were frequently used as urns from the Iron Age onwards (e.g. Seeden 1991), not only in the Near East but beyond (Williams 2004).

Urn 4 is a hand-made *ossarium* fabricated out of a single lead sheet measuring 39.5 x 57cm. The squared corners (12.3 x 15cm) were cut and bent to form a box of 32.5 x 15 x 12.3cm. The lid is gable-shaped with triangular sides and rectangular front and back faces (32.5 x 13.5cm) that were decorated with clumsily-engraved floral ornamentation. On one face, probably the front, a rounded motif, perhaps a pomegranate, is placed in the centre above a laurel or olive branch. The other face is almost entirely filled by a larger palm branch (FIG. 8). Four lines of inscription are engraved on one of the triangular lid sides. The translated inscription reads:

"Courage (C)Krispe(us) Nobody is eternal"
On the opposite side of the urn, on the box, are three more lines inscribed in Greek. Though unreadable, the text was probably written by another person, as indicated by the letters N and Θ (FIG. 9).

Lead cinerary urns are rare. They are more frequent in Roman Britain, where singular urns are often found in cemeteries (Jovanovic 1984), than elsewhere in the Provinces (Fischer 2001). These urns are usually cylindrical with a flat ceramic platter or stone used as a lid. The few rectangular lead *ossaria* (including gable-shaped examples) that have been found in Roman Europe typically have protruding floral ornamentation and often a Medusa head (Wheeler 1932). The ornamentation was typically shaped while casting the lead plates on a sand bed (Ward 1911).

The fabrication of Urn 4 did not differ from that used in the production of lead sarcophagi. The gable house urn form had been a well-known type of *ossarium* for some centuries, in a number of different cultures. These were made of stone, marble, gold, silver and more often terracotta (Toynbee 1971). In the case of Urns 1, 2 and 3, it appears that the hemispherical parts were made by hammering the lead sheet into a form and cutting it to shape. These parts were then attached to each other by hammering, as indicated by relevant marks and their uneven thickness. The lid was then hammered to fit the final shape.

Osteological Analysis
The analysed human remains included the cremated contents of the four lead urns from both sites and inhumation burials from the Ḥijra tomb. All material was fragmentary. The incinerated bones displayed typical characteristics with longitudinal fracturing, splitting and coiling along the axis of long bones, concentric fractures of flat bones and vertebral bodies, and numerous charred fragments and marginal surfaces. Dorsal elements displayed more severe heat-induced modification than others. Furthermore, the surface of many bone fragments displayed irregular light red to brown spots (FIG. 10). All four cases are characteristic of a typical Roman *ustrinum* cremation ceremony with minor differences in incineration. The deceased were evidently laid out on their backs on top of the pyre that was set alight. After cremation, the burnt remains were gathered up and placed in the urn. The type and condition of the bone material allowed limited macroscopic analysis using standard techniques[3].

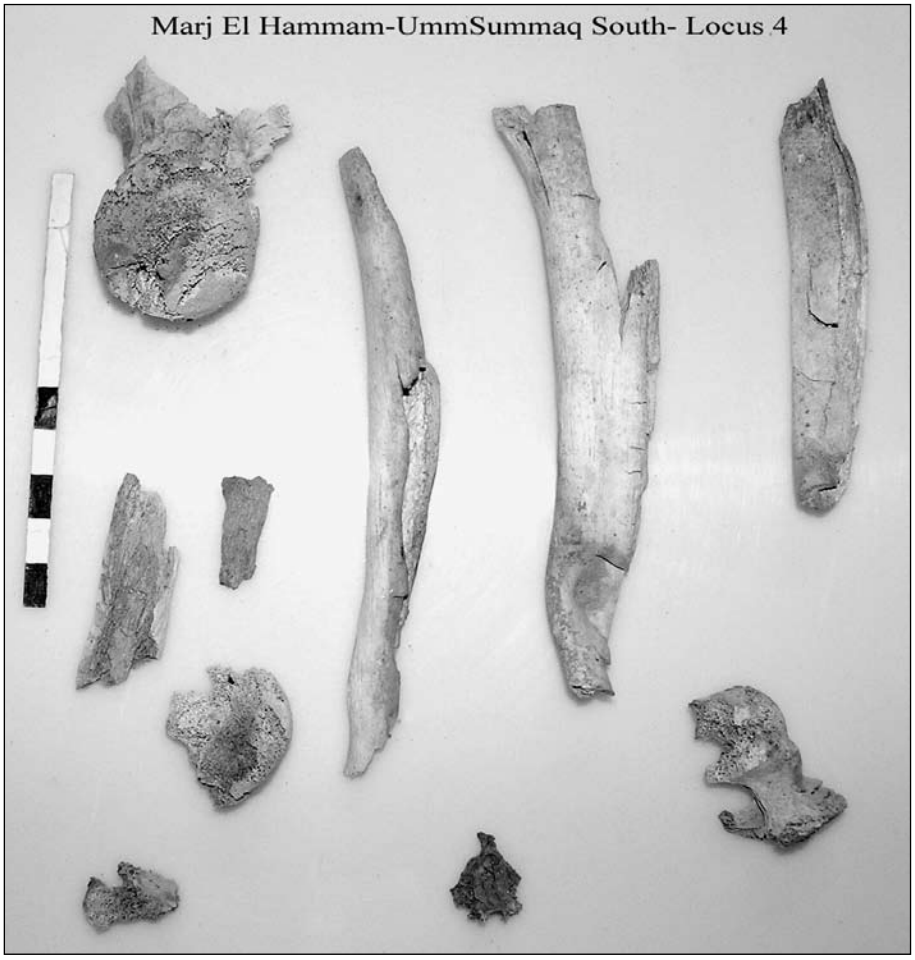
9. Greek inscription incised on the leaden Ossaria.

1- *The Umm as-Summāq al-Janūbī Tomb*
The bones from this tomb are derived from Urns 1 and 2, each of which contained the remains of a single individual, respectively USJ-001 and USJ-002. The material of both individuals was scanty, representing less than 20% of the total skeleton. Most fragments reveal a colour mix of grey, white and brown. These suggest a cremation temperature around 600°C, according to the scales proposed by Holck (1987) and Hermann (1988).

The USJ-001 fragments are mostly from long bones, with just a few from flat bones. Small vertebral and rib fragments as well as one canine tooth were also present. The material permits only limited analysis. The femoral head seem to be that of an adult, whilst a probable incomplete fusion of the distal radial epiphysis suggests an individual aged 15-21 years at death. Some evidence for robusticity hints that USJ-001 may have been male, but the evidence remains weak.

The bone material of USJ-002 was collected around the urn at the entrance of *loculus* 10 / 11. It includes few cranial and pelvic elements, with most fragments coming from the extremities. An occipital fragment displays strong expressed linea nuchae and a pelvic fragment has a narrow sciatic notch. These features suggest that USJ-002 was male. Available spongiosa and light pathological lipping on the vertebral margins suggest that age at

[3] Methods in articles in Knussmann,1988: Bräuer: 129-232, Sjūvold: 444-480, Schultz: 480-496, Szilvassy: 421-443.



10. Example of the cremated bones of HJ-001 from Urn-3.

death was around 45-55 years.

2- The Ḥijra Tomb

The remains of five individuals were retrieved from this tomb, including the cremated remains of two individuals from Urns 3 and 4 as well as three inhumations. All material smells perfumed. It is believed that the coloured spots on the cremated bone surfaces originated from an oily perfuming substance, the remains of which are represented by small clumps of a light brown, globular substance. Although the quantity of bone from the urns, estimated at 80-85% of the total skeleton, represents the amount normally salvaged after cremation (McKinley 2000), the remains of the three inhumations, with just 10-15% of total skeleton, are scanty. A thin white calcareous layer coated most of these bones, which were relatively well-preserved.

The contents of spherical lead Urn 3 in *loculus* 8, represent the cremated remains of a single individual, HJ-001. The urn contained a few charcoal fragments, 5-10mm in size. The material suggests a cremation temperature of 700-900°C. A relatively long mastoid process, a prominence on the glabella of a frontal bone fragment and a narrow sciatic notch all indicate that HJ-002 was an adult male. Sufficient cranial suture fusion, particularly in the bilateral C1 region, and the sacroiliac joint indicate an estimated age of 40-50 years. Medium degenerative changes were observed on the right clavicular articular surface and pelvic acetabulum, but no such pathological features were detected on the available articular surfaces of the long bones. Light osteophytic outgrowths were diagnosed on lumbar vertebrae L1, L2 and L3 as well as pitting and porosity on the articular surfaces of these vertebrae and on the sacroiliac joints.

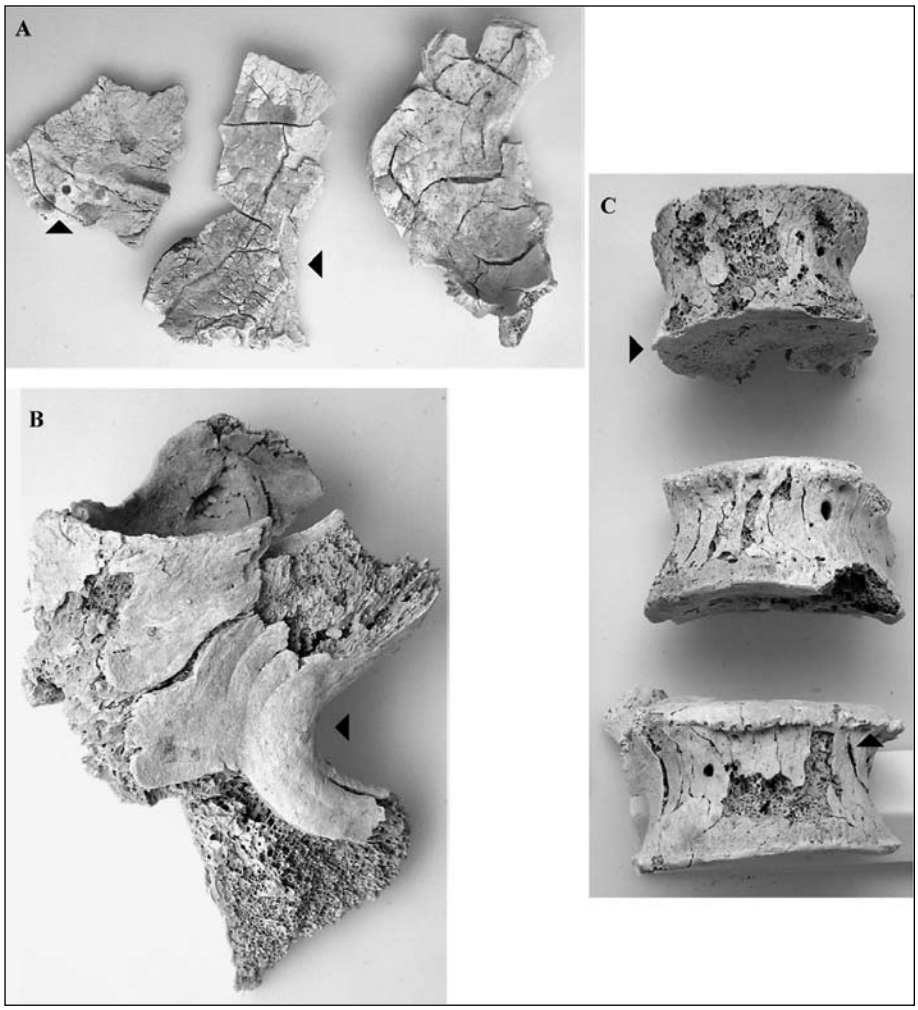
The cremated bone remains in Urn 4, *loculus* 7 belong to a single individual, HJ-002. As well as the human remains, the urn contained pieces of charcoal, pale red-coloured plaster fragments, small chalky stone pebbles and pieces of the light brown, globular substance referred to above. The grey-white bone material is heavily fragmented and

indicates a cremation temperature of up to 900°C. Cranial fragments display strongly expressed linea nuchae and temporal lines, as well as long mastoid processes. Together with the shapes of the ventral arc and sub-pubic cavity of the right pelvic bone, this is clearly indicative of an adult male. Pubic symphysis suggests an age at death of 40-60 years. Vertebral osteophytosis (grade 2-3) was diagnosed on many cervical, thoracic and lumbar vertebrae. Light to medium degenerative bone changes were also observed on some long bones epiphyses, with osteo-arthrose on the first distal phalanges of the right hand. These observations reduce the bracket of estimated age to 50-60 years.

Although bone condition in the three inhumations is relatively good, there is no explanation for the scarcity of the material. The lower extremities are over represented. The obvious robustness of the material indicates that all three individuals, HJ-003, HJ-004 and HJ-005 are males. This supported by relevant pelvic traits and some anthropometric values. The spongiosa of HJ-003 allow for an estimated age at death of 40-60 years. HJ-004, estimated at 21-35 years, has robust foot bones with a bilateral peronial tubercle (FIG. 11), a rare anatomical variation on the os calcaneus (Brossmann *et al*. 2001). Degenerative changes on the articular surfaces of the left tibia of HJ-005 suggest an age at death of 40-45 years. The tibia length of 385 mm. suggests an estimated stature of 170-176cm for this individual.

Discussion

The two Roman cave tombs dicussed above, Ḥijra and Umm as-Summāq al-Janūbī, can be dated to the second and third Centuries AD, possibly slightly later, on the basis of the associated ceramics. They are not substantially different in their architecture to others from the same region (Smaddi *et al*. 1992) and elsewhere (Empereur and Nenna 2001; Killgrove 2005) that have been dated to this period. According to excavation reports held by the



11. Bilateral peronial tubercle of the calcaneus bone.

Department of Antiquities of Jordan, many such tombs have previously been excavated, not only in the area of greater ʻAmmān but also beyond. Although they are common, they are rarely, if ever, published!

Both of the tombs under discussion combine two rare features that need to be highlighted. Both involve Roman cremation burials and in both lead urns were used. The presence of the same type of spherical urn in both tombs and the short distance between them suggest that the burials may be related. Ḥijra tomb is almost intact and provides more information than the heavily disturbed one at Umm as-Summāq al-Janūbī. The evidence presented here is based mainly on data obtained from the first tomb.

The two tombs under study include inhumation burials, which could pre-date or post-date the cremation burials. The latter can safely be dated to the second Century AD, when cremation was still common in the Roman Empire before it was replaced by inhumation during the third Century AD.

The generally low incidence of cremation among populations has stimulated interpretations that favour migration and cultural relationships. The practice of cremation by the Phoenicians, its westward expansion and later abandonment is a good example (Bienkowski 1982; Prausnitz 1982; Gras *et al*. 1991). Alexandrian urn burials, mainly in terracotta hydrias, dated from the fourth Century BC to the early Roman second Century AD have typically been associated with the immigrant Greek and Roman ruling class (Empereur and Nenna 2001; Venit 2002). A similar argument was put forward for Carthage's Roman cemeteries (Haeckl and Norman 1992). In Palestine, the two Roman cremation burials mentioned above have been associated with Roman legionaries of the first Century AD (Hershkovitz 1989). Consequently, which population, or part of population, do the burials in the tombs under consideration here represent?

The Roman cremation ceremony was a costly venture, requiring significant financial and natural resources (Toynbee 1971; Barber 1990). It is therefore probable that the cremations from the Umm as-Summāq al-Janūbī and Ḥijra tombs belong to individuals from a relatively affluent social class that would have been more "hellenized" than the commoners (Shahid 1984), particularly in the Decapolis (Miller 1994). The two tombs under discussion are located close to one of the Decapolis cities, Philadelphia (modern ʻAmmān).

This leads us to the inscription on Urn 4. It is a typical Roman funeral text that can be found on many Roman tombstones in Jordan (Canova 1954; Piccirello 1998). The name "*CRISPE(US)*" is a common Roman name meaning "curled hair". It occurs in both the Roman and Byzantine eras, e.g. Crispus Passienus, husband of Agripina in first Century AD and Crispus Flavius Julis, half-brother of Constantinus II, in the fourth Century AD (Shahid 1984). In the Babatha archives, a Julia Crispina (the female form of the name) of oriental origin with Roman citizenship is mentioned (Isaac 1998). The inscription, therefore, does not provide any definitive information as to the origin of the deceased, be they local or not. It is doubted that the second text, still unreadable, will shed any more light on this subject.

Osteological analysis of the human remains suggests that only male individuals were buried in the two tombs. This and the general robustness of two of the analysed individuals might lead one to consider the burial of soldiers. However, even if this was the case, the historical background has to be considered. After the annexation of Provincia Arabia in the second Century AD, Roman troops from neighbouring regions were brought to the region, but later on the local population was recruited (Bowersock 1983; Shahid 1984). The small sample size of the remains under consideration here makes it impossible to speculate about their ethnicity. Even the application of ancient DNA techniques were technically possible for cremations (von Wurmb-Schwark *et al*. 2005), they would probably only be useful in determining sex and establishing relatedness between the examined individuals because of the large genetic variability and overlap between Mediterranean populations (Richards *et al*. 2000; Bosch *et al*. 2001).

To conclude, the archaeological evidence and comparative data presented here suggest that the cremation burials from Umm as-Summāq al-Janūbī and Ḥijra are more likely to have been derived from the ancient local population than from migrant elements. The practice of Roman cremation was a type of cultural influence often observed amongst local upper-class groups and ruling elites.

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Continuity and Variation in Byzantine Church Architecture at Abila: Evidence from the 2006 Excavation

As early Christianity crossed through Jordan, it often produced monumental structures. Among the remains of Abila in Palaestina Secunda, the Byzantine churches stand out as some of the most remarkable finds. Abila was once the seat of a bishopric (Wineland 2001: 64-66, 76-78), and previous excavation seasons have confirmed the considerable importance of Christianity within the culture at Abila in the Byzantine era. The 2006 excavation focused on four of the five known churches in preparation for a volume on the churches of Abila.[1] This paper presents a brief, preliminary, comparative analysis of our architectural findings from all five churches.

Tri-Apsidal Churches in Areas A, D and DD

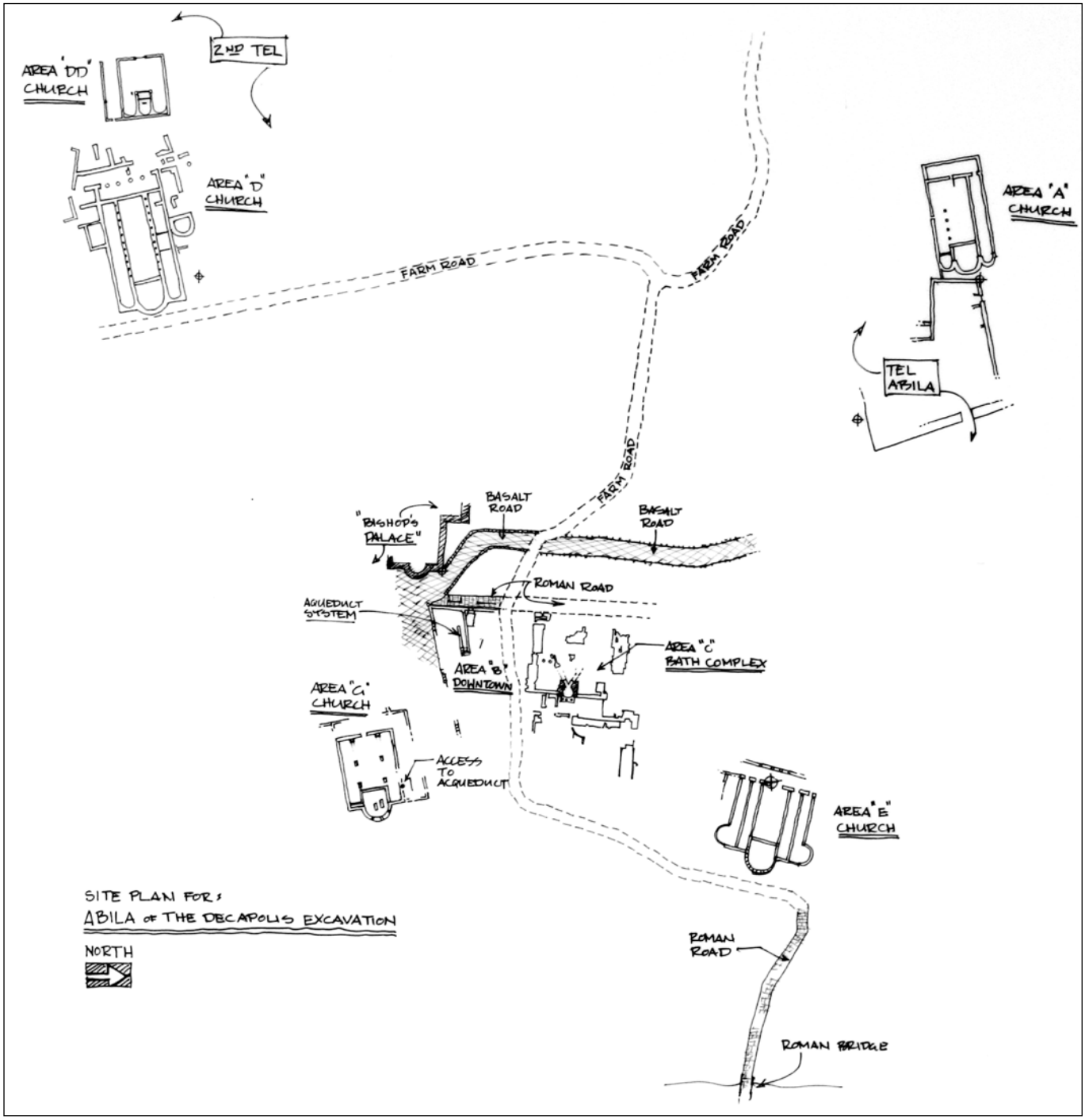
The prominent position of Christianity at Abila has been recognized since the excavations from the 1980's. Important church structures surmount the city's twin tall(s) – the Area A church atop Tall Abīl (the northern tall) and the Area D and Area DD churches near one another atop Umm al-'Amad to the south (FIG. 1). Previous seasons defined the footprints of these three churches – showing them each to represent tri-apsidal three-aisled basilicas, with apses at the eastern end of each aisle. While the A and D churches evidence a larger central apse in the nave with smaller symmetrical apses in the narrower side aisles (a common Byzantine design), remarkably in the DD church the three aisles and inscribed apses are identical in size (FIG. 2; Vila 1995: 103-104).

In these three churches, chancel screens were employed to separate the sacred space of the central apse (with its altar) from the nave of the church. In each case, the side aisles were divided from the central aisle (or nave) by two rows of supporting columns. There were twelve columns on the stylobate line in both Areas A and D. The columns from the Area DD church had been removed in antiquity for reuse (Vila 1995: 104). The columns in Area A appear to have been a combination of limestone and basalt. The columns in the Area D basilica alternated limestone and basalt. The Area A and D churches both evidence a narthex, and all three of these churches open upon public plazas with mosaic surfaces made of large white tesserae lightly decorated by dark tesserae set in a thin diagonal design (note the vivid description in Winter 1988: 59). The Area D basilica evidences an *opus vermiculatum* mosaic applied to the walls of its central apse (Winter 1990: 38, 41). Further signs of extensive wall and ceiling mosaics were found in the Area DD church.

Flooring in the sanctuaries of the A, D, and DD churches was typically *opus sectile*. However, the south aisle of the DD church evidenced some mosaic. Mosaics were also exposed during excavations in the attached side chambers north and south of the Area D church – both geometric and floral / faunal patterns are found (for a good comparison see the report in Winter 1992: 26-36). A geometric mosaic with Byzantine crosses was found in the courtyard of the Area A church.

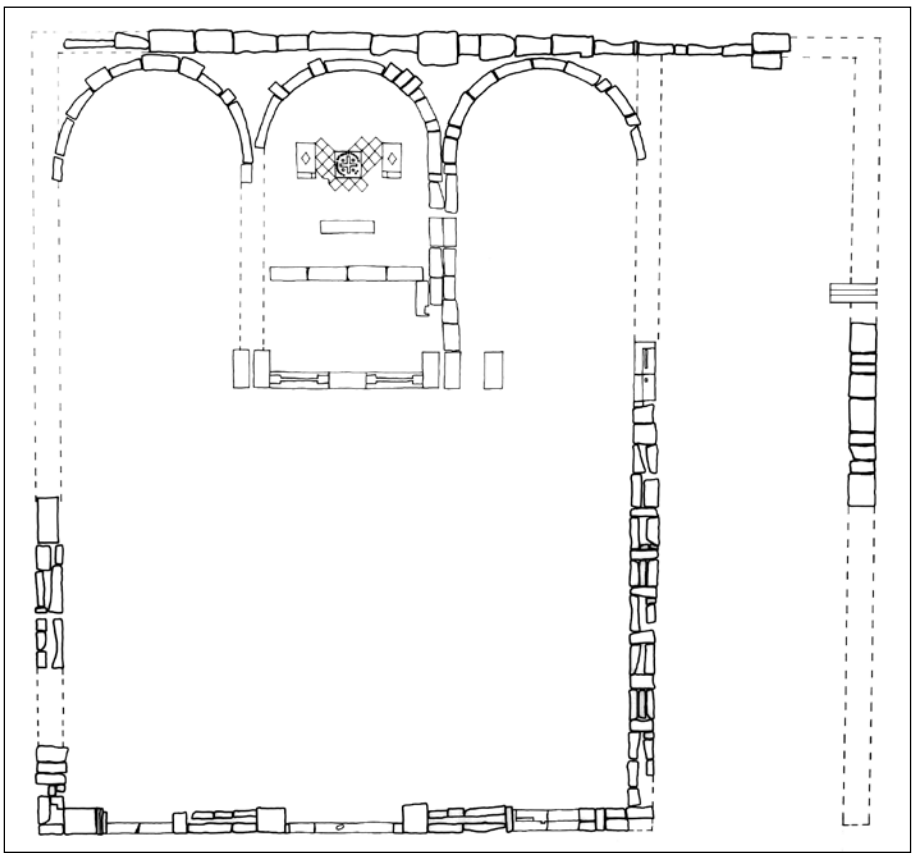
The original excavators dated the Area A church to the sixth century and the Area D church to the sixth or even to the seventh century (Winter 1992: 34-35). Due to evidence of traumatic collapse, both the A and D basilicas appear to have been destroyed during the earthquake of AD 747 / 748. Less cer-

1 In 2006 work occurred in all churches except Area A. The current excavation team does not identify the Byzantine or Umayyad structure in Area B as a church (*contra* Michel 2001: 118).



1. Overview of the Abila excavations showing five Byzantine churches. The Area A basilica to the north (top right) lies atop Tall Abīl. Areas D and DD lie atop the southern Tall Umm al-ʻAmad, with the Area G church on northeastern slope of that hill. The Area E basilica is below Tall Abīl *en route* to the Roman Bridge further to the east.

tain is the decommissioning date of the DD church. Given the lack of any columns found in situ, some have postulated that the columns from the Area DD church were removed in antiquity to build the D church (e.g., Mare 1997: 308). However, excavation this past season indicates that the DD church also had an external mosaic plaza on its west identical to the one outside the narthex of the Area D church (making both churches appear to have been in existence at the same time). These large white mosaic floors (with diagonal dark-colored bands) in front of the A, D, DD churches all appear to be



2. Area DD church top plan showing three identical inscribed apses.

Late Byzantine/ Umayyad.

Initial reports indicated that the three apses of the Area D church were built upon bedrock, suggesting that the church in its present form was the first monumental structure in its location (Winter 1990: 41). However, later excavation yielded some slight evidence of a previous Roman period installation below (Winter 1992: 32-33). Nevertheless, the Area A church is clearly built upon several meters of material filled-in during the Byzantine era; it may be the second church to stand on this site, and excavators have postulated a Roman temple further below (Wineland 2001: 27-28, 1989: 56-59, 1990: 29; also cf. Hummel 1986).

Water collection channels are associated with both the A and D churches. Two cisterns were found beneath the DD church (Mare 1997: 308) and a large cistern lies just north of the Area D basilica. It is probable that the Area A church also possessed a cistern, most likely under its north aisle, though excavations have yet to verify this.

Although there are many features that are similar between these three tri-apsidal colonnaded churches, there are also some areas of divergence. As noted above, the DD church possesses three apses of identical size – a strikingly unusual feature. The construction materials vary from a primary use of basalt alone (in Area A; also see below on Area G) to a primary use of both limestone and basalt (in Area D). The dimensions also vary between the churches. For example, the Area D church is roughly thirty-eight meters long and twenty meters wide with a narthex extending a further nine meters (Wineland 2001: 34). The Area A Basilica is approximately thirty-three meters long and twenty meters wide with a narthex of 5.25m (Smith 1983: 28-31).

The Area A church apparently stood above and apart from any attached structures. A number of secondary walls from various periods abut the DD church, making the analysis of this quite complex. However, it appears that, at least in the earliest stages of its construction, the DD church had an attached room to the south. Most substantially, the north and south doorways on the Area D church lead into at least four attached chambers (FIG. 3). One of these was likely a baptistery (perhaps the small single-apsidal room to the north), with the other chambers constituting small chapels, a vestry, and conceivably ecclesiastical living quarters.

3. Crane shot of the Area D church looking west. Note the *opus sectile* flooring, the alternating limestone and basalt columns, and the attached rooms on the north and south.

Just by examining these three churches, one can observe continuity and variation in the Abila churches. These three share a general tri-apsidal, three-aisled, colonnaded basilica form. They also have analogous mosaic plazas at their entrances, comparable internal decoration features, roughly equivalent access to water and similarly prominent locales atop the twin tells of Byzantine Abila. However, there are significant variations between these churches – not just in the size of their basilicas, but also in their connectivity to attached structures (note the important rooms attached to the Area D church) and in their internal design (note the three identical-sized apses in Area DD).

The Five-Aisle Area E Church

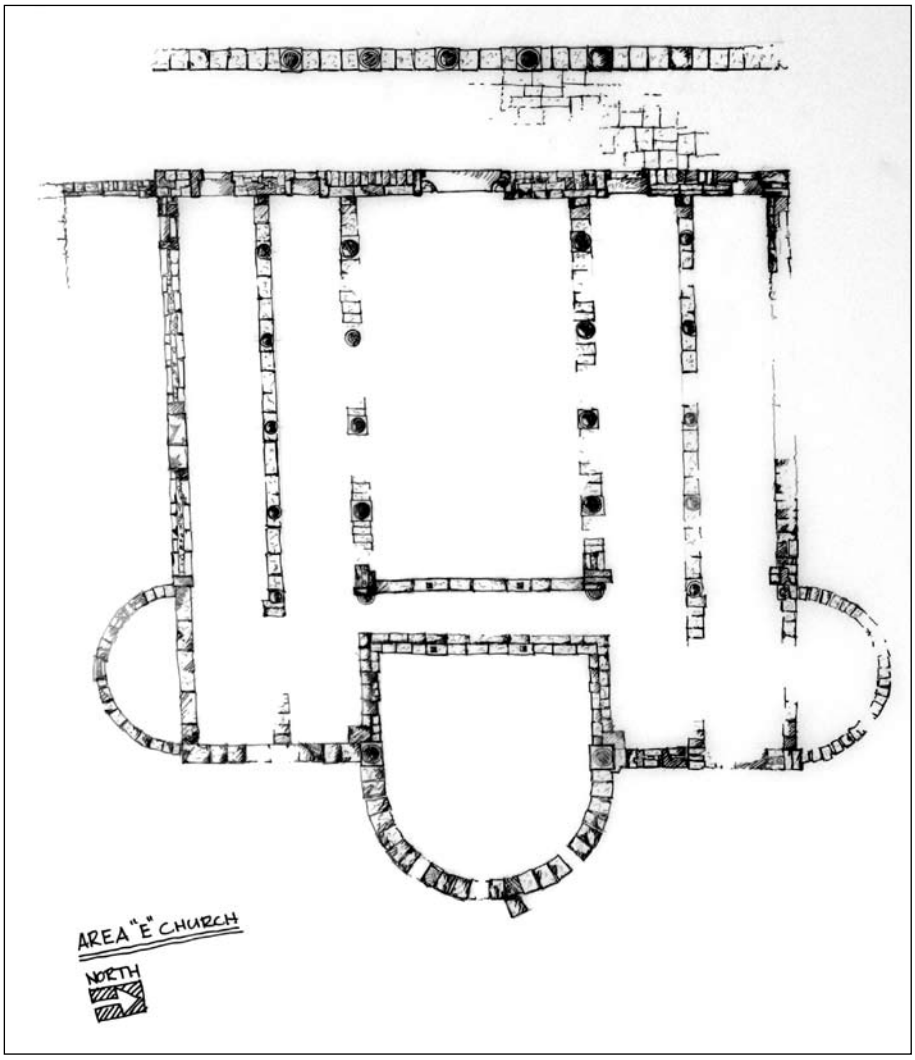
The bulk of new church excavation in 2006 occurred in the Area E and G churches. This is not the place to report our complete findings; rather, the following descriptions focus on material most pertinent to our architectural comparison of the Byzantine church buildings.

The Area E church lies to the southeast below Tall Abil, *en route* to the Roman bridge further to its east (see again FIG. 1). The sanctuary of Area E was excavated in the 1990's, and the 2000 season revealed the narthex (FIG. 4). This basilica is unique at Abila for possessing five aisles and three apses – the apses appearing in a cloverleaf pattern (one each pointing north, east, and south).[2] Analogs to this pattern are rare in the Middle East (for a suggested comparison see Menninga 2004: 43). A few other five-aisled churches are known in Byzantine Palestine, including one at Umm Qays (Patrich 2006: 375); however, the cloverleaf is more rare (perhaps cf. Scythopolis), and the combination of five aisles and a cloverleaf apse design appears quite innovative.

Screens separated off each of the apses, along with the altar, as sacred space. Four colonnades define the aisles from one another. Marble flooring made from large rectangular pavers is still evident in the southwest corner of the sanctuary. During all the various seasons of excavation, pottery analysis indicated Early and Late Byzantine (as well as occasional Late Roman) sherds at or below the floor level (e.g. Deeds 1991: 21). The interior walls of the church and its narthex still contained examples of metal hooks used for securing marble revetment. In addition to the three entrances from the west, doorways were built into the north and south walls of the basilica; some previous excavation had been done amidst the heavy collapse at the northern sealed doorway.

The goals in this church last season were to identify attached rooms on the southern exterior of this basilica, and to probe the material between the narthex and the huge (ten meter high) terrace wall to the west of the church. The fact that this Area E church had been shifted a few degrees off from

2 The designation "cloverleaf" comes from Menninga (2004: 43). Earlier it was called a "cruciform" church (Mare 1997: 306).



4. Area E top plan before 2006 excavation. Note five aisles and three-apses in a "cloverleaf pattern".

the eastern orientation of the other Abila churches was likely due to the church's alignment with this retaining wall. This curious orientation also opens the possibility that, since the eastern wall of the Area E Church suggests some modifications in its foundation; the current basilica might have been built by expanding an earlier structure.

Along the south side of the church we can now verify the existence of a large attached room to the west with a plastered floor entered from the southwest corner of the church. This large room (approximately 18m long and 10m wide) was constructed for ecclesiastical purposes and could accommodate a large group of people. Like the interior of the church, this room was originally paved with marble tiles at the western end. It also had a raised area of limestone pavers at the east end. The marble paved floor was largely broken up by falling masonry and was subsequently covered with a 2cm layer of plaster. In this second phase of the use of the room, it continued to be a large open area that could have accommodated a crowd. It also continued to be decorated with Christian symbols, as evidenced by a cross in the center of the western wall and a second one on a limestone column drum. Two large, rounded-topped, niches (approx. 1m wide, 35cm deep and 1.25m tall) were built into the southern wall of this room. While one niche was carefully plastered shut in antiquity, the other was left open and was used as a cooking or industrial fire pit in later times when the room's roof had collapsed.

The room also contained a black marble reliquary that had been moved from its original location of use (FIG. 5). The reliquary was found lying on the plastered floor upside down. When is was still functioning as a reliquary, it had been set deeply in a floor and stood proud about 20cm – as indicated by a mortar line that still adheres to the side

of the stone. The cover for this three-chambered reliquary was not found. The shape of the bottom of the reliquary suggests that it had been carved from a capital.

This large southern room possesses essentially rectilinear lines, except that a peculiar doorway on the east end leads through a curved passage into a paved smaller area at the southeast of the church that lies south of the south apse of the church basilica. Further excavation is required to understand the function of this smaller area and its relation to the south apse, where it seems to have been connected by a doorway that was apparently cut after the building was constructed.

Excavations in the plaza west of the church's narthex led to the discovery of the wellhead to a cistern. The cistern was roughly six meters deep, and it had been fed in antiquity by an approximately 20cm wide channel running down the side of the retaining wall. An intriguing niche was also found cut into the nearby retaining wall, and a bench seating area was exposed flanking it. This small plaza area west of the Area E church was limited in size but decorated with greater sophistication than those outside the other churches of Abila.

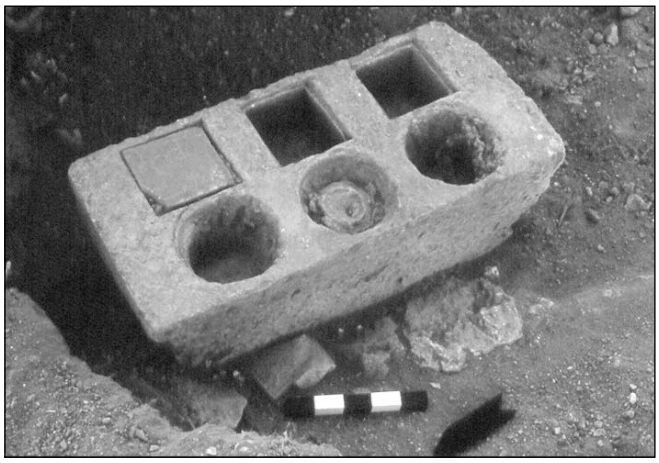
5. Area E reliquary discovered in southern attached room during 2006 season.

The Single-Apse Area G Church

The Area G church was once thought to have been a small martyrion, but it surprised us all in its scope and size (FIG. 6). Previous excavation had identified a single apse, in which was found a martyrium and a six-chambered reliquary (FIG. 7). Underneath this apse exists the apparent terminus of a large water channel running about two kilometers from the nearest natural spring ('Ayn Quwayliba). By the end of the 2006 season it was clear that the Area G church was actually a large three-aisled basilica, supported by piers, with a single apse to the east and a narthex to the west. Several squares exhibited the presence of *opus sectile* flooring, and all squares indicated a plaster substrate in preparation for the original *opus sectile*. Probes beneath the flooring exhibited Early and Late Byzantine sherds. The walls hint at marble revetment in the interior of the sanctuary and in the narthex.

On the south side of the central aisle lies an octagonal limestone base to an ambo (a platform for

6. Area G church looking east. Note single nave apse with martyrion, and pier construction. Excavation squares in the foreground are in the narthex area. On right (south) is an ambo, and behind this there is a screened flat wall at eastern end of south aisle.



7. Area G six-chambered reliquary found in church apse.

the reading of Scripture). Although it has been suggested that ambos were installed on the northern side of the nave in Palestine, and on the southern side in Arabia (Piccirillo 2000: 59; Michel 2001: 81), the Area G church ambo is located on the south which may indicate a mingling of influences in Palaestina Secunda. The octagonal shape of the ambo base is also rare, since these are usually thought to follow hexagonal, square, or circular forms (Patrich 2006: 380). Large basalt thresholds still mark the doorways that led from the narthex into the sanctuary and larger basalt lintels, which originally spanned the doorways, lay collapsed among the remains of the limestone walls. The location of the church, approximately halfway up the northeastern slope of Umm al-'Amad, necessitated the construction during antiquity of a foundation wall on the eastern end of the church (especially beneath the apse). There may be adjacent rooms south of the basilica, since we discovered openings along the southern wall in the last days of excavation in 2006.

This form of construction was unusual for Abila on several counts. It appears that vaulting below the northern end of the Area G church provided the necessary platform for the church itself. This church possesses in its martyrion the most substantial evidence of a martyr cult yet discovered at Abila (though it is possible that a sarcophagus found in the vicinity of the Area D sanctuary belonged to that church). The single-apse form is unique at Abila, as is the pier-based construction, and an ambo is not testified elsewhere at this site.

However, several of these features are found elsewhere in Byzantine churches in neighboring Palestina Arabia, in northern Jordan. For example, an early Byzantine church at Riḥāb has a single-apse three-aisled basilica with supporting piers (al-Husan 2002: 71-94). In fact, several churches in the vicinity of modern al-Mafraq were found to have single apses and to have supported their roof with piers of stone rather than columns (based on our travels to view these in 2006 and cf. plans in Piccirillo 1993: 304-313). Nevertheless, the main difference between our Area G church and these other churches in Jordan are that they possess attached rooms (pastophoria) off the side aisles on the east (adjacent to the central apse). Perhaps such a feature was not feasible at Abila, given that the eastern edge of the church was suspended over the slope of the hill? Nevertheless, the lack of dual pastophoria in a single-apse design may also be witnessed in the fifth-century Amman Citadel Church and especially in the seventh-century Bishop Genesius Church at Jarash (conveniently described in Balderstone 2007: 24, 42; also see Michel 2001: 269-272, 278-280).[3]

Continuity and Innovation

This paper is principally interested in the variety and similarities of church designs at Abila. One common factor in all the churches was their connection to water. Cisterns exist beneath the DD and G Churches, the E church has a cistern wellhead in the atrium just west of its narthex, and the D church lies not far south of a large cistern atop Umm al-'Amad. Even the Area A church is bordered to the north by a water channel used for collecting water atop Tall Abīl; likely this Area A church also lies near (or possibly over) a cistern at the terminus of its water channel.

All churches unearthed heretofore follow basilica designs with their entrances on the west and their nave apse on the east. Even the one clear example of a martyr church (Area G) followed basilica architecture rather than a centralized design. Four of these churches are three-aisled basilicas, but one (Area E) is five-aisled. Evidence of narthex entrances exists for four of these churches (Area DD is a likely exception here).

The principle variation among these basilicas concerns the number and location of apses. Four

3 Other possible parallels are listed in Patrich (2006: 377n), who follows Michel (2001: 28). Early published reports of the Church of St Thomas at Ṣa'ad also suggested a similar design (Rose and Burke 2004: 21), though this was later corrected to include a diakonikon and a prothesis on either side of the central apse (Rose *et al*. 2007: 424).

are tri-apsidal, whereas one possesses only a single apse at the head of the nave (Area G). Among the tri-apsidal churches, the five-aisled Area E is the only one to have a cloverleaf plan (as opposed to the more standard design where the north and south apses form the eastern heads of the side aisles). Also, the Area DD church possesses the remarkable feature of having three eastern apses of identical dimensions. Four of the churches relied on supporting columns, whereas only the Area G church employed piers to separate the aisles from the nave. Three of the churches (Areas D, E, and probably G) evidence attached rooms. On most matters the churches atop the tall(s) show greater continuity in architectural design than those below.

All the churches possess their own forms of decoration. *Opus sectile* flooring is present in all five churches, though only partial samples of such flooring remain in each. Mosaics appear in attached rooms (Area D) or in the public access-ways near the churches (Areas A, D, DD, E), and occasionally in a side aisle of a church (DD). Area E and G churches evidence brackets employed to hang marble revetments on the walls (cf. Mare 1999: 456). The walls of the D and DD churches were not found sufficiently intact to speculate on wall decorations in these churches. Some decorative motifs serve ecclesiastical functions. This is especially true with the chancel screens used to separate the sacred space of the apses. Only the Area G church clearly indicates the use of a permanently installed ambo for reading Scripture. With the discoveries of 2006 we now have two examples of reliquaries used to house holy objects in the churches (from the Area E and G churches).

The Abila Churches of Areas E and G, which do not have side apses flanking the central apse at the east end of the building, both display an intriguing development by screening off areas at the flat-walled, eastern end of their side aisles. At the ends of these aisles the restrictive screens and the vertical posts are gone but the hard limestone foundation course remains, showing the placement of the posts and the screen sections. The fact that these eastern walls are separated off as sacred space (without obvious entrances or exits) has led us to speculate that these walls may have been adorned with icons.

Church structure alone appears insufficient for dating these ecclesiastical buildings. One might postulate that the single-apsed Area G church was one of the earlier designs at Abila. However, although the final basilica form of the Area G church (with its single apse) appears simpler than the other churches,[4] it required a substantial commitment of resources to construct this expanded Area G church over such a water system and on the slope of a hill. Its simplicity of design may have been affected more by its location than by its era of construction. Furthermore, the original excavation assessments have suggested that the Area A and D churches were among the latest monumental Byzantine structures at Abila (from the sixth or even seventh century). Yet, despite their prime location, the A and D churches do not seem as structurally complex as the E church, which was probably among the most unique basilicas in the region. Most of these buildings appear to have suffered a similar calamitous demise during the earthquake of AD 747 / 748 (although the DD church may have been decommissioned earlier). Thus, at least most of these basilica churches were in simultaneous use through the end of the Byzantine era and up to the end of the Umayyad period.

Perhaps the most substantial conclusion we can reach is to admit that, among the currently exposed structures at Abila, the differences in church design are all fairly conservative variations on the basilica style. With the possible exception of the reliquary and martyrium discoveries, and the various ways screens are employed, there is currently no substantive reason to suspect theological motivations for structural variations. Rather these seem to depend on the level of opulence desired in church design.

As Byzantine ideas of sacred space flowed through Jordan, they left their footprint behind. There was also regional variation within Jordan itself. The use of local materials (or the reuse of previous materials found near Abila) helped determine building construction. However, local creativity also took the basilica form and reshaped it into a

4 On the basis of the simplicity of the Area G church, one might assert that it was Early Byzantine, such as the examples of the St John of Studius basilica in Constantinople or the much larger one at the Archeiropoietos basilica in Thessalonica (Mango 1978: 36-40). A closer example might be the one at Maresha (Kloner 1993). The examples near al-Mafraq were mentioned above. However, simplicity of design does not necessarily mean a more ancient date of construction. Note that the single-apse churches already mentioned in this paper included the fifth-century Amman Citadel Church and the seventh-century Bishop Genesius Church at Jarash.

variety of designs that were employed roughly contemporaneously in Byzantine Abila.

The unearthing of a fifth basilica during the 2006 excavation season has revealed further such variation in local design and, additionally, testifies to ecclesial wealth at Abila. Indeed, the wealth these churches possessed in their structures and their proximity to and control over significant water resources bear witness to the social importance of the church at Abila from the fourth to eighth centuries.

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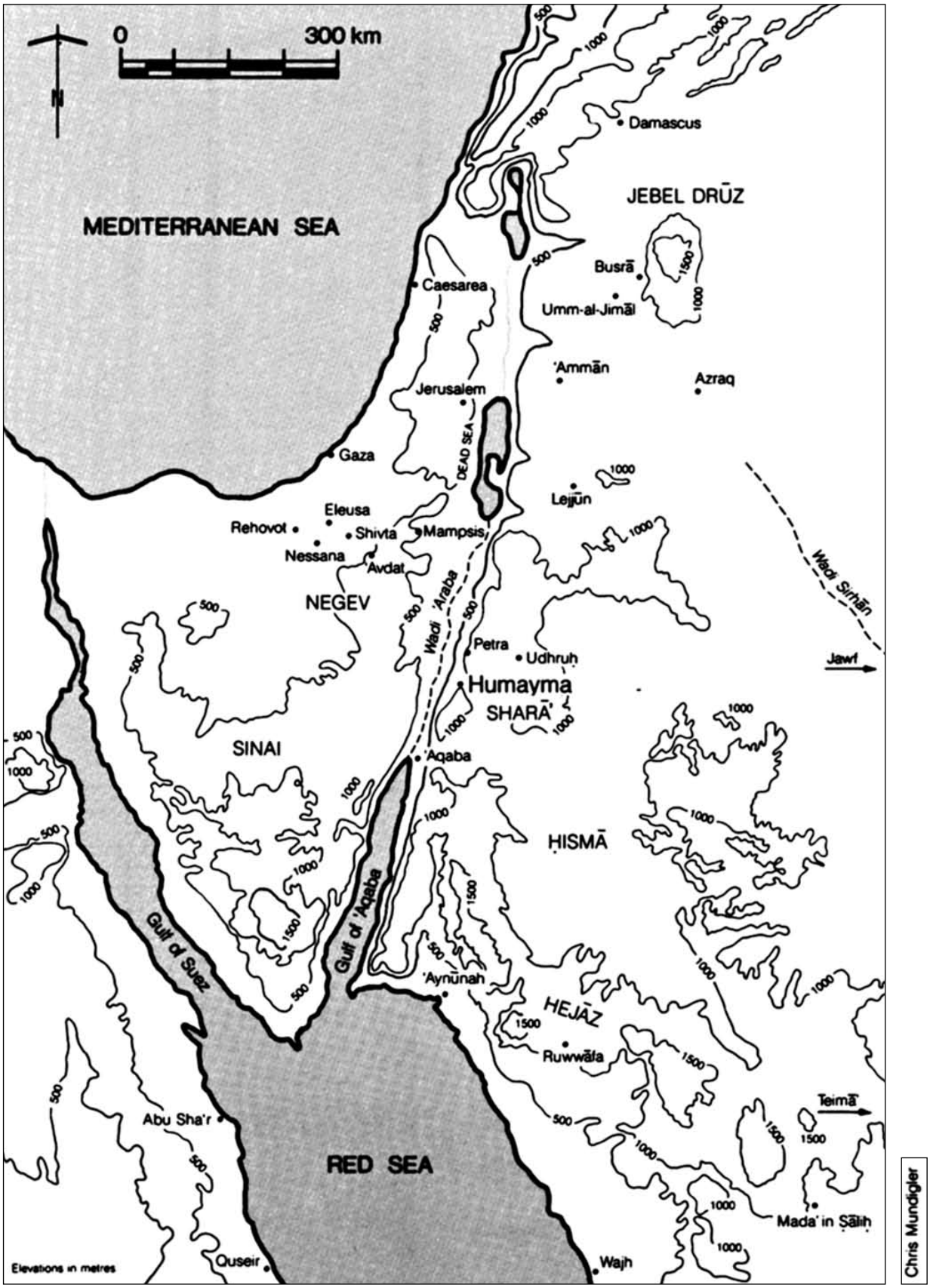
Trajan's Engineers and the Roman Fort at al-Ḥumayma (Ancient Ḥawara, Jordan)

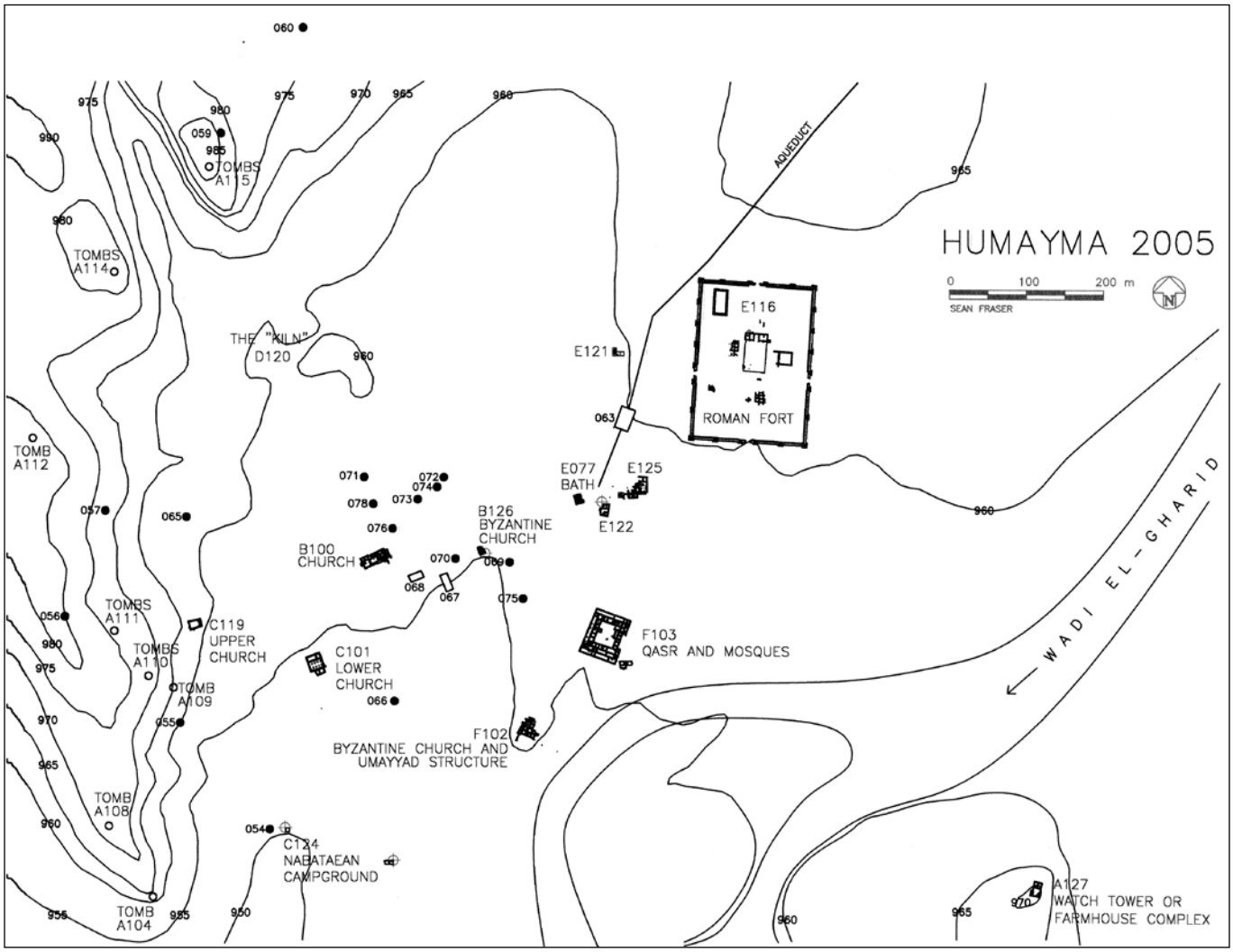
As is well known, the Romans began to intervene directly in the Nabataean kingdom and Nabataean sphere of interest during the 60s BC, in the course of Pompey's reorganization of Syria and the surrounding regions (Bowersock 1983: 28-44). During the reign of Augustus, the expedition of Aelius Gallus also involved intervention in the kingdom, according to Bowersock, perhaps even brief suppression of the kingship around 3BC. Some forces from the army of L. Vitellius may have entered the kingdom as well, before being recalled at the news of Tiberius's death in 37 (Bowersock 1983: 54-58, 65-68). The final blow came after the death of Rabbel II in 106, when the emperor Trajan's forces annexed the kingdom as the Provincia Arabia. Although the literary and numismatic evidence is ambiguous about the conditions of this take-over, the archaeological remains suggest that the occupation was accompanied by widespread violence (Kennedy 1980; Freeman 1996; Schmid 1997, 2000: 139-46; Oleson 2004: 354-55). Various explanations have been proposed for this annexation, and there were undoubtedly more than a few motives. In any case, for the first time, the Romans fortified and extensively garrisoned the region of the former kingdom and improved lines of communication by constructing or rebuilding roads, in particular the *Via Nova Traiana* (Graf 1995, 1997). Much is still obscure about the transition from Nabataean to Roman rule and the early years of the new province, but it is clear that teams of military engineers must have been involved. The well known *Papyrus Michigan* 466, for example, a letter home by a new recruit stationed near Petra in March 107, mentions quarrying undertaken for road work (Speidel 1977: 691-94). Some milestones and honorific building inscriptions mentioning Trajan have been found (Bowersock 1983: 81-86; Graf 1995, 1997), and the legionary fort at Bostra, the capital of the new province, should date to this period (Parker 2000: 124; Kennedy 2004: 217-18). So far, however, there has been little close analysis of the strategy followed by the presumably imported Roman engineers, the direct motivations for their activities, and the procedures they followed in planning and constructing the infrastructure of Roman occupation.

The Roman fort at al-Ḥumayma, Nabataean Hawara, Roman Ḥawara, is the earliest large Roman fort in Jordan so far excavated and reliably dated, and one of the few surviving principate forts in the entire region (FIGS. 1-2) (Oleson *et al*. 2003, 2008; Parker 2000; Kennedy 2004: 193-98). Ceramic and numismatic evidence reveal that the fort was constructed immediately after the events of AD 106. A gap in the coin record suggests the fort was abandoned during Diocletian's reworking of the military centres along the *Via Nova Traiana*, but it was re-occupied, most likely by a military unit, under Constantine. Final abandonment occurred late in the fourth century. The historical context makes it likely that the fort was manned by a detachment from the Legio III Cyrenaica, and an inscription from a shrine in the *vicus* documents the presence of members of that legion in the fort in the mid-third century (Oleson *et al*. 2002). It is also possible that a detachment of the Legio VI Ferrata was stationed at Ḥawara at some point (Kennedy 1980; Freeman 1996).

Although the fortification walls and interior structures were plundered for building materials in the Byzantine and Early Islamic periods, for the most part the plans of both the original structures and their later phases of use can be easily determined (FIG. 3). Excavations directed by Oleson since 1993 have documented the dimensions and design of the fort and its interior road network,



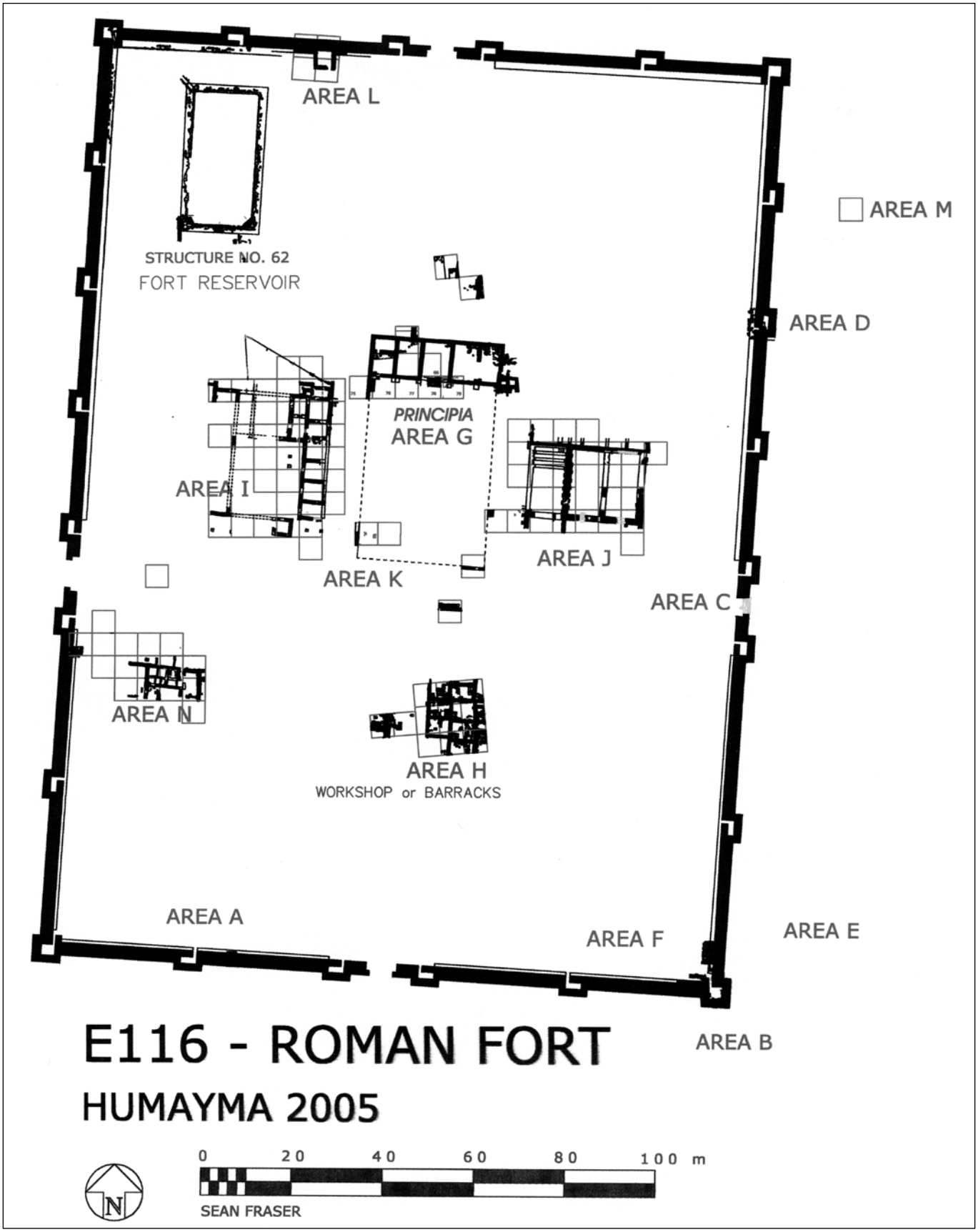
1. Ḥawara/al-Al-Ḥumayma, Locator map.



2. Ḥawara/al-Al-Ḥumayma, plan of settlement.

along with the plans of the most important interior structures: *principia, praetorium, horreum,* barracks, workshops, and possibly a stable (Oleson *et al*. 1995, 1999, 2003, 2008). A latrine has also been identified, along with a pressurized pipeline for water supply, and an extensive network of drains. This paper discusses several issues raised by the location and plan of the fort, as a contribution to our understanding of the process of the occupation of the Provincia Arabia: first, the strategic and tactical reasons for the location of the fort; second, the planning procedures behind the overall layout of the fort; and, third, the design and execution of its individual interior structures. I will show that the structures and their arrangement correspond for the most part to a modular system based on rational totals of Roman feet, and I will compare the archaeological data with Roman period literary sources relating to the planning of fortifications.

Location is always a major consideration in military architecture, and in strategic terms the placement at Nabataean Ḥawara of the main military unit between Petra and Ayla makes a great deal of sense (FIG. 1). This settlement, although small, was the main population and market centre in the Ḥismā, it was located on the main north-south route — renovated as the *Via Nova Traiana* — and at the junction of tracks leading southeast towards the sanctuary in Wādī Ramm, and beyond into the Ḥijaz. There were close connections between Hawara and both Petra 80km to the north and Ayla 80km to the south, on the Red Sea. A Nabataean aqueduct brought spring water to the settlement, supplementing numerous cisterns storing run-off from precipitation, and the loessal soil within the run-off area allowed the production of grain. Ro-



3. Ḥawara/al-Al-Ḥumayma, plan of fort and excavated structures.

man control of this site was crucial to their occupation of the southern portion of the kingdom, and the fort undoubted served as the regional administrative centre (Oleson 2001; Isaac 1990: 205).

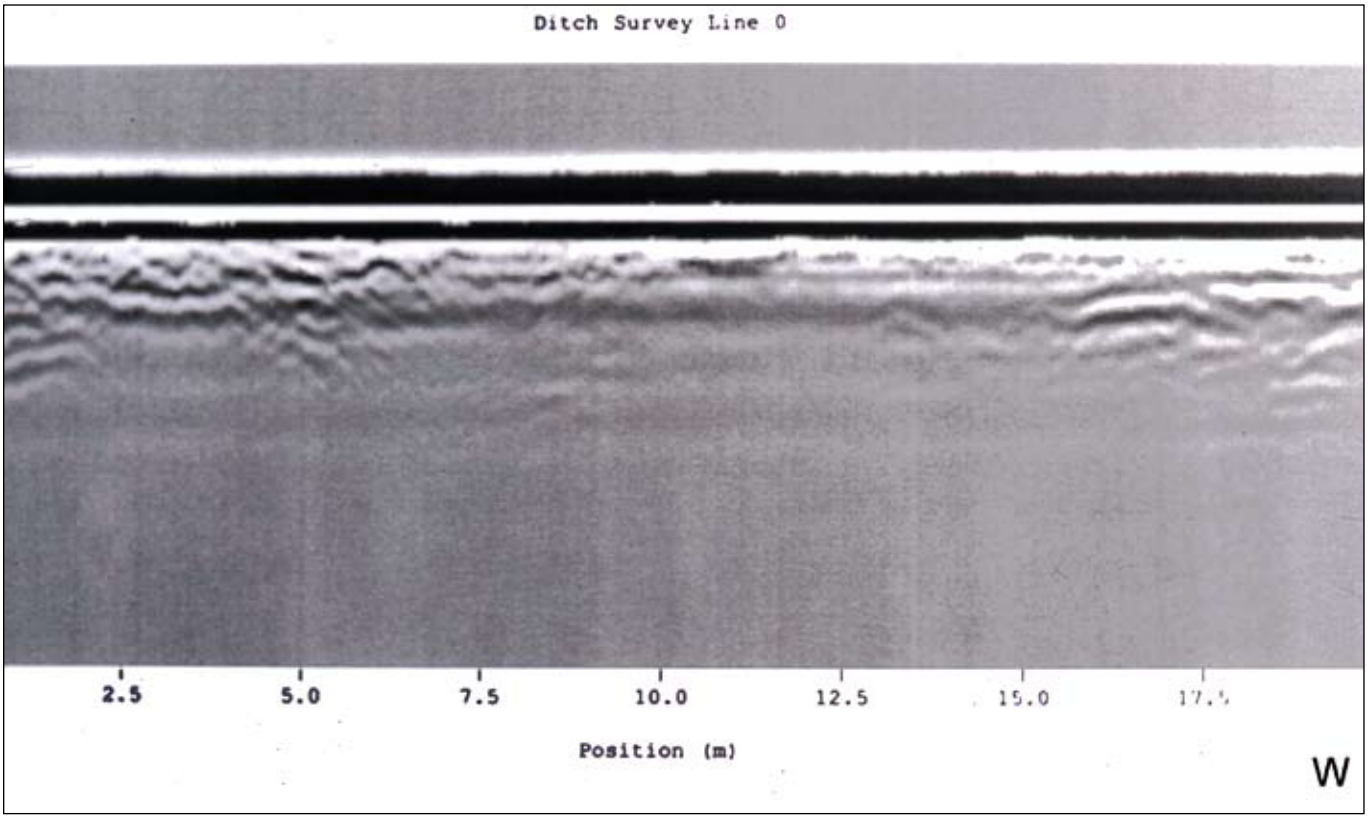
In the local context, tactical considerations are equally important. The fort was laid out on a gentle, southern-facing slope above and 100m northeast of the Nabataean settlement (FIG. 4). The site has no natural defences, but it was close enough to the Nabataean aqueduct to draw water from it by means of a branch channel, and the *Via Nova* probably passed by just outside the west gate. The view directly to the north was blocked by a hill, but from the fort there was a clear view south to the *castellum* at Quweira and to the southeast nearly as far as Wādī Ramm. A detached, semicircular earth mound — in Latin *titulum* — outside the north gate reinforced it against assault from the level plain on that side (Oleson *et al*. 2003: 53). Evidence is less clear for the presence of *titula* at the other three gates, but geophysical survey recently revealed the presence of a ditch (*fossa*) 5m outside the walls, ca.

4. Ḥawara/al-Al-Ḥumayma, aerial view of fort from south (Photo: D. Kennedy, with permission).

1m deep and 3m across, with a V-shaped cross-section (Oleson *et al*. 2008) (FIG. 5). Spoil from the ditch was probably used along with rubble as fill in the stout, block-faced fortification wall. In addition to the 24 projecting towers, there were platforms at several points inside the wall for artillery (FIG. 6). The 4.7m drop from the north gate to the south gate allowed for the controlled removal of runoff through a system of drains below the main roads, and for the internal distribution of water through a system of terracotta pipes fed by the reservoir at the high, northwest corner of the fort. The fort dominated the civilian settlement visually, a permanent reminder to both local inhabitants and passing travellers of the iron fist of Roman occupation.

Roman architects, particularly military architects, paid careful attention to design, materials, and construction procedures, and the fort at Ḥawara was no exception. The general plan of the fort clearly was laid out in multiples of the Roman *pes monetalis*, 0.296m in length, and it was oriented within a few degrees of true north. Throughout this paper, when I refer to "feet" I intend this Roman foot (abbreviated as "RF"), rather than the English foot of 0.3048m (FIG. 3). Here are the main dimensions of the fort in Roman feet: width 500 RF, length 700 RF; walls 10 RF thick; 4 corner towers 20 RF on a side, projecting 6 RF out from the wall, and 20 intermediate wall towers also 20 RF wide projecting 6 RF; the east and west gates are 400 RF south of the north wall and are 15 RF wide. The interior of the reservoir measures 50 by 100 RF, and 10 RF deep. The main north-south road (*via praetoria*)

6. Ḥawara/al-Al-Ḥumayma, ballista platform against fort wall.



5. Ḥawara/al-Al-Ḥumayma, GPR definition of ditch around fort, looking south.

and the peripheral road inside the fort (the *intervallum*) were both 27 RF wide. The principal east-west road (*via principalis*) is less well documented, but may have been 30 RF wide. All the roads so far identified within the fort were originally paved with stone slabs. The Roman surveyors usually achieved an accuracy of better than one percent, but errors or adaptations might be made in executing a theoretical design might be made in any Roman construction project (Wilson-Jones 2000: 11-14, 202).

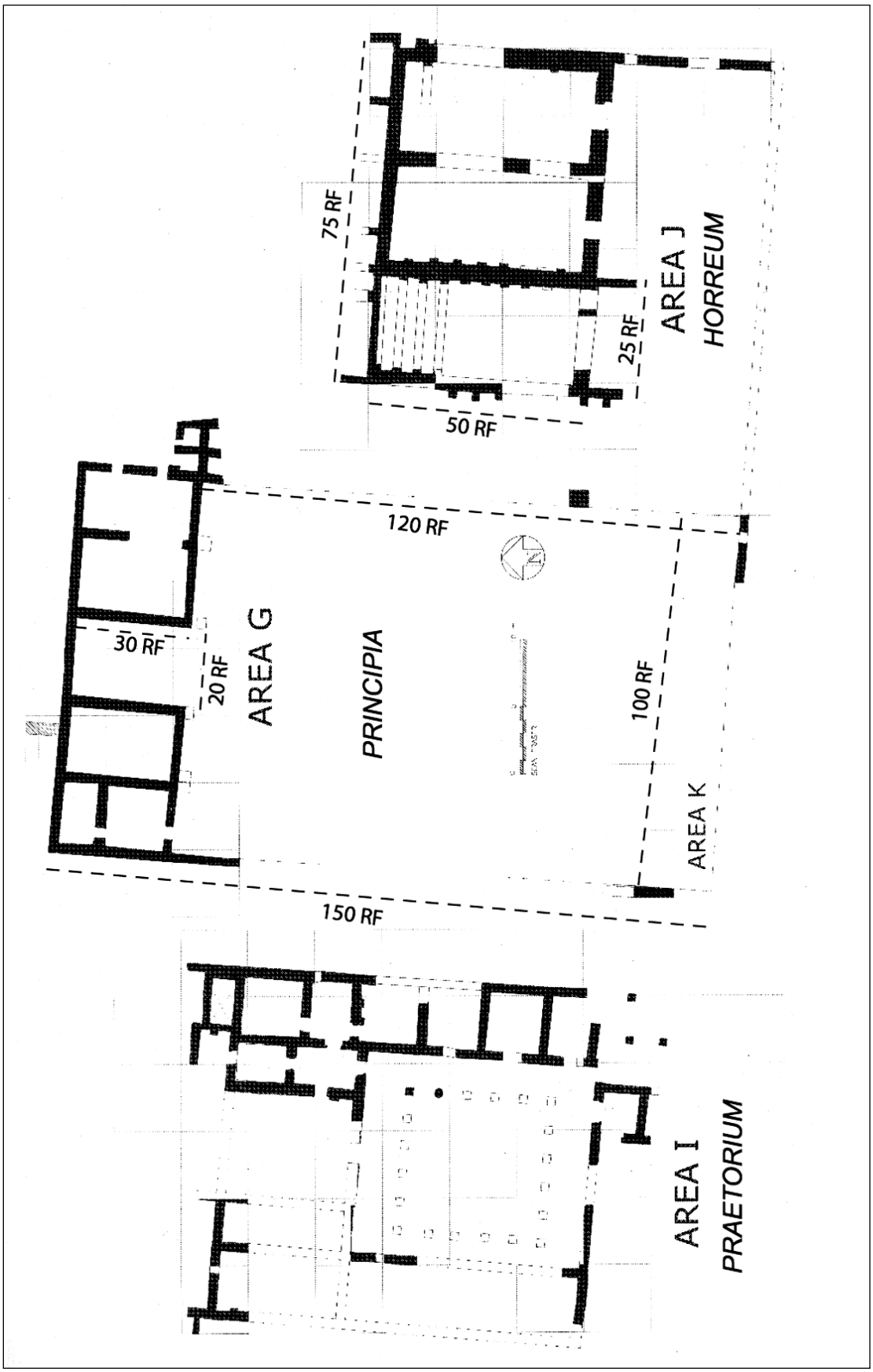
The same attention to rational numbers of the module was applied to the design of the buildings inside the fort. Only three structures — the *principia, praetorium,* and *horreum* — have so far been excavated comprehensively enough to allow convincing reconstruction of the plans and procedures used by the engineers. All three structures belong to the first phase of the fort, but they continued in use in one way or another through the end of occupation (FIG. 7).

The *horreum*, or granary (often referred to in Latin as the plural *horrea*), is located immediately east of the *principia*, or headquarters building, in the northeast quadrant of the fort. This structure is identified as the granary because of the following plan and construction features, which are shared with granaries at other Roman forts: heavy, buttressed walls, long narrow interior rooms roofed with stone slabs carried on cross arches; floors carefully paved with bricks or thick stone slabs; careful arrangement for drainage; and the predominance in this location of fragments of storage wares (Johnson 1983: 142-57; Richardson 2004; Parker 2006: 235-40). The location of the structure near the central administrative area is paralleled in most other Roman forts, and there are no other suitable locations available within the fortification walls for such an important structure. Given the isolated and environmentally marginal location of Ḥawara, the provision of food and other supplies for a unit of 500 men, baggage animals, and mounts would have been logistically very challenging (Richardson 2004). The items making up the standard Roman military diet have been estimated to weigh 1.4kg per person per day (Davies 1971, 1989: 193; Johnson 1983: 195-202), so the unit of approximately 500 men suggested by the size of the Ḥawara fort would have required approximately 700kg of foodstuffs daily. Any mounts housed in the fort would have required further supplies: 3kg of grain per day for a pack animal, 5.5kg/day for a horse (or twice this amount of high quality pasturage) (Shirley 2001: 109). Storage of at least three months supply of food, probably totalling more than 100 metric tons, was essential to the function of the outpost.

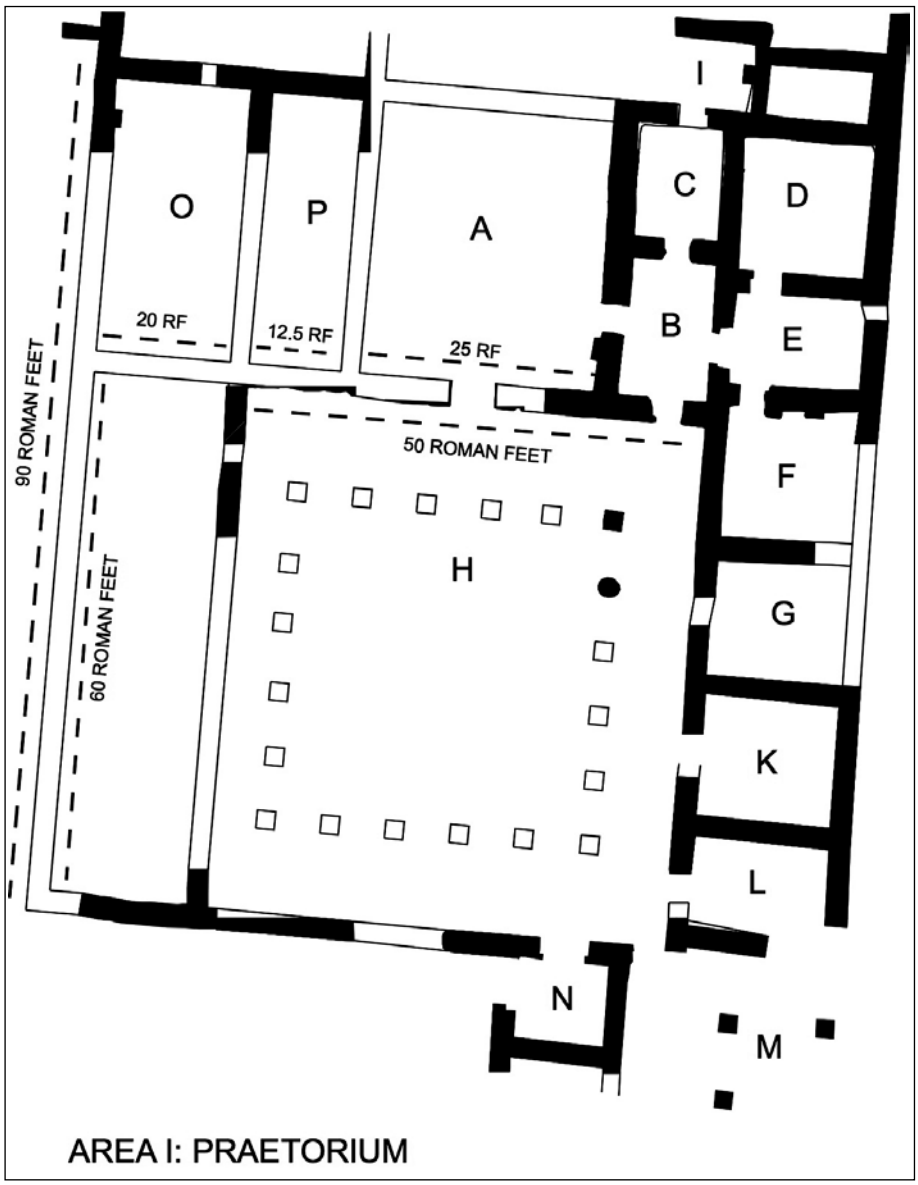
A few details of the south end of the structure require further excavation, but it looks as if the engineers laid out the main portion of the *horreum* as a rectangle 75 RF wide from east to west, and 50 RF long (FIG. 7). This space was then subdivided into three large rooms 25 RF wide and 50 RF long, each with a door 5 RF wide in the centre of the south wall. The walls were built straddling the survey lines, and they vary in width. The storage area was roofed with heavy slabs carried on cross arches.

While the *horreum* was crucial for subsistence, the *principia* was the central administrative structure in a fort, where the unit's gods and standards were kept and the commander's decisions passed on to the officers and men assembled in the courtyard (FIG. 7). As in most Roman forts, the engineers laid this structure out on the centre line of the fort, on the same orientation as the fortification walls, and facing south on to the *via principalis*. The benchmark (*gromae locus*; see below) for the original survey probably was set up on what became the centre line of the *principia*, on the line of its south wall, with a clear view to the sites of the four gates, two-thirds of the distance from the north wall to the south entrance. The engineers laid out a rectangle 100 RF wide and 175 RF long. A cross wall placed 30 RF from the north wall defined space for four offices and the central shrine, subdivided by four party walls 20 RF apart. There may have been a colonnade around the resulting parade ground. Several statue bases drew attention to the façade of the office area.

The *praetorium*, or commander's residence, is the third of these central structures. The planning procedure can be reconstructed in more detail for this structure, given its better preservation, greater complexity, and more complete excavation (FIG. 8). A square was laid out at the appropriate orientation, 90 RF on a side; an east/west line was then laid out across the square, 60 RF north of the south side. Two further lines were then laid out north/S, 20 RF in from the east and west sides. These lines defined a central courtyard 60 RF long north to south, and 50 RF wide. The long rectangles framing the east and west sides of the courtyard were then each divided into rooms theoretically 15 RF wide and 20



7. Ḥawara/al-Al-Ḥumayma, plan of central structures in fort.



8. Ḥawara/al-Al-Ḥumayma, plan of *praetorium* in Roman feet.

RF deep. Five long, rectangular rooms were laid out across the northern third of the structure, all 30 RF long, oriented north/south: two outside rooms 20 RF wide (possibly subdivided in length); two at the northeast and northwest corners of the courtyard, 12.5 RF wide; a grand central room 25 RF wide.

The present measurements of the structure vary slightly from these ideals, depending on whether the walls were constructed with the outer or inner face on the surveyed line, or the medial line of the wall itself. The walls in the *praetorium* — built for the most part of rubble set in mud, with occasional use of blocks at corners and doorways — range in thickness from 0.64-0.70m (2.16-2.36 RF), but the design width was probably 2 RF. The addition of plaster after construction and during renovation, and the gradual dissolution of the fabric after abandonment have thickened them. As built, the outside, north/south dimensions of the *praetorium* are just over 93 RF (27.16m), suggesting that one east/west wall was built outside the surveyed line, and the other straddling it. Similarly, the courtyard is just over 50 RF wide (14.88m), but only 58 RF long (17.16m). In this case, the north/south walls and one east/west wall were built outside the survey line, but the other east/west wall was built inside it. The doors range around 5 RF in width.

As in the *horreum*, most rooms in the *praetorium* had flat slab roofs supported by cross arches, while some of the smaller rooms may have been roofed with poles and palm thatch covered with an

impermeable roof plaster.

The engineers who laid out the fortifications and interior buildings of the fort at Ḥawara were following a long tradition that specified the designs and procedures to be used. Sketches or even verbal descriptions may have been sufficient, given the standardized plans, and with the *groma* to survey right angles and the measuring chain or pole to determine distances (Lewis 2001: 20-1, 59-60, 120-33), the team could have quickly laid out the wall lines on the ground with coloured flags and pegs — as described by Polybius (below, 6.26.10-34.6). Execution seems a little more haphazard, as walls were sometimes built on top of the theoretical wall line, or to one side or the other. These variations from the ideal may have been intentional, as the builders tweaked a standard plan to deal with practical problems involving the site or available materials; the construction teams may also have varied in competence and attention to detail. In any case, consideration of the process of design provides a better understanding of these structures.

It is instructive to compare some of the procedures reconstructed above with the few surviving Greek and Latin sources that describe the procedures for laying out Roman marching camps: a description in Polybius' *History*, dating to the mid-second century BC (6.26.10-34.6); a description in Josephus' *Jewish War* (3.76-84) of the 70s AD; the *de munitionibus castrorum* of Pseudo-Hyginus, dating to the early second century AD; and a few details in Vegetius' *Epitoma rei militaris*, written in the late fourth century (1.21-25, 3.8). These sources all describe temporary or seasonal marching camps, in which the central structure is the commander's tent, termed the *praetorium*. In permanent forts the central building was the *principia*, which took over the administrative functions of the commander's tent, while the *praetorium*, to one side, assumed the residential function.

Although Polybius describes an early form of the Roman marching camp, and the details of the design remain subject to controversy, the characteristics of symmetry, proportion, logical organization, and standardization are already clear. A site from which the camp can best be overseen is selected for the commander's tent and marked with a flag. A square 200 RF on a side is marked out with this flag at the centre. The rest of the camp is laid out around this square, with consideration of local conditions, such as the best direction from which to take water and forage.

"When the army on the march is near the place of encampment, one of the tribunes and those centurions who are specially charged with this duty go on in advance, and after surveying the whole ground on which the camp is to be formed, first of all determine from the considerations I mentioned above where the consul's tent should be placed… (see 6.27). When they have decided on this, they measure out first the area of the *praetorium*, next the straight line along which the tents of the tribunes are erected, and next the line parallel to this, starting from which the troops form their encampment… All this is done in a very short time, as the marking out is quite an easy matter, all the distances being fixed and familiar. Then they plant flags, one in the spot intended for the consul's tent, another on the side of it they have chosen for the camp, a third in the middle of the line on which the tribune's tents will stand, and a fourth on the other parallel line along which the legionaries will encamp. These latter flags are crimson, but the consul's is white. On the ground on the other side of the *praetorium* they plant either simple stakes or flags of other colours. After this they go on to lay out the streets and plant stakes in each street" (Polybius, *History* 6.41; Loeb edition).

There are striking parallels between this straightforward procedure and the modern use of variously coloured flags in laying out building sites, or lawn irrigation systems. Polybius, of course, wrote 250 years before the fort was built at Ḥawara, but the procedures are simple and logical. Josephus was equally impressed by this Roman innovation.

"This camp is not erected at random or unevenly; they do not all work at once or in disorderly parties. If the ground is uneven, it is first levelled; a site for the camp is then measured out in the form of a rectangle. For this purpose the army is accompanied by a multitude of workmen and of tools for building. The interior of the camp is divided into rows of tents. From outside, the circuit gives the appearance of a city wall and is furnished with towers at regular intervals; and in the spaces between the towers are placed…every variety of artillery engines, all ready for use… The camp is intersected by streets symmetrically laid out. Precisely in the centre is the headquarters of the commander (*stratégion*), resembling a small temple" (*Jewish War* 3.76-83; Loeb edition).

The location, design, and even some of the de-

tails of the Ḥawara fort correspond well with the specifications provided by Pseudo-Hyginus, *de munitionibus castrorum*. This work, whose author and original title are unknown, is now felt to have been written by a military engineer active in the east during Trajan's reign (Lenoir 1979: 113-33). Given their chronology and the eastern context, the texts in Josephus and Pseudo-Hyginus are particularly relevant to Ḥawara. Here is a selection of the more striking passages from the *de munitionibus castrorum*.

"As for selecting a location for laying out the fort, sites that rise up a gentle slope from a field are the best. In this arrangement the north gate (*porta decumana*) is at the highest point, so that the rest of the fort lies below it. The south gate should always face the enemy (56).

The spot at the entrance to the *praetorium*, at the middle of the *via principalis* is called the "benchmark" (*gromae locus*) because the troops meet there; also, because when the measurements are called out the *groma* is positioned over a metal stake set in this very spot, at the intersection of the line of sight to each gate (12).

The main ditch, [should have a] cross-section either "sloped" or "Punic". That one is called "sloped" whose sides incline downward from its greatest breadth and meet at a narrow point at the bottom… They should be given a width of at least 5 feet and a depth of at least 3. Similarly, let there be a ditch 60 feet outside the gates, equal to them in width; on account of its short length this is called "the nametag" (*titulum*)… Likewise there should be a mound in front of the main gates, as along the ditches, at "the nametag" (*ad titulum*)" (49-50).

In hostile country one should remember to… build platforms for ballistae around the gates, at the corners, and in place of towers" (58) (translation adapted from Miller and Devoto 1994).

The late fourth century author Vegetius says relatively little about camps, and he expresses a different, much later tradition than the authors already quoted. Nevertheless, a few of his comments are relevant.

"Camps are considered more practical if their length is a third part more then their width. The surveyors (*agrimensores*), however, should calculate a module of measurement in feet, so that the army be enclosed according to its size… A mound is built up like a wall. The centurions measure this with 10-foot poles lest some dig less or cause mistakes through laziness" (3.8; translation Stelten 1990).

The design standards, personnel, procedures, and tools mentioned in these sources help us to reconstruct the activities of Trajan's engineers at Ḥawara early in the second century and to understand better the structures we find there. This approach has not yet been applied to the other Roman forts excavated in the region, although many British scholars have applied modular analysis to Roman forts in Britain and northern Europe (Connolly, Davison, Van Driel-Murray 1989; Evans 1994; Henderson 1991; Richardson 2000; Shirley 2000, 2001; Taylor 2000). Even a selection of a few results based on metric dimensions of fortifications published in Kennedy 2004 (and a few other publications), some of them approximate, will give an idea of the promise of this approach in the region.

Bostra: Trajanic legionary fort; 440 x 360m (Kennedy 2004: 218) = 1500 x 1200 RF.

Ad-Diyāthah: fort, century AD 300; 71.7 x 51.7m (Kennedy 2004: 219) = 250 (?) x 75 RF.

Dayr al-Kahf: fort, after AD 306; 60 x 60m (Kennedy 2004: 72) = 200 x 200 RF.

Al-Lajjūn: legionary fort, century AD 300 (Parker 2006: fig. 3.4); c. 238 x 192m = 800 x 650 RF.

Tall 'Abara: marching camp? Trajanic? (Kennedy 2004: 180); c. 150 x 120m = 500 x 400 RF.

Aṣ-Ṣadaqa: auxiliary fort, second century (Kennedy 2004: 187); c. 120 x 80m = 400 x 275 RF?

Beer Sheva: auxiliary (?) fort, third century (Fabian 1995: 237); 180 x 117.5m = 600 x 400 RF.

In this context there is space only to introduce one remaining problem: the fort at Ḥawara seems to be the earliest documented example — by nearly a century — of a Roman fort with towers projecting from the wall rather than built against the inside face (Gregory 1986, 1996a, 1996b). The Trajanic fort at Bostra has been said to follow the same design, but excavation is needed to prove it. Gregory suggested that the Romans adopted projecting towers for their forts in the east in response to their common custom of billeting troops in walled cities in that region, in contrast with the marching camps customary in the more sparsely populated western provinces. But since towers appear on the fort at Hawara, which is otherwise very western in design, at the very beginning of the Roman occupation of Nabataean, it seems more likely that the towers are a response by Trajan's engineers to the greater experience of their eastern opponents with siege techniques against walled cities with projecting towers.

The greater tactical sophistication of the forces opposing Rome in the Near East, and the character of their offensive and defensive armament, fostered the use of projecting towers. Among other advantages, projecting towers would have allowed more effective deployment of hand carried ballistae, while larger torsion catapults were mounted on intermediate platforms, as at Ḥawara (Rihill 2007: 91-105). The descriptions quoted above do not clarify whether the camp towers should project from the wall, but it may not be accidental that Josephus describes a Roman camp as having "the appearance of a city wall…and furnished with towers".

Roman engineers, both civil and military, were famous for their skills, and the Roman Empire could not have survived without the infrastructure they created. There is still much to be learned about their activities in the Provincia Arabia, whether in the design and construction of forts, or of roads, aqueducts, and drains.

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Jordan in the Iron I Period

Introduction

The Iron I period in Jordan is something of a dark age. Early surveys often assumed settlement patterns and ceramic development should be like those west of the Jordan River, leading them to misdate some types of pottery to Iron I in order to fill out the period. Unfortunately, this has happened in survey reports of some localities (especially the south) as late as the early 1990s. Thus, Iron I readings among the results of archaeological surveys, such as those of Glueck (1934, 1935, 1939, and 1951) should be treated with utmost care. There have also been very few excavations at sites that contain Iron I levels. Further, when sites have produced Iron I discoveries, they are often exposed in small areas for which coherent archaeological interpretations cannot be clearly supported, such as Nimrīn. Or, more problematic, the Iron I levels have been largely destroyed by later constructions, such as Ḥisbān. The third problem is that some excellent sites have not yet been published in a final form, such as Saḥāb.

We may divide the Iron I sites in Jordan into two principal groups: those in the Jordan Valley and those in the highlands. The sites in the Jordan Valley seem to reflect a more prosperous lifestyle. They also contain a material culture that displays a continuum with the Late Bronze and is oriented more toward the west than sites on the plateau. However, like the Valley sites, prominent LB sites on the plateau often continue to exist into the Iron I period. Also unlike highland sites west of the Jordan River, Iron I sites on the Jordanian plateau tend to be larger, some with fortifications. Among excavated sites there is virtually no evidence yet that the settlement pattern of the Transjordanian highlands included scores of very small village sites, like that of the highlands west of the Valley. We may still find some, especially in the north, but the highlands of Jordan will most likely present a different settlement pattern for Iron I than that of the West Bank.

Recent research has tended to emphasize the "tribal" nature of settlement and sedentarization in the highlands while more established urban connections seem to have existed for the Jordan Valley sites (Herr 1998; Ji 2002; van der Steen 2004). Indeed, both Ji and van der Steen have used aspects of 19th century Bedouin tribal society to help explain Iron I settlement processes in the highlands. But see Routledge's nuanced amplification (or redirection: 2004: 92-93). At the risk of appearing simplistic, clustered settlement patterns may reflect tribal groups or confederacies as they began the settlement process at different paces in different areas, but these groups were never static and interacted with each other in fluid ways (LaBianca and Younker 1995).

Egyptian sources for the Late Bronze Age and early Iron Age mention a people group called Shasu, apparently nomads from a region, which included southern Jordan. The only other textual sources relevant to this period are later reports and/or remembrances of the biblical documents. These include stories of the origins of the Aramaeans, Ammonites, Moabites, Edomites, and ancient Israelites. Among them are the defeat of Sihon the King of Heshbon (Num 21), a series of wars between Israel and the Transjordanian people-groups about who was to control the territories east of the Jordan River (e.g. the Jephthah story in Judges 11), and even battles that occurred to the west (e.g. the stories of Ehud against the Moabites in Judges 4 and Gideon against the Midianites in Judges 6). All these sources certainly reflect interactions among the various people groups as they sorted out who they were and how they could best support their "related" clans.

The settlement process in the highlands was not constant. Regions with high agricultural potential were generally settled first. Thus, northern areas (north of the Wādī az-Zarqā') contain sites that continued from LB settlements; sites in the central areas (from the az-Zarqā' to the al-Mūjib) sometimes continued from LB settlements or founded new ones near the beginning of the period; the south-central area (between the Wādī al-Mūjib and Wādī al-Ḥasā) was first settled seriously during the 11th century; and the southern region (south of the Wādī al-Ḥasā) did not seem to have been settled clearly until the Iron II period.

Routledge has produced an important list of features describing the Iron I period as a contrast to the LB (2004: Chapter 5), which I summarize (in part) here:

1. The collapse of pan-Mediterranean trade systems.
2. Disappearance of palaces and temples with a more egalitarian demography.
3. Disappearance of Egyptian hegemony.
4. Collapse of the Hittite Empire.
5. The proliferation of pillared houses and the rise of the domestic nature of settlements.
6. Increase of sites in the highlands.
7. Episodic occupational patterns (short-term occupation with disruptions).

Much progress has occurred recently on the pottery of Jordan during the Iron I period, allowing us to re-date older excavated materials. For instance, simply to find a collared pithos is no longer enough to ascribe a settlement to the Iron I period in Jordan. Across Jordan for the most part, they continue into the Iron II period. Excavations are also providing us with a much better understanding of Iron I assemblages. Unfortunately, this better understanding of the pottery has resulted in a net loss of Iron I sites rather than gain, because early surveys and excavations tended to suggest pottery was Iron I when it really was Iron II (below).

No attempt has been made here to include survey sites, which have produced "Iron I" pottery. Older surveys did not illustrate the pottery consistently or clearly (Glueck 1934, 1935, 1939, 1951) or did not illustrate it at all (Mittmann 1970 and Ibach 1987). Indeed, when we peruse the plates of surveys that did illustrate the pottery, we must reduce significantly the number of Iron I sites they purported to identify (see below for details). Survey data (and JADIS entries based on them) are misleading at best, forcing us to exclude them from this study.

I have tried to follow the new spelling conventions (but without diacriticals) from the Royal Geographic Society for site names, which have been adopted by the Department of Antiquities, but in cases where no example occurs, the old spelling is retained; I have also used popular classical site names, such as Pella. The following is an update and expansion of Herr and Najjar 2001.

The Late Bronze Age/Iron I Transition

This sub-period is necessary in any discussion of the Iron I period in Jordan, because many sites seem to contain a ceramic horizon which contains forms with strong LB tendencies, such as flaring, flanged cooking pot rims and slightly everted, triangular rimmed jars and jugs, but also forms that reflect the very beginning stages of the Iron I assemblage, such as cooking pots with long flanges and an upright stance and other upright forms. It also lacks certain typical LB forms, such as the low carinated bowls in the MB-LB tradition. This ceramic assemblage occurs together in buildings that reflect Routledge's Iron I characteristics (above). Unfortunately, not all the sites listed below have been extensively excavated or clearly published. Others contain only tombs. The list is presented to begin a process of discussion and decision about just what should belong to this sub-period or not. Sites with question marks indicate that not enough has been published to allow independent confirmation for the existence of the site in this period (usually entailing the lack of published pottery).

Excavated Sites with at Least Preliminary Reports: Jordan Valley

Dayr 'Allā?	House (Kafafi, lecture at *SHAJ* 10, Washington, DC, 2007).
Nimrīn	Pithos (Flanagan and McCreery 1994: 241, fig. 21:4).
Pella	Palatial town with destruction (end of LB) (McNicoll *et al*. 1982; Bourke 1997: 103-113).
Saḥam	Tombs (Fischer 1997)
As-Sa'īdiyya	Tombs (Pritchard 1980); Strata XIV-XV — end of LB; wall and cobbled surface (Tubb *et al*. 1996).

Northern Plateau

Abila?	Walls (Mare 1992 and other references there).

Al-Fukhār?	Reused palace?; house walls (Strange 1997).
Irbid Phase 2	City wall; tower; cultic building (Lenzen 1988); Tomb B (Dajani 1966b).
Jarash	Floor fragments; one published potsherd (Braemer 1987).
Zar‘ā	One potsherd (Vieweger and Häser 2005: 25, Abb. 8:19).

Central Plateau

‘Ammān	Tomb (Dajani 1966a).
‘Arā‘ir V	Houses (Olavarri 1965: figure 1: 1-4).
Al-Baq‘ah Valley	Tombs (McGovern 1986).
Ad-Danānīr?	Unpublished pottery (McGovern 1986: 61).
Ḥisbān 21	Rock-cut trench; (Ray 2001: 75-120; Herr forthcoming).
Jalūl?	Pottery in secondary deposits (Younker, personal communication).
Al-Lāhūn	Sherds under perimeter wall (Homès-Fredericq 1997: 58).
Mādabā	Tomb (Harding and Isserlin 1953)
Rujm al-Ḥinū?	Unpublished pottery (McGovern 1983: 126).
Ṣāfūṭ?	Unpublished pottery (Wimmer 1987: 281).
Saḥāb	Tomb (Dajani 1970).
Al-‘Umayrī 12	Fortification system; city gate; houses (Clark 1997)

Southern Plateau

Ṭawīlān?	One possible pottery sherd (Hart 1995: 60, figure 6.19: 11).

In the discussion that follows, I have not repeated citations listed in the above list unless more details are given.

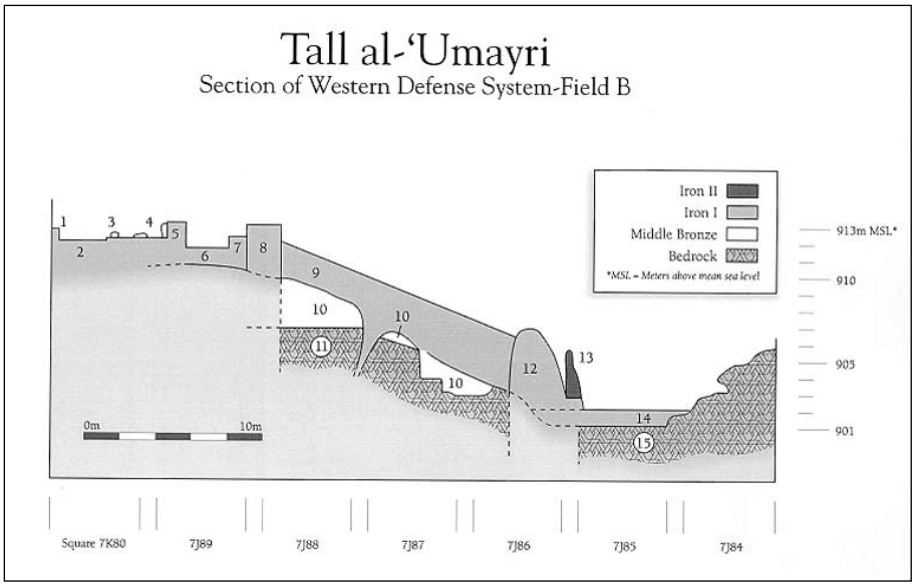
In the Jordan Valley, the most important site is Pella, although generally the Iron Age I is not very clear. The remains published as coming from the end of the Late Bronze Age are here considered to be Transitional, if the pottery published in 1982 also comes from that horizon (McNicoll *et al.* 1982: 121-127); it should, however, be noted that much of the pottery seems to be from later Iron I, as well. Researchers have recently discovered most of a house at Dayr ‘Allā which they date to this period. The large and rich cemetery at as-Sa‘īdiyya with LB IIB and Iron I pottery and other objects suggests a significant town or city there. Indeed, recent excavations have apparently uncovered tantalizing hints of its existence, but the exposure is small. One pithos sherd from Nimrīn is identical to those from the Transitional period at al-‘Umayrī (Flanagan and McCreery 1994: 241, fig. 21:4). The Jordan Valley sites generally produced finds of a much more varied and luxurious repertoire than the plateau sites, often continuing the cultural pattern of the Late Bronze Age.

Several sites on the northern and central parts of the plateau seem to have continued from the Late Bronze Age (Abila?, ‘Ammān, the Baq‘ah Valley, Umm ad-Danānīr, al-Fukhār, Irbid, Jarash, Ṣāfūṭ?, Saḥāb, and al-‘Umayrī). The early Iron I remains at Zar‘a seem to have reused LB walls. This suggests a peaceful continuity from the Late Bronze Age into the Iron Age, at least in the north and central plateau, where all of these sites occur.

Many of the finds on the northern and central plateau come not from excavation, but from tombs (‘Ammān, Saḥāb, the Baq‘ah Valley, and Mādabā); fragmentary architectural remains are reported for Abila?, Ḥisbān (Sauer 1986; Ray 2001; Herr forthcoming), Irbid, and Jarash (the published collared pithos is similar to those from al-‘Umayrī [compare Braemer 1987: figure 2: 8 with Clark 1997: figures 4.14-20]); isolated and/or secondary pottery finds seem to come from ‘Arā‘ir, ad-Danānīr?, Rujum al-Ḥinū?, Ṣāfūṭ?, and Jalūl?. The finds at Ḥisbān include a long trench cut into bedrock, possibly a deep, narrow moat at the edge of the hilltop (Ray 2001). Preliminary reports from Irbid indicate a very thick destruction level (up to four meters thick), which covered the city wall, a tower, and a two-storied public building that contained cultic vessels.

The excavators of al-Lāhūn suggest the site was founded during the Transitional period, but no pottery has been published so far, except for three sherds found under the perimeter wall. Because the following period is much longer-lasting, I have placed the lion’s share of the site there for the time being.

The best preserved remains so far come from al-‘Umayrī (Herr 2002: 16-17). The defensive system (FIG. 1) included a dry moat cut out of the original ridge upon which the site was founded (FIG. 1:14); a retaining wall (FIG. 1:12) supporting a massive rampart which repaired a crack in bedrock



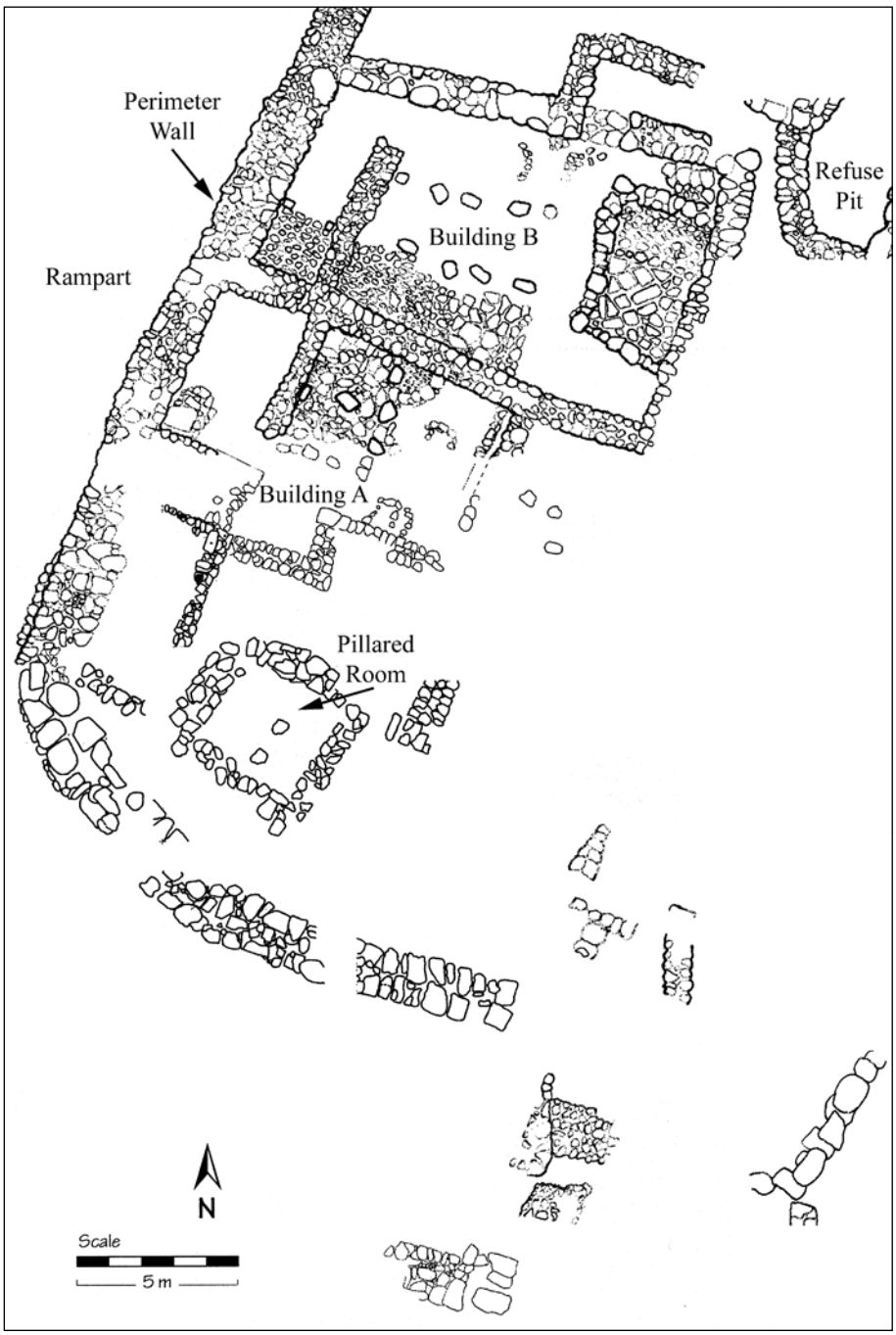
1. A sketch of the section through the Middle Bronze Age and Transitional LB/Iron I fortification system at Tall al-'Umayrī.

probably caused by an earthquake (FIG. 1:9); and a defensive perimeter wall surrounding the site at the top of the rampart (FIG. 1:8), which has been traced for approximately 70 meters. The perimeter wall curves into the city (FIG. 2) forming a gateway with a parallel wall partially excavated to the south in 2006 (FIG. 3). A new wall then continues the fortification system to the south (not illustrated).

Inside the perimeter wall were the remains of three houses (FIG. 2). Building B, the northernmost house, was preserved over two meters high in places by a massive brick destruction layer, which fell from the upper story of the building. It was a four-room house with post bases separating the long rooms (Room B2). The broad room (Room B3), which used the perimeter wall as its back wall, contained around 80 collared pithoi lining the walls of the room and fallen from the collapsed upper story (Clark 1997: figures 4.14-20 shows a few of them). Six bronze weapons in the destruction debris of the room suggest the site was destroyed by military attack, while the burned bones of at least four humans were scattered in the destruction debris, probably victims of the attack. Their remains were then dramatically spewed throughout the room by the subsequent collapse of the upper story. The house did not contain an eastern wall, but probably used blankets and carpets as curtains to protect the house from winds. They could then be opened to allow the early morning sunlight to enter the house, or they could be arranged in a variety of ways to create wind patterns that would disperse smoke from the hearth inside. In front of the house was a small courtyard containing a paved annex to the east (Room B1), surrounded by a narrow wall interspersed with post bases. It may have been an animal pen.

Another building to the south (Building A) contained more collared pithoi in the broad room (Room A3). In the paved area of Room A2 was a standing stone with a votive altar or table in front, but in the nearby courtyard were domestic remains, suggesting a house with a small shrine. A small alcove contained eight standing stones lying down. The precise meaning of this arrangement is unclear. Another house is just beginning to appear to the south of Building A. Only the tops of some of the walls have been exposed so far. All three houses probably used a large open refuse pit, which contained about 25,000 bones (mostly from the meaty parts of animals) and hundreds of cooking pot sherds.

The best parallels to the objects from these structures are found mostly in the highland regions north of Jerusalem (and possibly in the Irbid region) and range from pottery to potters' marks to seals. Similarities are notably less extensive in the Jordan Valley. Al-'Umayrī, however, was larger and somewhat more prosperous than the sites west of the Jordan Valley. The finds probably reflect socio-economic or lifestyle connections with the highlands of western Palestine. The limited assemblage of the finds suggests a simple economic system brought about by tribal groups beginning a lengthy sedentarization process in the highland areas of Jordan. Although the site was also occupied near the end of the Late Bronze Age, the ma-



2. Plan of the perimeter wall and adjacent houses from the Transitional LB/ Iron I period at Tall al-'Umayrī. The drawing reflects the remains up to the 2004 season and does not illustrate the gate area.

terial culture of this settlement is nothing like that of the previous, unambiguously LB level, which included a large public building, either a palace or a temple (Herr and Clark 2005: 250-253). A major catalyst of this initial settlement, and perhaps its destruction, may have been frictions arising from the north-south trade routes (Herr 1998).

At Ṭawīlān in the southern region a probable cooking pot from this period and a Midianite potsherd were found in mixed contexts, but they hardly indicate solid evidence for a settlement. It is very possible that they actually reflect different sorts of pots. In the total lack of anything else from this period at the site, we should discount them. Moreover, no other certain sherds from this period have been found south of the Wādī al-Mūjib in excavations or surveys. Early published reports may have attributed a few sites to the Transitional period, but almost all the sherds involved can be shown to derive from later periods, such as late Iron I or

3. The termination of the new southern gate wall of the Transitional LB/Iron I period at Tall al-'Umayrī found in 2006 (a fragment of which is just visible at the bottom of FIG. 2); note the very large stone. The walls to the left date to the late Iron II period and were built later in the gate entry passage; the wall to the right is the southern part of the perimeter wall (not shown in FIG. 2).

even Iron II. Personal observation of the pottery in two recent survey projects south of the Wādī al-Ḥasā conducted by Burton MacDonald (aṭ-Ṭafīla-Buṣayra Archaeological Survey and the Ayl to Rās an-Naqab Survey) underlines the lack of pottery from this period in the entire region. For his other two surveys (the Wādī al-Ḥasā Archaeological Survey and the Southern Ghawr and Northeast Araba Archaeological Survey), I can confirm no pottery from this period in the plates. There may have been some human habitation in this region, but it was very slight indeed.

Iron I (12th to 11th Centuries)

There are no clear settlements in Jordan that seem to go smoothly from the Transitional period to the main part of Iron I, the late 12th to 11th centuries. However, I must emphasize that the number of sites upon which that very tentative inference is made are few. Several sites saw new settlements: Abū al-Kharaz, Dayr 'Allā, al-Mazār?, and Nimrīn in the Jordan Valley; and 'Ammān, al-Bālū', Dhībān, Ḥajjār, 'Irāq al-Amīr?, probably al-Lāhūn, Mudayna al-'Ūlya, Mudayna Mu'arrāja, Mu'mmariyya, Rujm al-Malfūf south, Saḥāb, and al-'Umayrī on the plateau, and possibly an-Nuḥās in the Wādī 'Arabah. This suggests there was a disruption between the two periods with significant movement toward sedentarization after the disruption. We should not consider tombs to represent settlements if there is no clear pottery from the excavations at the site itself. Some sites in both areas were settled only after a destruction level: Pella VII and al-'Umayrī 11 are the clearest examples. But most sites have not produced clear results or clearly published results for us to be sure if such a relationship extended to other sites. Indeed, many sites have produced only pottery in secondary deposits (and then often not very much): 'Ammān, al-Bālū', Dhībān, probably 'Irāq al-Amīr, Jarash, and Rujm al-Malfūf south; others have produced only fragmentary remains: Abila?, 'Arā'ir, Ḥajjār, Ḥisbān, al-Mazār?, Nimrīn, Pella VII, and Ṣāfūṭ?. Mādabā was limited to a burial and other sites were excavated when Iron I pottery in Jordan was not known very well and I question their attribution when the pottery is not published: 'Arā'ir, Rujm al-Malfūf south, and Ṣāfūṭ.

Excavated sites with at least preliminary reports on this period:

Jordan Valley

Abū al-Kharaz?	Citadel? (Fischer 1994: 130).
Dayr 'Allā	Phases A to G or H; bronze smith workshop; pits (Franken and Kalsbeek 1969).
Al-Mazār	Courtyard building with cultic objects (Yassine 1988: 115-135).
Nimrīn	Wall fragments (Flanagan and McCreery 1994: 212-216).
Pella VII	Village wall fragments (Bourke 1997).
As-Sa'īdiyya XII	Parts of the cemetery (Pritchard 1980: e.g. figures 16: 2, 3; 30: 2; 31: 1, etc.--brown and black juglets); administrative complex; steps to water source (Tubb *et al.* 1996: 24-27).

Northern Plateau

Abila?	Walls (Mare 1992 and other references there).
Al-Fukhār	Reused palace?; house walls; Philistine potsherd (Strange 1997).
Irbid Phase 1?	City wall; houses; wine installation (Lenzen 1988).
Jarash	Pottery in secondary deposits (Braemer 1986: fig. 15: 9-10 [No. 8 is probably LB]).
Juḥfiyya	Pottery in secondary deposits (Lamprichs 2002).
Zar'ā	Walls, ovens, pottery (Vieweger

2002: fig. 16; Vieweger and Häser 2005: 13, 25).

Central Plateau

ʻAmmān	Unpublished pottery (Zayadine *et al*. 1987: 308; Najjar 1997); pottery (Dornemann 1983: 97).
ʻArāʻir?	Houses? (Olavarri-Goicoechea 1993: 93).
Dhībān	Pottery in secondary deposits (Winnett and Reed 1964: Pl. 76: 11-13).
Ḥisbān	Copious pottery in rock-cut trench (Sauer 1994; Ray 2001; Herr Forthcoming).
ʻIrāq al-Amīr V	Fills and possible fortification wall (N. Lapp 1983: 10; 1989: figure 9b: 1-2, 20-23; the rest belong to Iron IIC and later — No. 8 is Roman)
Al-Lāhūn	Fortified village; casemate wall; 4 houses; perhaps multiple phases (Homès-Fredericq 1997b).
Mādabā	Tomb (Piccirillo 1975; Thompson 1986).
Ṣāfūṭ?	Mud brick installation; unpublished pottery (Wimmer 1989).
Saḥāb	Domestic house fragments; collared pithoi burials; burial cave (Ibrahim 1987: 77-78).
Al-ʻUmayrī 11-10	Storerooms and destruction layer (Clark 1989: 249-250; [Field Phases 5 and 4; Phase 4 was misdated at the time to early Iron II]).
Unnamed Site near Khirbat as-Sūq	Few scattered domestic buildings and a tower with Iron I and Iron II pottery (personal observation).

Southern Plateau

Al-Bālūʻ	Pottery (Worschech 1994: 202)
Mudayna al-ʻŪlya (also ʻAliya)	Houses, city walls and gate; 11th c. only (Routledge 2004: 100-108).
Mudayna Muʻarraja	City walls, gate, towers, houses (Olavarri 1978; 1983).
Muʻmmariyya	Citadel (Ninow 2004; 2006).

ʻArabah

An-Nuḥās?	Copper slag (Levy *et al*. 2005)

This period, unfortunately, spans a relatively long period of time and includes several sub-phases of activity, which overlap. It is thus very difficult at this time to propose realistic sub-divisions. Not all the sites listed above were contemporary and some sites probably had more than one phase of occupation, such as al-Lāhūn and al-ʻUmayrī. Nor can this "episodic" settlement pattern always be sorted clearly into a sequence of site occupation: which sites came first, etc. Moreover, the preliminary nature of the publications often do not allow us to project whether a site lasted a long time or not, or indeed, whether it contained more than one phase. It is possible, however, to propose sites that began toward the end of the period, such as those in the Karak region. I will point these out in the discussion.

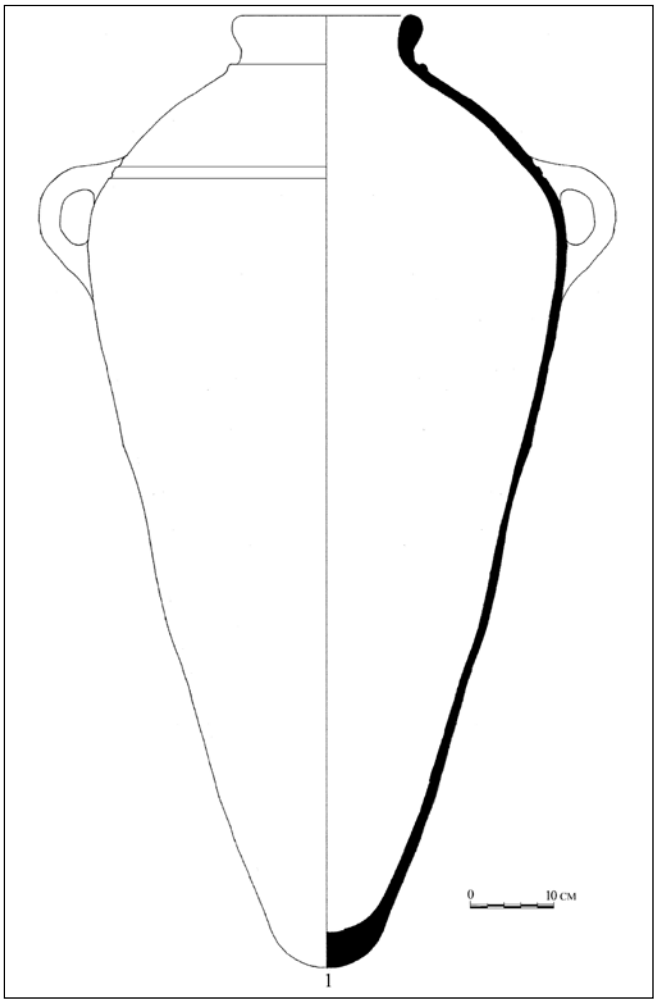
The Jordan Valley site of Pella continued from the earlier period, but the wall fragments are not as yet easily interpreted. Tubb *et al.* seem to suggest that stone terraces at as-Saʻīdiyya may lead to entrances to the stepped structure, excavated by Pritchard, which descended to the water source at the foot of the site. The closest parallels to this latter feature are found in Mycenaean Greece (Mycenae and Tiryns). A large residency or administrative complex, possibly with Egyptian connections, was also found there. At Dayr ʻAllā Phases A to G or H all belong to the Iron I period. The first four phases (A-D) include a possibly-itinerate bronze-smith's workshop on top of the LB sanctuary. Nearby deposits of clay were used for molds and the metal was fired in a large oven. Pear-shaped pits were also found around the smithy, as were small wall fragments. Some of the painted pottery has been connected with Philistine ware (Sauer 1986: 12 and figure 12). These first four phases probably date to the twelfth century. Their relationship to the house dated here to the Transitional period has not yet been established. The excavators suggest Phase C ended in an earthquake. Phases E-G/H were characterized by a much heavier settlement, but with walls often only one brick wide and founded on a layer of reeds. Phase H produced a major building of uncertain use.

Two major sites in the Jordan Valley began or were resettled at this time: Abū al-Kharaz, and al-Mazār. There may have been a citadel at Abū al-Kharaz, but the initial report has not been pursued in later publications. Toward the end of the period an open court sanctuary was constructed on the lower mound at al-Mazār with three rooms at the end of a large courtyard. The pottery, much of which was found together outside the door to one of the rooms,

dates to the end of Iron I and the beginning of Iron II (Yassine 1988: 122-124). A few wall fragments and pottery appeared at Nimrīn. Thus in the Jordan Valley, the orientation of the material culture still seems to be more toward the west than the sites on the plateau. The East Jordan Valley Survey located 16 other sites, mostly dated to Iron IB, that have so far not been excavated (Yassine, Sauer and Ibrahim 1988: 174). If the dating was correct, it confirms the above picture that settlement grew in the Valley during the late 12th and 11th centuries.

On the northern plateau, al-Fukhār seems to continue, reusing the LB palace, while Abila may have extended into this time period, as well. The Philistine sherd found at al-Fukhār is still the only one so far discovered on the plateau. Most of the Iron I pottery published from Zar'a (Areal I, Stratum 3 and the surface survey) is from the second half of the period. Phase 1 at Irbid, which lasted into Iron IIB, included a rebuilt city wall and domestic buildings, which were associated with an industrial installation that the excavators suggest was for wine. One wonders if there were not several sub-phases within Phase 1. However, the published evidence for all three sites in this region is sparse. The vast majority of the pottery published from Juḥfiyya belongs to the Iron II settlement (probably the ninth and eighth centuries based on the cooking pot and collared pithoi—Lamprichs 1996; 2003; 2004). However, a few Iron I vessels occur in one publication (Lamprichs 2002): one certain Iron I collared pithos (Tf. 12:4), three probable jars (Tf. 15:4-6), two likely jugs (Tf. 19:4 and 6), several probable cooking pots (Tfs. 26:4-6 and 27:1-3), one probable krater (Tf. 29:4), and three probable carinated bowls (Tf. 35:2-4). The German survey of the northern plateau claims to have found small Iron I sites, such as the small villages on the West Bank. Mittmann (1970) lists 75 sites with Iron I pottery but only 51 with Iron II potsherds. Moreover, all but two of the "Iron I" sites contained multiple periods. Unfortunately, Mittmann did not publish any pottery whatsoever and his results cannot be confirmed. To find considerably more Iron I sites than Iron II sites makes one suspicious (because at that time collared pithoi were thought to be limited to the Iron I period, I wonder if the Iron II forms of collared pithoi (with inward stances), so frequent at Iron II sites all over Transjordan (see Juḥfiyya, al-'Umayrī, and the Edomite sites), were mistakenly identified Iron I.

In central areas of the plateau Ḥisbān seems to have lasted throughout the Iron I period. The large amounts of pottery in the bedrock trench span the period from Transitional times down to Iron IIA (Herr Forthcoming). However, the pottery comes from a secondary fill in the trench and a true multiphase stratigraphy for Iron I Ḥisbān does not exist. A massive destruction at al-'Umayrī separates the Transitional period from this one. Based on the significant change in ceramic assemblages between Strata 12 and 11, the site may have witnessed a hiatus during at least part of the 12th century. A storeroom was built on top of the bricky destruction of the earlier, Transitional settlement and the bases of at least 18 reconstructable collared pithoi were embedded in the fallen bricks (FIG. 4 shows an example of one of these vessels; they all have more upright rims, shorter necks, and higher collars than the pithoi of the Transitional period). South of the



4. One of the Iron I pithoi from a storeroom at Tall al-'Umayrī; it is typologically later than the pithoi from the Transitional LB/Iron I period.

gate area, an open-air sanctuary was constructed and paved with cobbles and plaster. It lasted until the late Iron II period. On one of the lowest floors was a model shrine (FIG. 5). In the southern areas of the site in at least three separate fields, several walls were constructed of very large stones (some are over two meters long). The lowest earth layers sealing against them date to this period, but the founding levels of only one wall have been discovered, built on top of the LB stratum. These megalithic walls may have been built during the Transitional period. Certainly, however, they were reused during this period (Strata 11-10).

The Iron I pottery from Saḥāb was virtually identical to that from al-'Umayrī at this time (Ibrahim, personal communication; for one example among many, compare the collared pithos from al-'Umayrī in FIG. 4 with the example from Saḥāb published by Ibrahim 1978: 116, 119). Of special interest are the seal impressions on the rims of many of the Saḥāb collared pithoi. This is a feature generally not apparent at other sites in Jordan. None of the house plans at Saḥāb were complete, but enough was uncovered to characterize the rooms as rectangular and mostly paved with flagstones (Ibrahim 1974: Pls. 15, 18 for the house plans). The Ḥisbān survey (Ibach 1987) located 30 sites for which Sauer read Iron I pottery. But unfortunately, none of the pottery was published. The surveys around Tall al-'Umayrī and Tall Jalūl, for which I read the pottery, located very few Iron I sites, but the full publications have not yet appeared.

5. The reconstructed model shrine found in an open sanctuary at Tall al-'Umayrī.

Excavators at al-Lāhūn have discovered an extensive town and have excavated a casemate wall and several houses, which are sometimes pillared. But possibly over 50 houses exist at the site. The excavators date the remains to the Transitional period, but seem to suggest a broader time range, as well. I have thus moved them to this period in their entirety. Not enough pottery has been published to make independent decisions (Homès-Fredericq 1997). Perhaps future publications will revise this decision. Whereas the remains are very shallow, several episodes of rebuilding in the houses suggest a long period of time for the settlement (Homès-Fredericq 1992: 190). Because there are virtually no other remains on top of the town, the site is the most extensively known site in Jordan dating to most of the Iron I period.

Other central plateau sites were probably new. That is, although they may have had an earlier tomb, the pottery published from the site lacks Transitional forms but matches the later assemblages: 'Ammān (incoherent walls), Mādabā (Tim Harrison has told me of sherds from secondary deposits; note also the late Iron I tomb), and Ṣāfūṭ (also without published pottery). Possibly, a new site was constructed at 'Irāq al-Amīr town (fills and a possible fortification wall; note that P. Lapp sometimes apparently identified Iron IIC pottery as Iron I; Ji, personal communication). A few potsherds from the period have been published from Dhībān. The unnamed site near Khirbat as-Sūq is atop the forested hills on the western fringes of the town almost immediately beneath high-tension wires. It is about 1-2km south of al-Yādūdah and was discovered by the Mādabā Plains Project survey team (not yet published). It is the only unfortified, very small village site clearly identified so far on the central Jordan plateau, but it has not yet been excavated.

Toward the end of this period settlements were appearing in the Karak region at two very similar sites, Mudayna al-'Ūlya and Mudayna Mu'arraja. Because the ruins are prominently visible on the surface, it is easy to describe the house plans, city walls, towers, town gates, dry moats severing the

sites from neighboring hills, and the roadways approaching the sites. Four-room houses are visible and are sometimes preserved as high as the lintels spanning the doors (Routledge 2000). In some cases large slabs of stone are still visible spanning the rooms of the houses with a corbelling technique. Possibly as many as 35 houses existed at Mu'arraja, while the pottery from the excavations seems to date to the late eleventh century, perhaps going into the tenth century, as well. Similar pottery has been published from al-Bālū'. A nicely preserved citadel has recently been excavated at Mu'mmariyya, also, like the other sites in this paragraph, located on the edge of the al-Mūjib and containing pottery from the end of Iron I.

Miller's survey of the Karak plateau published only one genuine (to me) Iron I potsherd (Miller 1991: 274: Cooking pot No. 206) and a few other possibilities (Bowl No. 185 and Pithoi 218-219). Otherwise, everything else appears to be Iron II or even Hellenistic (Bowl No. 197 and Pithoi Nos. 205, 209-212, 220, and 221 [until very recently many archaeologists in Jordan have been calling these Hellenistic pithoi late Iron I or early Iron II]). The Iron I period was thus very sparsely settled in the Karak area until the end of the period. However, because the excavated sites tend to be limited to the edges overlooking the Wādī al-Mūjib, one should probably expect a few other sites to turn up in more central areas, probably well hidden beneath later remains.

No Iron I settlements have been excavated south of the Wādī al-Ḥasā. Various surveys have discovered pottery at several sites. Some of the published "Iron I" pottery assemblages from surveys prior to the 1990s, however, seem to be mostly Iron II forms. In the published plates for Iron I in the Wādī al-Ḥasā Archaeological Survey (MacDonald 1988: 312-316) only four most likely belong to Iron I (Pls. 6:10-11; 7:7, 24). Most of the others are Iron II and one (Pl. 6:5) is EB. One suggested Iron I site was actually excavated to test the survey results, but the team discovered only Iron II remains (Bienkowski 1997). In the Southern Ghawr and Northeast 'Arabah Archaeological Survey (MacDonald 1992: Pls. 18-19) I can find only 5 that are probably Iron I (Pls. 18:1, 11; 19:1, 3, 5, if they are cooking pots as they seem). More recent surveys by MacDonald have produced very few clear Iron I potsherds (I was the ceramic chronologist for his last two projects), leading me to suggest there may have been an extremely sparse settled population, if any.

At the copper production site of Khirbat an-Nuḥās in the Wādī Fidān excavators claim to have found Iron I remains they date to the 12th to 11th centuries. But so far, publications have discussed a few architectural remains and 14C dates, primarily for the Iron Age II. Moreover, the dating for this phase of activity at the site is ambiguous (Levy *et al*. 2005: 149, Stratum S4). The finds from this pre-fortress phase seem to reflect temporary occupation, perhaps during seasonal mining and smelting operations. But without published pottery we cannot relate the 14C dates to the finds.

The End of Iron I

The transition to the Iron II period is very weakly attested on the plateau. Very little red-slipped, hand-burnished pottery has been found. I remember only about two sherds from eleven seasons of excavation at al-'Umayrī. The pottery at Ḥisbān has considerable amounts that can be attributed to Iron IIA, but again it is all from secondary deposits. Most of the sites in the southern plateau in the Karak region were abandoned during this time. There needs to be much more work done on the early Iron II period in Jordan. It is still a dark age archaeologically.

Conclusions

We may tentatively suggest the following as hypotheses for future research: 1) The Transitional period seems to be well witnessed in the northern and central plateau. Based on the LB features in the ceramic assemblages, it would seem to date from the late 13th century to the early 12th century; 2) There are not a significant number of sites from the transitional period in the Jordan Valley where the orientation of the material culture is toward the valley culture of the west, not toward the eastern highlands, and carries on the architectural traditions of the Late Bronze Age; 3) There are no Transitional sites south of the al-Mūjib; 4) The major part of the Iron I period (from the mid 12th century to the end of the 11th century and maybe slightly into the 10th century) has no clear sub-divisions other than the rise of some sites toward the end of the period. Instead, settlements seem to have witnessed individual episodic occupation throughout the time period. Some sites show signs of durative settlement, while others were occupied for only short periods of time; 5) The Iron I sites in the central and southern highlands of Jordan do not reflect a

similar settlement pattern as the small unfortified villages of the western highlands of Cisjordan, but were often fortified and many were large enough to be called "towns." A possible exception is the area north of the az-Zarqā' River; 6) The Karak region began to be settled only toward the end of Iron I; 7) The Jordan Valley grew in number of sites during this period, but the orientation of the material culture still seems to be toward the valley culture of the west; 8) There was no major Iron I site south of the Wādī al-Ḥasā. A very few villages or camp sites may have existed, mainly in the northern areas.

Two things need to happen before our knowledge of the Iron I in Jordan can grow: 1) We need more excavations at sites with Iron I levels. One-period sites are fine, but multi-period ones will provide better insights into transitional periods. We especially need excavations at Iron I to early Iron II sites; 2) The Iron I sites that have been excavated need to be fully published.

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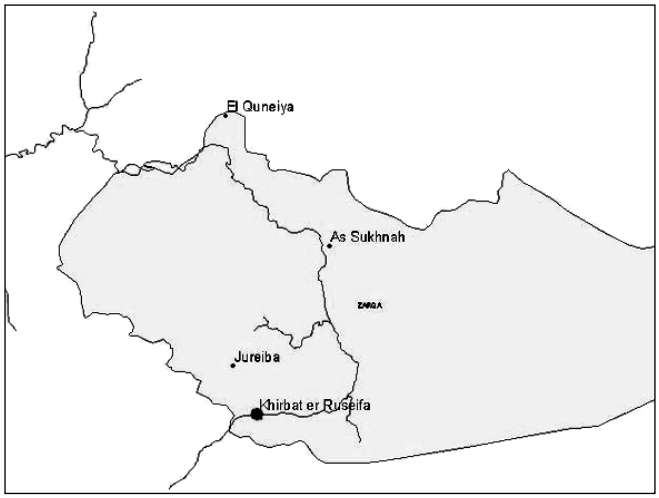
Results of Recent Excavations at Khirbat ar-Ruṣayfah

1. Introduction

Because of its location in the centre of the Hashemite Kingdom of Jordan and because of its vast extent, az-Zarqā' province contains several important archeological sites. Khirbat ar-Ruṣayfah is one of the most important of these sites, which date from the Chalcolithic to the Islamic periods. Ar-Ruṣayfah is located north of Wādī az-Zarqā', 12km south-west of the city of az-Zarqā' (Zalloom 1993: 176) and 15km north-east of 'Ammān (FIG. 1a, b). The hills on which ar-Ruṣayfah is located have an altitude of around 675m above sea level. The site is an artificial mound covering nearly 20 acres, but urbanisation (FIG. 2), road construction and drainage works have affected 95% of it, with only one acre remaining untouched on the top of the artificial mound (FIG. 3). There are two huge sections on the south-west and on north-east sides (FIG. 4), but the other two sides have been removed.



1a. Site location.

Because of its location on the upper reaches of the Wādī az-Zarqā', its strategic importance was such that the site played a principal defining role in the area. The immediate vicinity is characterised by open terrain, enabling easy contact with the surrounding region (al-Mugheer 1999: 75). The river stream that passes through ar-Ruṣayfah[1] called Sayl az-Zarqā'. On either side of the site are tributary valleys that feed into the main course of the Wādī az-Zarqā' (FIG. 5). The Wādī az-Zarqā' was previously known as the Yabooq and is a major tributary of the Jordan river. It separates the 'Ajlūn mountains from al-Balqā' (Abu Nawwas 1995: 49; ad-Dabagh 2003: 81).

2. The Early History of Exploration ar-Ruṣayfah

A number of archaeologists have either visited or worked at ar-Ruṣayfah, including Glueck (1939), Condor (1889) and Burckhardt (1812). Glueck's journey along the Wādī az-Zarqā' and Sayl az-Zarqā' took him past ar-Ruṣayfah to az-Zarqā' castle (Qaṣr Shabīb). His principal focus on the journey was a site some 3km south-west of ar-Ruṣayfah. The modern name of the site was not mentioned in Glueck's notes but he comments on the considerable quantity of pottery, which resembled that found at Tall Bayt Marsīm and included folded wavy ledge handled jars dated to the end of the third millennium BC (Glueck 1939).

The site of ar-Ruṣayfah was extensively occupied in the Roman period, during which a road was constructed (Zalloom 1993: 176). This road, known as the Yājūz road, now connects many cities in Jordan, e.g. az-Zarqā' with 'Ammān through ar-Ruṣayfah, and az-Zarqā' with Ṣuwayliḥ and as-Salṭ

1. The word *'Ayn* / "spring"; the name *ar-Ruṣayfah* is derived from the root *raṣaf* "alignment", i.e. the arrangement of stones in straight or parallel lines in order to collect rainwater; "collection", i.e. the dam / cistern constructed for collection of runoff water.

1b. Site location on Wādī az-Zarqā'.

2. Urbanization extended.

3. Artificial mound.

4. East section.

5. Landscape of Khirbat ar-Ruṣayfah area.

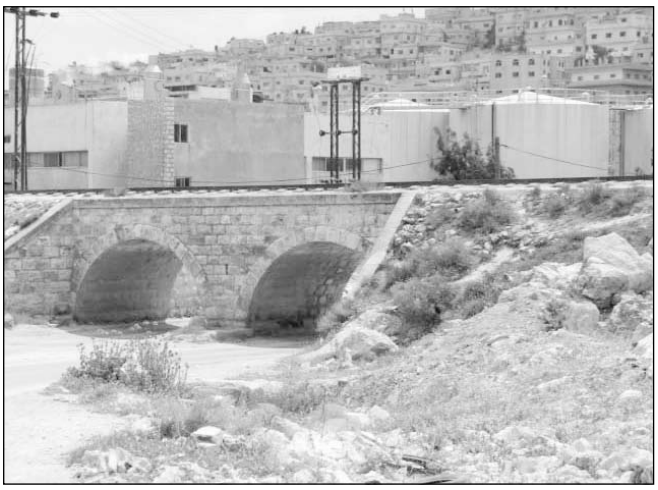
(al-Mugheer 1999: 75-76). One should not forget its role as a commercial artery, as it was one of the most important trade routes during the Decapolis period (Sulaiman 1998: 32) (FIG. 6). Today the Yājūz also connects Jordan with neighbouring countries.

Ar-Ruṣayfah, located on this ancient but important communication route, became strategic as a resting place for travellers and traders, which ensured the town's continued existence and improvement. The construction of the al-Ḥijaz railway line (FIG. 7) in 1902 enhanced ar-Ruṣayfah's connections by giving it direct access to Damascus and Istanbul (al-Mugheer 1999: 75-76).

3. Archaeological Excavations

Over the past fifteen years, the site of ar-Ruṣayfah has suffered from the twin threats of development and looting. Urban sprawl and road construction has destroyed much of the tall, so it was deemed vital that archaeological work be undertaken before the site was completely destroyed. The Department of Antiquities designated the site an ancient monument in 1999 and began excavations there in the same year (FIG. 8). Six seasons of fieldwork were undertaken between 1999 and 2004[2].

6. Ancient and modern road.



7. Ottoman bridge.

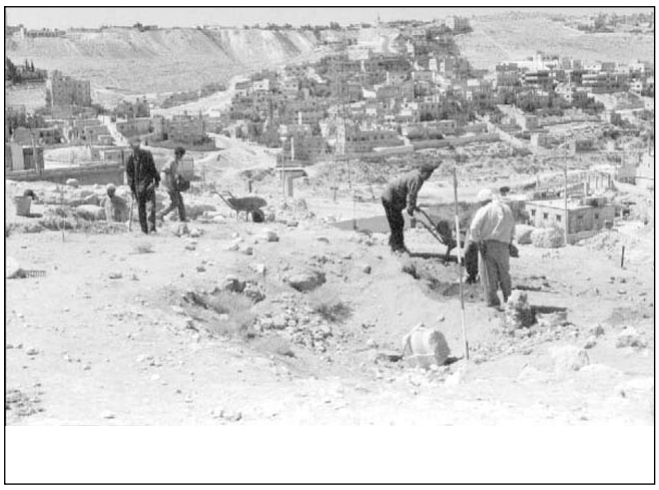
The top of the artificial mound was divided into four areas (A, B, C and D), which were in turn sub-divided into 5 x 5m squares for excavation. 21 squares, or 15 % of the site, were excavated (FIG. 9). These were:

Area A: No squares were dug.
Area B: Squares A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2.
Area C: Squares A1, A2, B1, B2, B3, C1, C2, C4, C5, C6.
Area D: Square B1.

Preliminary work defined the extent of looting and other damage to the site, while later seasons demonstrated that ar-Ruṣayfah had been occupied from the Early Bronze Age to the Umayyad period

The Bronze Age

Two squares excavated in the west section of the mound exposed Early Bronze Age stone and mud-built walls and compacted mud floors (FIG. 10). These were associated with a destruction layer that contained quantities of sherds and other material characteristic of the beginning of the Bronze Age. Analysis of the pottery showed that it belonged to Bronze Age deposits (FIG. 36:1-3, 5 and 8).



8. Site before excavation.

2. The excavations were directed by R. Ghrayib, with the participation of A. Sharma, A. al-Dihythem, A. al-Hunaty, I. al-Faiomy (archaeologist), S. al-Abadi, T. al-Hnaity, K. al-Dusuky and A. Obaied (draftsman).

9. Site through excavation.

10. Mud Brick wall.

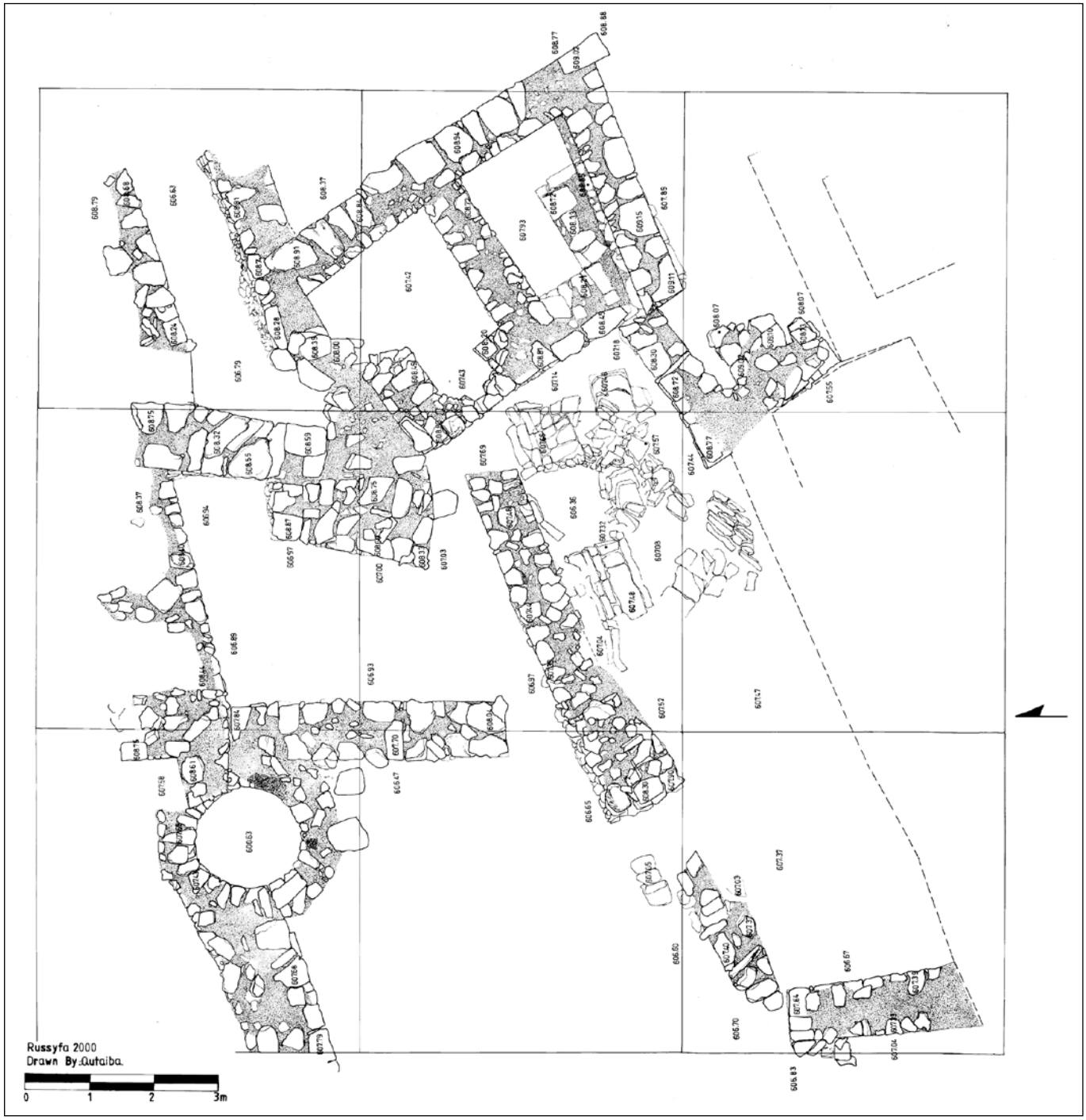
Quantities of fallen brick (FIG. 11) were also recovered, including a whole brick measuring (52 x 22 x 10cm). It was later discovered that this is a standard brick size at ar-Ruṣayfah.

The City Wall: The Early Bronze Age in Area B was dominated by a city wall (FIG. 12) standing 1.6 to 1.8m high, approx. 9m long and 7m thick. The wall itself was interesting in that it was not of solid stone construction, but instead had a rubble core with an interior and exterior stone facing of good quality. A similar but later wall can be observed at Bāb adh-Dhrā‘, dated to the MB IIC period. The pottery excavated from the foundation trench of this wall, however, is Early Bronze Age in type.

Architectural features: The Brick Wall: When starting to remove the layer of broken bricks in Square B1 Locus 12, quantities of mud brick were found, which were later shown to form part of a well-preserved wall (FIG. 13) extending from north-east to south-west. It is built of mud bricks that contain some gravel and straw within the matrix. Each brick is approximately the same size (14 x 40 x 60cm) (FIG. 14). The wall is 4.10m long and 0.62m wide, with a slope height of 2.2m; it consists of 15 courses of brickwork, one brick wide. The wall was covered with a layer of plaster up to 1cm thick (FIG. 15).

Wall 1: is located in the middle of Square B1 and extended for one metre, from the north-east corner of the square towards its south-west corner. This wall was built of medium-sized undressed limestone blocks and flint nodules, with mud mortar (FIG. 16). In the eastern part of the square and on the eastern façade of the wall, there were traces of plaster (FIG. 17). The wall intersects with another wall that begins in Square B1. The stratigraphic position of the wall and associated finds place its construction in the MB II period, but its current condition is so poor that it is hard to be definitive.

Wall 5: extends from the western part of the square. It is 3.25m long, 0.75-0.9m wide and consists of two rows of medium-sized undressed stones with a maximum extant height of 2.20m (FIG. 18). Although its northern end intersects with Wall 1, its southern end was not discovered until recently, but was found to have been built in the same style as Wall 1 (FIG. 16). This wall, according to the stratigraphic sequence of the associated floors, indicates an MB II date.



11. Fallen mudbricks.

Other contexts: Locus 13 was located under the brick wall and was enclosed between the northern parts of Walls 1 and 5 in Square B1 Area C. It is a floor extending through Squares B1 Area B and B1 Area C, which slopes down to the south and has traces of fire and burned material in situ. Many pottery jars were also found on this floor. All of the sherds recovered belong to MB IIC (FIGS. 19, 20 and 21). This floor runs up to Wall 1 in Square B1 Area B and Wall 5 in Square B1 Area C, indicating that these two walls also belong to MB IIC.

Square A1, which was the focus of our attention in the sixth season of archaeological fieldwork, became important because of its depth of deposit

12. City wall.

13. The Brick wall.

14. Brick.

and quantity of material recovered. On its east side were two walls belonging to the same period. The floor associated with these walls had many in situ potsherds; a considerable amount of charcoal was also found. In the north-west corner of the room there was a small hearth, entrance and what appears to be a stairway (FIG. 22).

15. Bronze Age wall.

16. Wall 1.

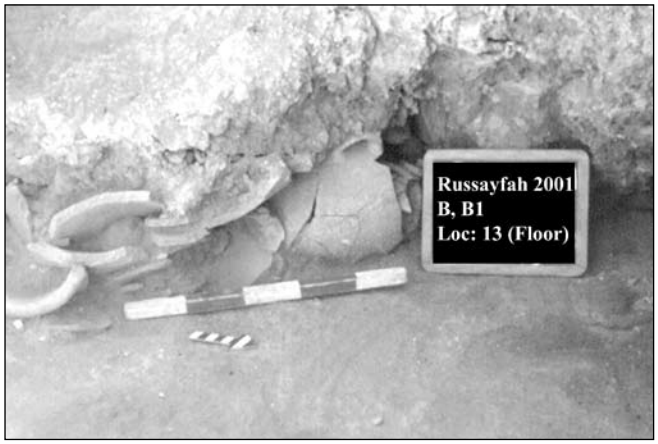
17. plaster on wall.

Fallen bricks were found in the south part of Square A1 below Walls 1 and 6. The layer which contained the bricks was damaged, but what remained extended from west to east over an area measuring 3 x 1.2m and in excess of 0.8m thick. It forms an extension of Layers 9 and 10 in the same square. This layer was considered to be a part of Layer 13 and contained the following:

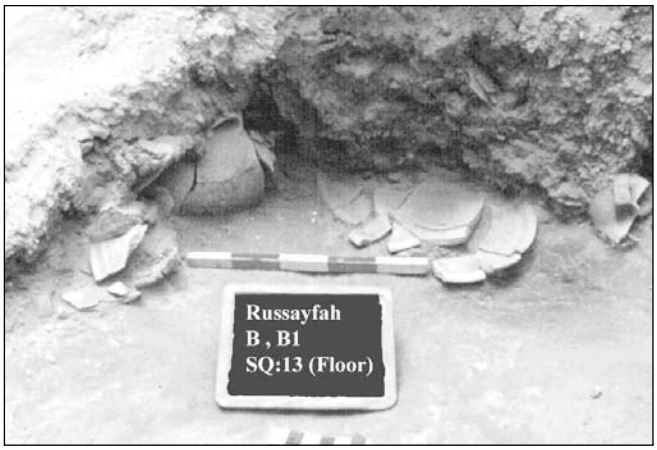
Jar 1: was placed upside down and was broken. It was made of dark red clay, with many grits in the fabric. Some white powdery soil was found inside

18. wall 1 and wall 5.

19. Jar.



20. Jar.



21. Jar.

22. Stairway.

it, some of which appeared to have been affected by water. The floor on which the jar was found consisted of a hard, white material and reddish brown soil. A group of burned medium-sized limestone fragments surrounded the jar. The soil around the jar was a mixture of creamy white, yellow white and very light red soil. Broken pieces of flint and fractured bricks were found beneath the jar, which may have been because of exposure to very high heat.

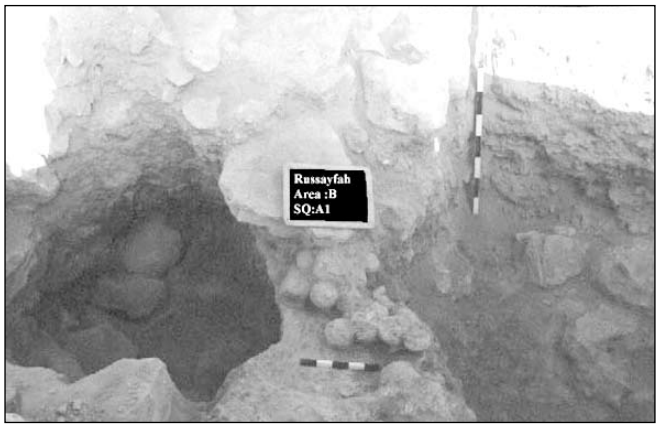
Jar 2: was also broken, and was bigger and thicker than Jar 1. The jar is poorly made, incompletely fired and tempered with straw and flint. The fabric is light red with a light grey core.

The Iron Age

The Iron Age is poorly represented at ar-Russayfah. Archaeological features are few and ill-defined, but two walls were discovered in Square A1 which we have dated to the Iron Age on the basis of associated pottery and the presence of twelve loom weights (FIGS. 23 and 37).

Hellenistic and Roman Periods

Like the Iron Age, the Hellenistic and Roman periods were poorly represented and have been damaged by recent urban development, with the result that some sherds (FIGS. 36:7,10 and 37) and coins were re-deposited. If much in situ material of these periods ever existed, it is now buried under new buildings, but traces may still be recoverable in another area of the tall. While working on floors as-



23. Loom weights.

sociated with these periods, it appeared that there were walls beneath the floors, especially in the middle hall. We excavated beneath the hall floor and located foundation trenches for robbed-out walls pre-dating the Hellenistic and Roman periods. In the process, half the hall floor was removed and two extant walls (Walls 27 and 28) discovered. Wall 27 extends parallel to the walls of the middle hall for a distance of 10.8m; it was 1.36m wide, 0.5m high and constructed of undressed stone. Walls 27 and 28 are distinguished from other walls at the site because of their greater width.

Byzantine Period

Excavations were most extensive in Area C, where nine squares were opened. The first task, before any archaeological features could be exposed, was to remove the modern rubble (FIG. 24) that covered the top of the mound. One of the most important discoveries was that of dozens of walls built of eroded limestone blocks, which appear to have been damaged by ancient or modern construction work.


24. Modern rubble in the site.

A. The 'Big Building'

Excavations in Area C also uncovered a group of walls, which together formed four roughly rectangular 'halls' approx. 15.2m long and 11.5m wide. Together, these 'halls' comprise a huge rectangular structure that we have designated the 'Big Building' (FIG. 25), owing to the fact that its footprint covers almost the entire summit of the tall. At the eastern end of the building was a small rectangular room, aligned north — south and separated from the three rectangular 'halls'. The building has been identified as Byzantine on the strength of the archaeological material found within it (FIG. 26).

The construction of the building (e.g. type of blocks used, the way they have been cut, the presence of column drums (FIG. 27) and church stones, e.g. the "chancel stone" (FIG. 28) suggests that it may represent the remains of a church, constructed during a single phase. The pottery (FIGS. 36: 4, 9 and 37) and coins found in the 'halls' typically date to the Byzantine period. In addition, some re-deposited Roman coins and pottery were found in the uppermost fills. The floors of the 'halls' were of compact soil or, in some cases, paved with limestone blocks. We also found five copper coins that date to end of Roman


25. The Big Building.


26. Byzantine wall.

27. Column drums.

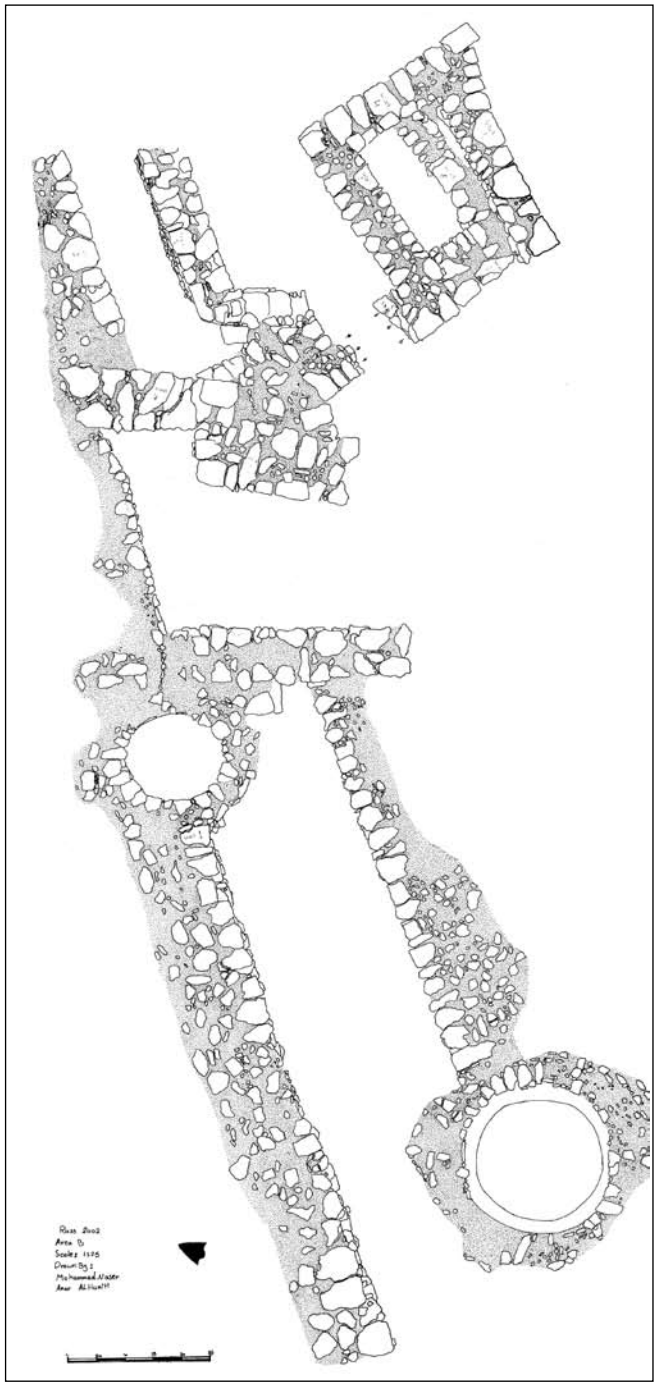
28. Chancel stone.

period and beginning of Byzantine period; some of the Roman coins can be attributed to the reign of Orlianus (272-275 AD) (FIG. 29a).

The Byzantine period is represented by many copper coins, including one attributed to the reign of Constantine I (315-320 AD) (FIG. 29b). Other objects include a group of loom weights, an ivory spindle whorl decorated with circles, lamps and a small jug.

B. Well and Water Cistern

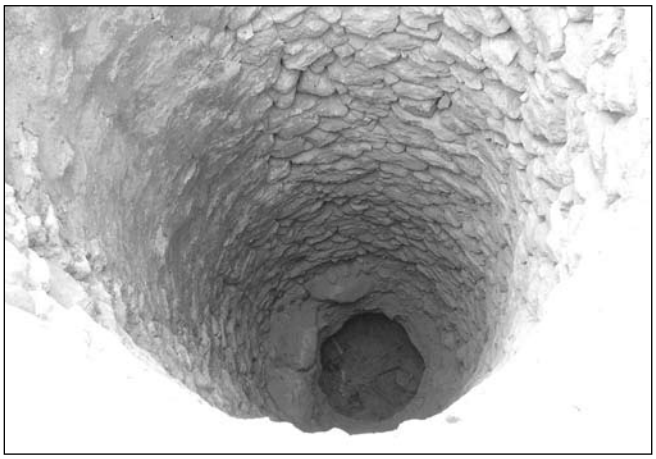
On the north-west side of the mound, a well and water cistern were discovered (FIG. 30). The well



30. Water units in the site.

29. Coins

was built of uncut, medium-sized limestone blocks and was 10m deep (FIG. 31a, b); its lower part was plastered. Near the well was a 3m deep cistern (FIG. 32); its inner face had been plastered with three separate layers. The cistern and well can be dated historically and archaeologically to the Byzantine period.



31a. Well.

31b. Well.

32. Cistern.

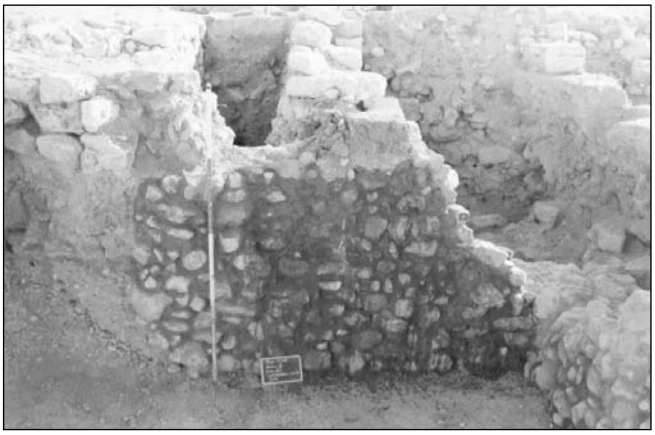
4. Conservation and Restoration of the Site

Much of the tall has been damaged by urban development. During the course of the excavations it became clear that conservation and restoration of many of the architectural features was required. Conservation work in Area B included the well and cistern (FIG. 33), which were fenced and consolidated. The stairway found in Square A1 was also consolidated, as was the Byzantine wall adjoining to the well and some of the less substantial Bronze Age walls (FIG. 34). Conservation work is still underway at the site, in order to ensure that most of the Byzantine walls and the "Big Building" are protected.

5. Conclusion

Detailed analysis of the pottery[3], coins and archi-

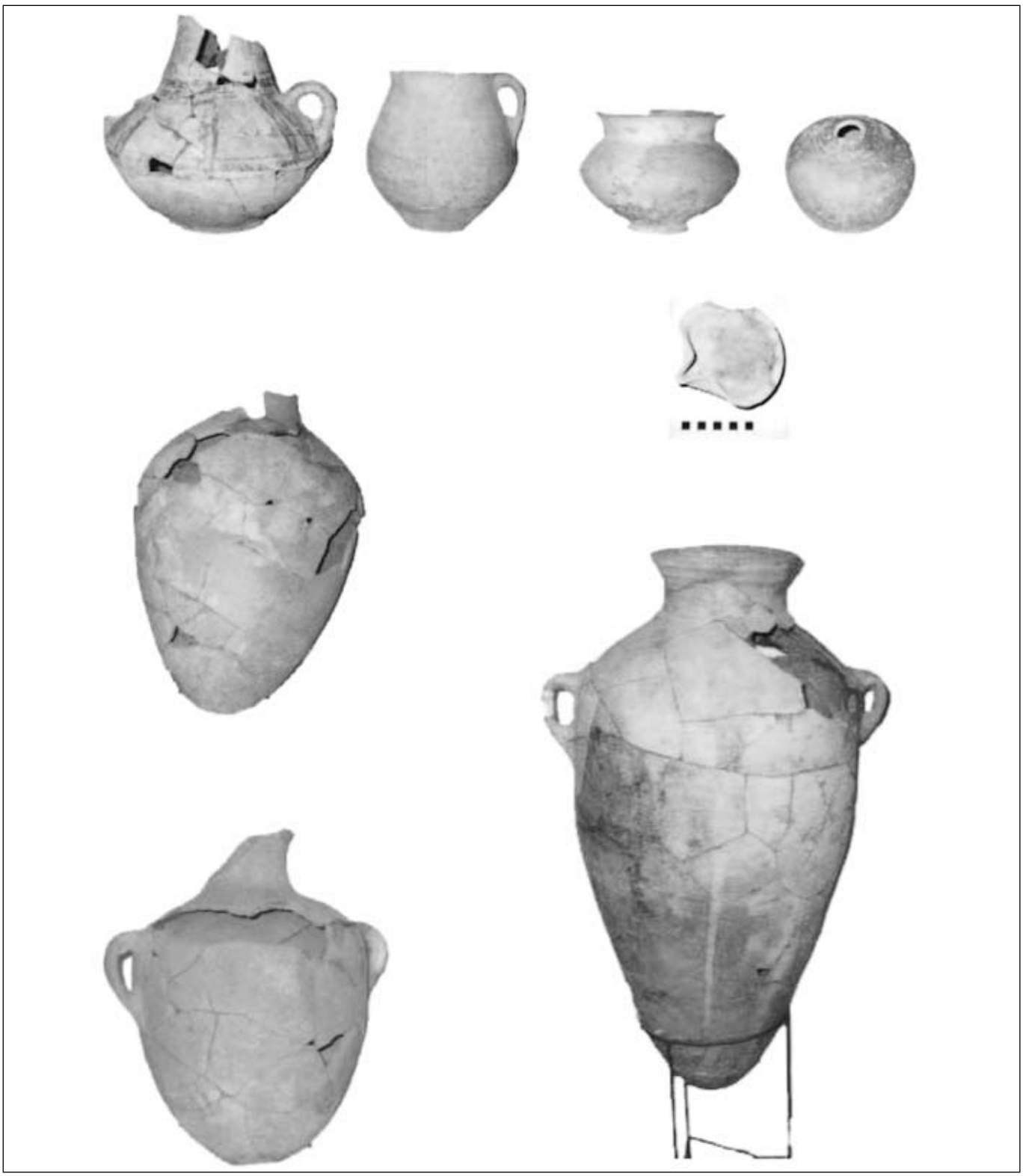
33. Restoration works in the site.



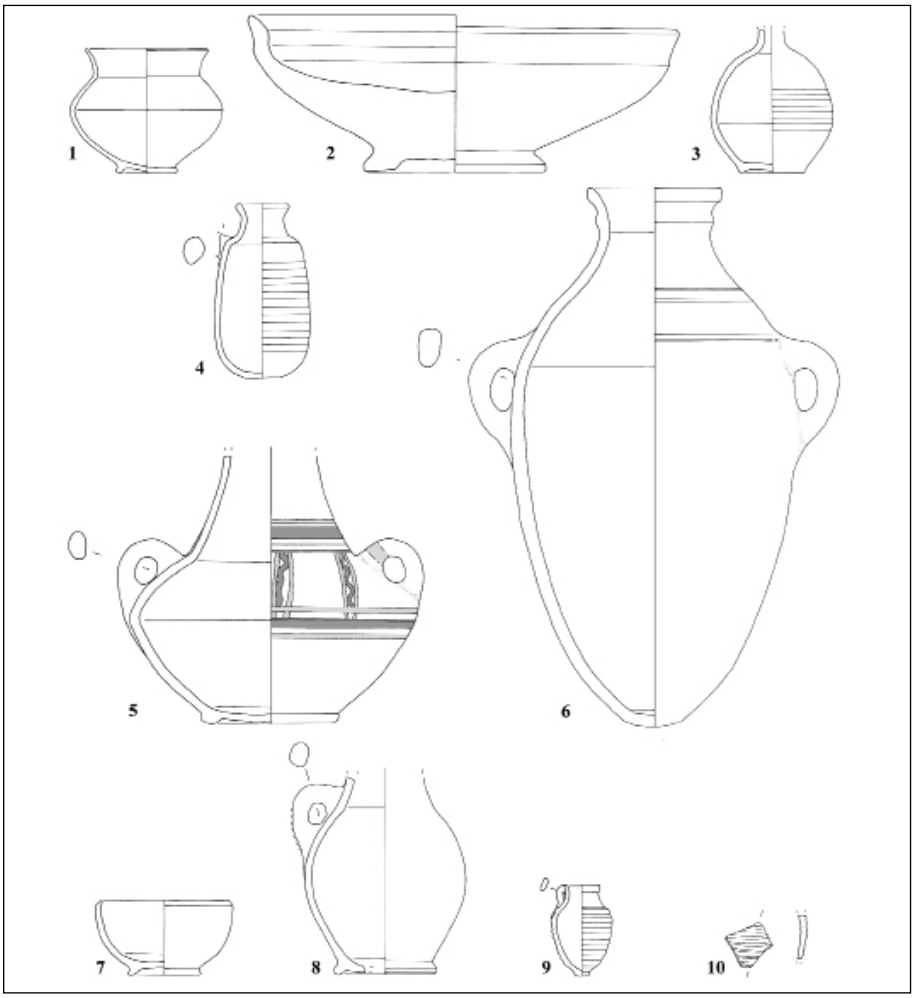
34. Bronze age wall after consolidation.

3. Collected by Mr Adeeb Abu Shmais.

tecture show that Khirbat ar-Ruṣayfah was occupied for a long period of time, from the Bronze Age to the Byzantine period. The Roman and Byzantine remains dominate the site and suggest that the site attained its peak during this time. Less is known of the Iron Age, Hellenistic and Classical periods. Many walls and floors, and a range of material culture belonging to Iron Age II have been found,

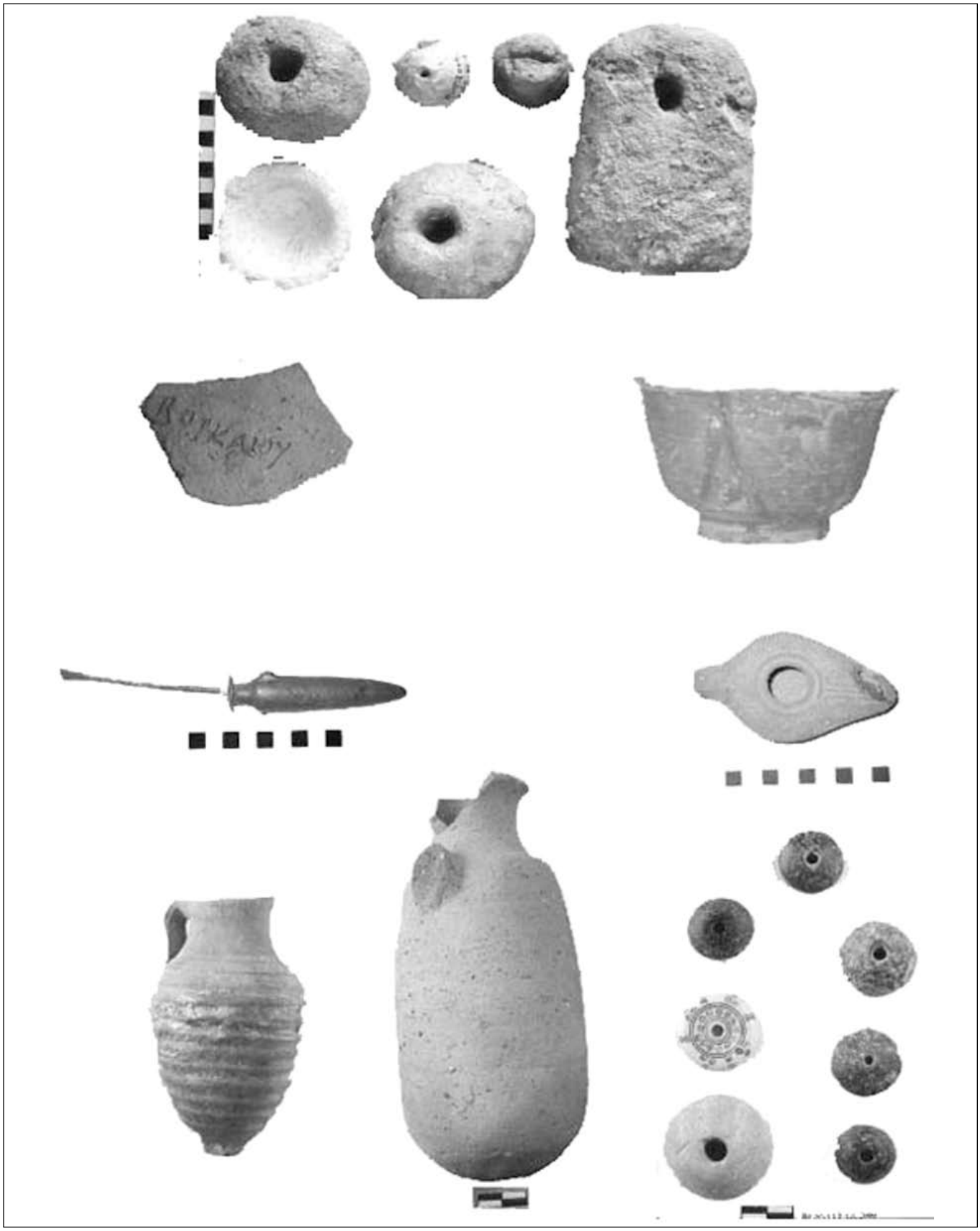


35. Bronze age artifacts.



36. Pottery drawing.

No	*Type*	*Form*	*Diameter*	*Depth/Height*	*Description*	*Date*
1	Bowl	Open	Medium	Intermediate	Buff; cream burnished slip outside.	MB II C
2	Bowl (platter)	Open	Large	Shallow	-	MB II C
3	Jug (juglet)	Closed	-	Short	-	MB II C
4	Jug (juglet)	Closed	-	Very Short	Pink buff; hand burnished; horizontal ribbing; cylindrical; body; ridged rim.	Byzantine
5	Amphora	Closed	Medium	Intermediate	Pink, white, red decoration	
6	Jar	Closed	-	Tall	Broken edge and tall neck; narrow top; compact body with two handles extending from middle of body to bottom of neck.	MB II C
7	Bowl	Open	-	-	-	Hellenistic
8	Jug	Closed	-	Short	-	MB II C
9	Jug (juglet)	Closed	-	Very Short	-	Byzantine
10	Sherd	-	-	-	-	Hellenistic



37. Artifacts from ar-Ruṣayfah.

including the very important loom weights. Even though the Hellenistic period is not as well represented in architectural terms as the subsequent Roman period, a considerable quantity of Hellenistic pottery has been recovered. The 30 copper coins have been studied and conserved with the help of Dr Fawzi Zayadine and Mrs Ayda Naghawy. We managed to read some of them, which were inscribed with the following names: Hulianus, Gurdianus, Thiodosius and Valerian; two coins from the reign of Constantius II (361-337 AD) were found. In sum, the size of the architecture and the richness of finds show that ar-Rußayfah was an important site in the region.

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The Message of the Khirbat at-Tannūr Reliefs

The Nabataean sanctuary of Khirbat at-Tannūr at the northern limit of Edom high above the Wādī al-Ḥasā was excavated by Nelson Glueck in 1937 and became more famous by his book "Deities and Dolphins", published in 1965. People were fascinated by the richness and the style of the sculptural decoration of the sanctuary. Glueck's book had a great impact on the research on the Nabataeans. A few years ago Judith McKenzie, Sheila Gibson and Andres T. Reyes published several important articles on Khirbat at-Tannūr (McKenzie, Reyes and Schmidt-Colinet 1998; McKenzie 2001; McKenzie, Gibson and Reyes 2002; McKenzie, Reyes and Gibson 2002; McKenzie 2003). Their re-examination of the evidence has led to a new reconstruction of the sanctuary and a revised chronology, as well as new interpretations of the sculpture. I largely agree with them and take their results as the starting point for further considerations. My own study of astral belief among the Nabataeans likewise focuses on the Khirbat at-Tannūr sculptures and has resulted in some new ideas presented first in a lecture during a conference of the Deutscher Palaestina-Verein 2006 and at the Washington ICHAJ 10.

Khirbat at-Tannūr and the nearby Khirbat adh-Dharīḥ were founded by the Nabataeans, but the monumental extension of the sanctuaries at both sites took place in the first half of the second century AD (McKenzie, Gibson and Reyes 2002: 50, 72-73; Villeneuve and Muheisen 2000: 1535; cf. the *lupa Romana* Villeneuve 2002), that is the early phase of the new Provincia Arabia. The subject of the frieze of the Qaṣr adh-Dharīḥ, excavated by François Villeneuve and Zeidun al-Muheisen, was recognized in 1999 by the bust of Libra with a balance as busts of the zodiac figures in alternation with standing Nike figures (Villeneuve and Muheisen 2000, 2003). Preserved are the busts of Taurus, the Gemini, Cancer, Libra and a fragment of Sagittarius and some Nike figures. The identification of the busts is facilitated by their crowning attributes, such as the horns on the bust of Taurus.

The Zodiac

Basing on such attributes Judith McKenzie elaborated on the zodiac approach and gave a new interpretation of the so-called Dolphin Goddess from Khirbat at-Tannūr (Glueck 1965: 315-319 pls. 1-2; McKenzie 2003: fig. 192). Nelson Glueck understood this bust as a representation of the Syrian goddess Atargatis. This relief was the corner-stone of his interpretation of the entire decorative programme of Khirbat at-Tannūr. McKenzie correctly demonstrated that the marine creatures in the hair of the bust are clearly fish, and no dolphins, identical to the fishes in the zodiac (McKenzie 2001: 109; McKenzie, Gibson and Reyes 2002: 76-77). The counterpart of the bust with the fish is a female bust with ears of grain in the hair (Glueck 1965: 315-318 pls. 25-26, so-called Grain Goddess; McKenzie 2003: fig. 191). McKenzie identified the two busts as zodiac signs, Virgo and Pisces, already suggested by Starcky 1968: 132. The busts decorated the outer pilasters of platform III (McKenzie 2003: fig. 188), which is about a century later than the main phase of the sanctuary. There are five other panels with busts above the zodiac busts, but they follow a more simple formula (Glueck 1965: pls. 27-28). Clearly, the two zodiac panels are emphasized. This seems to be a citation of a composition found among the sculptures of the older phase of the sanctuary.

The famous zodiac (Glueck 1952, 1965: 395ff. pls. 46-48; McKenzie 2001: 108-109; Rosenthal-Heginbottom 2001; McKenzie 2003: 186-191) is said to be contemporary with the older main phase

of the sanctuary or a little bit later for stylistic reasons, but whose original place in the sanctuary is unknown. The zodiac roundel with a bust of a female deity in its middle is carried by a Nike (FIG. 1). In comparison with other zodiacs (cf. Gundel 1992) the arrangement of the signs at the at-Tannūr zodiac differs from the usual sequence. It starts at the top with the bust of Aries, runs down to Virgo in the left half, then turns back to the top to Libra and runs down to Pisces in the right half (FIG. 2). To explain this peculiarity the two halves have been interpreted as the civil year beginning with the month Nisan on the left and the normal year beginning with Tishri on the right (Glueck 1965: 413-415). This presumed blending and integration of two calendars and two different New Year festivals side by side is questioned only by Starcky 1968: 232 (cf. Gundel 1992: 106, 222). McKenzie 2001: 108-109 supposed Egyptian influence. There are Egyptian parallels for a divided zodiac, but, significantly, none for a divided zodiac ring nor for a change of sequence of zodiacs.

1. Completed relief of Nike with Zodiac. ʻAmmān, Jordan Archaeological Museum and Cincinnati Art Museum. Markoe 2003: fig. 199, Courtesy the Cincinnati Art Museum.

Indeed, another interpretation seems to be possible as the new photographs in Markoe 2003: figs. 197-199 allow a better interpretation. Not only is the sequence of the signs unusual, but also the iconography of various signs as busts (for a list of Nabataean busts at Petra cf. Wenning 2004). The zodiac is organized in pairs, the most prominent ones being the two on top. Aries and Libra indicate the spring and the autumn equinox, and East and West. In Babylonian mythology the ram is connected with the moon, the scales with the sun (cf. Papke 1993: 62, 200, 234), and their moon and sun are male deities. That might explain why Aries is here pictured as a male bust, wrongly interpreted by Glueck 1965: 415-416 as bust of Athena (opposed by Starcky 1968: 231-232).

At first glance it may seem far-fetched to bring in Babylonian models as an explanation, but one must consider that Hellenistic-Roman world was thoroughly acquainted with Babylonian astronomy. That's true for the Nabataeans too, as at least a few pieces of evidence demonstrate. Convincingly, the two masks in the frieze of the Tomb with the Armour (Br. 649) at Petra and the masks of some tombs at Hegra are interpreted as a representation of the beheaded Sumerian-Babylonian demon Humbaba (McKenzie, Reyes and Schmidt-Colinet 1998). I know of another head of Humbaba in a figural capital found at Petra, still unpublished.

It must have been the intention to bring Aries and Libra together at the top of the zodiac, otherwise Pisces would have been next to Aries. This intervention into the sequence of the signs resulted in the unusual two halves of the zodiac. There is a second emphasis in the composition. The new arrangement of the signs of the zodiac brings Virgo and Pisces to the bottom of the ring as counterpart to the pair at top. While Aries and Libra as moon and sun indicate cosmic features, the sphere above the earth, Virgo and Pisces are related directly to the earth itself and its fertility. Virgo holds ears of grain (cf. the Semitic name for Virgo "ear", Arabic

2. Zodiac with bust of the local female deity as Tyche. Cincinnati Art Museum. Markoe 2003: fig. 198, Courtesy the Cincinnati Art Museum.

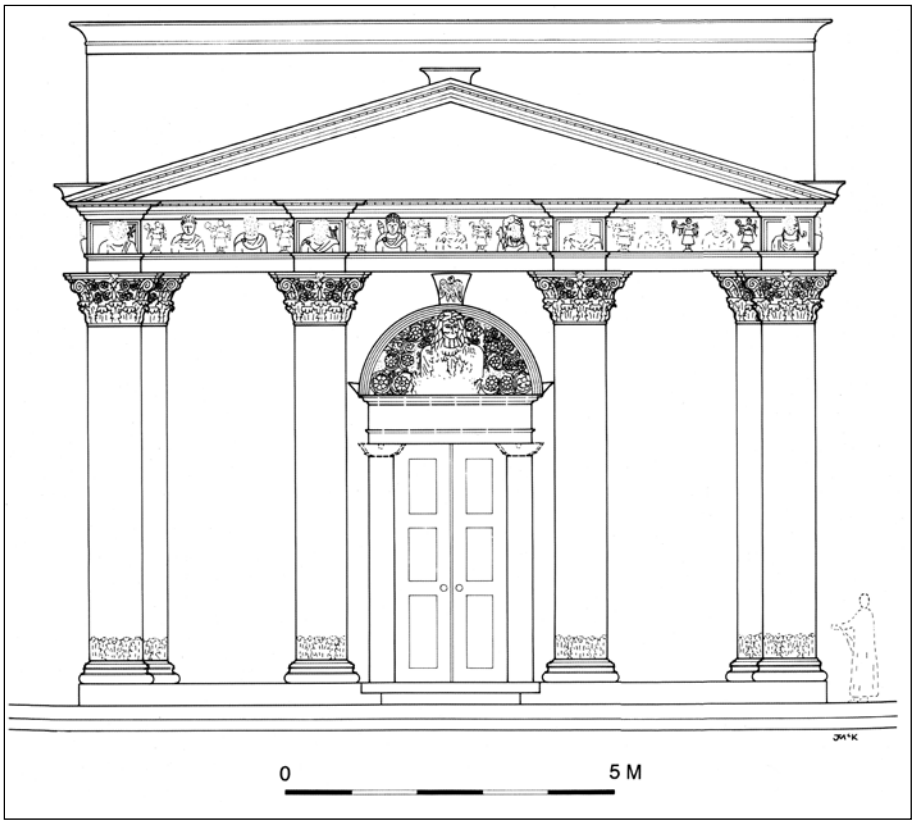
"sunbul"; kind information by F. Villeneuve) and the fishes symbolize the living water.

Therefore, I believe that the composition does not follow two calendars, but expounds local aspects of agricultural fertility of the land as a gift by the local deities within a larger cosmological conception. Some further arguments can confirm this interpretation. In the middle of the zodiac ring there is the bust of a female deity, *capite velato* and with mural crown, a Tyche as tutelary deity. Behind her left shoulder projects a double sceptre crowned with the cone of pine and the crescent moon. It is not a *semeion* as it is often called. Another crescent moon is added in the field opposite above her right shoulder. The identity of the deity is explained below, as it is revealed thanks to the frieze of the temple — what matters now is that the double crescent moon indicates the celestial reign of the deity. Embedded into the zodiac with its stars and the pronounced position of Aries and Libra, the monument reflects a cosmological programme.

The Frieze

The frieze of the temple of Khirbat at-Tannūr represents a programme that closely corresponds to this. Glueck 1945: 184 suggested a frieze of the seven planetary deities, but was not able to reconstruct such a frieze. A solution came only with the frieze of the Qaṣr adh-Dharīḥ with the alternation of zodiac busts and standing Nike figures and gave the idea for such a reconstruction of this frieze as well, suggested first by Laurent Tholbecq. The reconstruction of the façade of the temple by McKenzie (McKenzie, Gibson and Reyes 2002: 56-65 fig. 13) is convincing (FIG. 3), although the position of the deities in the frieze is debatable. Three busts of planetary deities are placed in the middle intercolumnium of the frieze, two busts at the outer intercolumnia. Each bust is framed by Nike figures, adding up to ten Nike figures. These unframed blocks belonging to the frieze are discussed by McKenzie (McKenzie, Gibson and Reyes 2002: 59-63; McKenzie, Reyes and Gibson 2002: 460-461) and do not require more detail here. The best-preserved blocks are those of Sol, Jupiter and Saturn.

Beside the busts of the planetary deities and the Nike figures there are four busts in framed panels directly above the half-columns. These four panels allow further consideration of the composition. The two middle panels were identified by Glueck as Mercury (Glueck 1965: 228, 467-468 pls. 146a-b), but one is representing Apollo with a small kithara behind his left shoulder (Starcky 1968: 233; McKenzie, Gibson and Reyes 2002: 60), the other the



3. Elevation of façade of inner temple enclosure, Period II (reconstruction J. McKenzie). Markoe 2003: fig. 180, Courtesy the Cincinnati Art Museum.

moon god (FIG. 4), as the rest of the crescent moon above the shoulders proves (cf. Roche 1990: figs. 4-5). This panel seems to be unfinished. Unlike to the moon goddess (Luna) among the planetary deities, this is a male moon god as in the composition of the zodiac. Apollo is a god of light representing the sun, a well-known feature for this god. He is the counterpart of the moon god. That means, sun and moon are again emphasized.

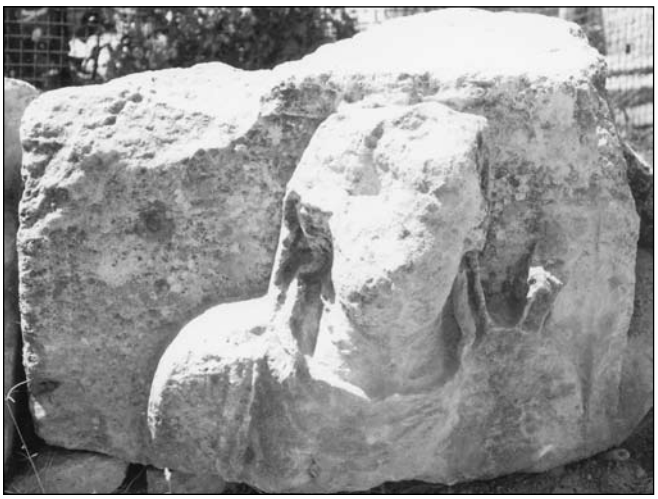
The two outer panels depict the deities of the temple itself (Glueck 1965: 411 pls. 56, Zeus-Hadad-Jupiter; 396, 411 pl. 53a, Tyche with lyre; McKenzie, Gibson and Reyes 2002: 59-60). Again, a clarification of the shown deities is necessary. On the left a bust of Zeus is shown with a thunderbolt behind his left shoulder (FIG. 5). He is to be compared with the male deity of the relief of the cult figures where this deity is depicted as a mixture of the Syrian Hadad and the Greek Zeus (Glueck

4. Panel from the frieze. Bust of the moon god. ʻAmmān, Jordan Archaeological Museum. Photo by R. Wenning, Courtesy Department of Antiquties, Amman, Jordan.

5. Panel from the frieze, Bust of the local male deity in a Zeus type. ʻAmmān, Jordan Archaeological Museum. Photo by R. Wenning, Courtesy Department of Antiquties, ʻAmmān, Jordan.

1965: pls. 41-42; McKenzie, Gibson and Reyes 2002: 74; Markoe 2003: fig. 40). The cult figure accompanied by two bulls follows rather Syrian models, while the bust in the frieze is closer to Greek models. But there are connections between the two. For instance, both wear unusual torques around their necks. The local deity behind these Zeus types is probably Qos, to whom a dedication was discovered on site (Savignac 1937: 408-409 no. 2; McKenzie 2003: fig. 196). Although this is the only clear indication of a venerated deity at Khirbat at-Tannūr beside the sculpture at all, and although it could be, that this dedication has nothing to do with the deities of the temple at all, it makes sense that the sanctuary at Khirbat at-Tannūr could have been devoted to the Edomite Qaus whose cult continued among the Nabataeans and Idumaeans as Qos through the Hellenistic-Roman period. Hadad, Qos, Zeus and even Dushara all more or less share the same iconographic type of weather and fertility deities.

The counterpart of Zeus in the frieze on the outer right depicts a female deity *capite velato* and holding a double sceptre (FIG. 6). She can be recognized as Hera, the wife of Zeus. Like Zeus she bears a torques. Hera is much less common in the Levante, but when she is pictured she sometimes holds ears of grain and points to the fertility of the country as the female deity of this temple. The female *paredros* of the Zeus type deity is depicted in a smaller relief which could reflect the cult figure again as a Syrian-Greek composite (Glueck 1965: pls. 44, 161b; McKenzie, Gibson and Reyes 2002: 74; McKenzie 2003: figs. 195, 193) and has been identified by Glueck as Atargatis, based on the Syrian type of the cult figure seated on a throne accompanied by lions. But since the Syrian "Hadad" is probably not Hadad, the Syrian "Atargatis" could easily represent a local deity other than Atargatis. Nevertheless, Atargatis as an eastern appearance of Hera remains a possibility. Lucian, De Dea Syria 32 describes the Dea Syria as a very complex syncretistic construct (cf. Hörig 1979). If one prefers to call the female deity of Khirbat at-Tannūr Atargatis, one has at least to modify the common interpretation. She is not the Fish- or Dolphin Goddess, and not necessary an Aphrodite type, but a matron, a tutelary deity, and a goddess of fate and fertility. But for now one should refrain from labelling her at all. Instead of speculation about names the identification of the female deity as a Hera type is of great importance and must define the direction of interpretation for the moment.



6. Panel from the frieze, Bust of the local female deity in a Hera type. ʻAmmān, Jordan Archaeological Museum. Photo by R. Wenning, Courtesy Department of Antiquties, ʻAmmān, Jordan.

The same couple of Zeus and Hera type deities is depicted once again in two smaller panels of the entrance either to the temple or to the Temenos (Glueck 1965: 467 pl. 153b, Hermes-Mercury, and 207 pl. 45a, Tyche) and underlines the given interpretation. The Zeus this time is identical with the Jupiter of the planetary deity from the frieze (the same type is found in Petra in Markoe 2003: fig. 3; Roche 2001: 355 no. 18), while the Hera is identical with the Hera of the framed corner panel. Once again, the same local goddess in the Hera type is to be identified in the middle of the zodiac discussed above.

The panels of the corner pilasters of the frieze are decorated with a bust at the outer long sides as well, which is unusual. Here a Tyche figure with the horn of plenty (FIG. 7) is depicted (Glueck pls. 55, 53b, Dionysus; McKenzie, Gibson and Reyes 2002: 59-60). Such reliefs with Tyche figures are common in Nabataean art, often as reliefs above the framing half-columns. Here the number of planetary deities, Nikes, Zeus and Hera, and Apollo and the moon god left no space to show them up in their usual position. These figures do not represent the Tyche in the sense of a city goddess as they lack the particular attributes needed for such an identification and they are not temple deities, but rather symbolise the blessing, wealth, fertility, and protection guaranteed by the venerated temple deities. For convenience, I call them Tyche figures. It is important to note that they are placed next to the

7. Panel from the frieze, but at lateral side, Bust of a Tyche figure. ʻAmmān, Jordan Archaeological Museum. Photo by R. Wenning, Courtesy Department of Antiquties, ʻAmmān, Jordan.

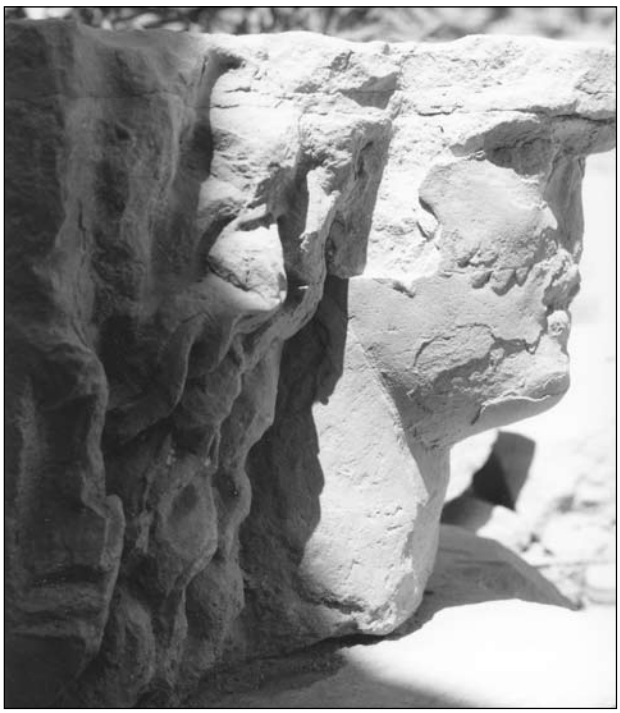
panels with Zeus and Hera, the temple deities.

Clearly, the arrangement of the blocks wit the temple deities send a message. The temple deities frame the frieze of the planetary deities and participate in this way in the cosmic ideas. The local deities are related to the fertility of the herds and of the land, while the planetary deities promise its perpetuation. The same programme is expressed in the zodiac: the busts of Aries and Libra together with the zodiac form the astral sphere, Virgo and Pisces symbolise the fertility of the country, joined by Hera-Tyche as the local tutelary deity with astral elements.

The Tympanum

Beside the frieze one also needs to mention the so-called Atargatis panel, a semicircular panel above the entrance of the temple (Glueck 1965: 143-144 pls. 31-33; McKenzie, Gibson and Reyes 2002: 63-64; Markoe 2003: fig. 41), which depicts the bust of a female figure surrounded by floral motifs (FIG. 8). Following Glueck the figure usually is identified as the temple deity, which depicts Atargatis as a vegetation goddess, but I would like to suggest another interpretation. The body of the figure is covered with floral branches, which are directed towards the bottom indicating that the figure originates from the earth or even below. Even the neck and the face are covered with leaves. Such features do not fit Atargatis, but are characteristic of marine creatures in Greek art. There are two other Nabataean busts of the same type known, one from Khirbat Brāq (Parr 1960: 134-135 pl. 15,1), the other one from Petra (Lyttleton and Blagg 1990: 277 pl. 9). If one conceder that Khirbat Brāq is important mainly for its spring, the ʻAyn Brāq, which provides water for Petra, this bust should represent the personification of that spring. The Petra bust (FIG. 9a-b) could represent the ʻAyn Mūsā or the Wādī Mūsā, but having no context for the bust this remains still hypothetical. At Khirbat at-Tannūr one

8. Relief from the tympanon panel with the bust of the personification of the ʻAyn Laʻbān (?). ʻAmmān, Jordan Archaeological Museum. Markoe 2003: fig. 41, Courtesy the Cincinnati Art Museum.



9a-b. Petra. Architectural panel with the bust of the personification of a spring (?). Photo by R. Wenning, Courtesy Department of Antiquties, ʻAmmān, Jordan.

would rather prefer to point to ʻAyn Laʻbān than to the Wādī al-Ḥasā. I would like to identify the bustʻ as the personification of the ʻAyn Laʻbān. There is a Nabataean inscription from the site, dated to 8/7BC, which mentions a votive by Netir'el, the master of the spring of Laʻbān (Savignac 1937: 405-408 no. 1). This obviously important spring is situated at the foot of Khirbat adh-Dharīḥ, and the Wādī Laʻbān continues towards Khirbat at-Tannūr. Between the isolated sanctuary on Jabal at-Tannūr and the settlement at Khirbat adh-Dharīḥ 7km to the south there must have been strong relations, and probably processions took place between the two sites. Khirbat at-Tannūr could have been a place of pilgrimage. The figure in the tympanum is not the temple deity and not a deity in the sense of the Zeus and Hera type deities, but rather comparable with the Tyche figures or the "*Rankenfrau*" in the tympanum of the al-Khazna and the Florentinus Tomb.

The crowning element of the pediment, an eagle (Glueck 1965: pl. 34a), is taken from the Greek world as a symbol of Zeus, and in the Semitic world as a symbol of the god of heaven under the local name of Dushara, Baʻal-Shamin or Qos. In the combination with the personification of the spring this feature connects the fertility of the earth with the local deity and the divine sphere. At least four times we find the same idea formulated among the Khirbat at-Tannūr reliefs.

The emphasis of astral and cosmic connotations at the sanctuaries of Khirbat at-Tannūr and Khirbat adh-Dharīḥ is remarkable. One wonders if the programme reflects the new political situation of the Nabataeans after AD106. Although planetary deities do appear in earlier Nabataean art, even in connection with Nikes, there seem to be no earlier Nabataean representations of the zodiac. On the other hand, signs of zodiac are pictured on seals of the Roman administration in Moab at this time, found at Mampsis in the Negev.

The end of the Nabataean kingdom by the Roman occupation and transformation into the Provincia Arabia in AD106 must have shocked the Nabataeans. But rather than a break, one can observe increased building activity now sponsored by various local authorities. This is to be understood as a revival of the particularistic structures of the Nabataean tribal society, which Rabbel II had tried to overcome in his re-novatio. At the two sites in northern Edom discussed here the Nabataean tradition remained very strong, especially in the architecture, while the extremely rich sculptural decoration was a rather new feature. The people running the sanctuaries still worshipped their traditional deities. While these gods formerly protected the royal dynasty, now they had risen to a transcendental astral and cosmological sphere. In such turbulent times, the builders, artists and worshippers apparently chose to pin their hopes on astral deities rather than seeking the favour and protection of the gods of their new Roman overlords, who started to gain popularity elsewhere, especially in the cities.

Acknowledgments

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Middle and Late Bronze Age Domestic Architecture from Tall Dayr ʻAllā: Recent Discoveries

Introduction

Tall Dayr ʻAllā[1] stands in the base of the long north-south Rift Valley, in a part which is called Ghawr Abū ʻUbaydah. Here, the valley floor is in general 4 to 5km. wide, i.e. extending from the Jordan River bed (*zor*) to the slopes of the eastern mountains. The surrounding landscape has good agricultural soil in most places and the extremely variable, but generally limited, rainfall (av. 260mm. at the site) can be supplemented with irrigation water supplied from the az-Zarqā' River. The Jordan Valley is very suitable for winter grazing, largely because of its mild temperatures during that season (FIG. 1).

The summit of Tall Dayr ʿAllā stands almost 30m. above the local plain, which is about 230m. below mean sea level and slopes gently down (2%) to the west-south-west. The oval base of the mound of Tall Dayr ʿAllā measures approximately 250m by 200m (FIG. 2).

The excavations conducted at Tall Dayr ʻAllā in 1994 and 1996 exposed evidence concerning the south-western limits of the final Late Bronze Age (LB) settlement, including an extra-mural metal-working area and commercial storage facilities, and yielded data associated with preceding LB phases. In 1998, 2000 and 2004 excavations to the east of these trenches, on a protruding part of the tall, revealed additional remains dating to the LB and beginning of the Iron Age, including large buildings and several enigmatic clay tablets. The exposed LB buildings on the southern slope of the tall provided us with information about use of space and their development over time (FIG. 3).

Chronology

The archaeological excavations conducted at Tall Dayr ʻAllā have shown that it was occupied from ca. 1700BC to 350BC (Van der Kooij 2006: 224). This chronological determination is based on the study of the stratigraphy of the site in parallel with the study of excavated archaeological materials, especially pottery. In addition, a number of excavated written sources, including a cartouche of the Egyptian queen Tawosert, stamps and cylinder seals of Ramses II and bulla carrying the name of Thutmoses III, are taken into consideration (Van der Kooij 2006: figs 12:4; 15). Unfortunately, radiocarbon dates are unavailable at present, but we await the results of analysis of samples collected for this purpose.

Domestic Architecture from Tall Dayr ʻAllā

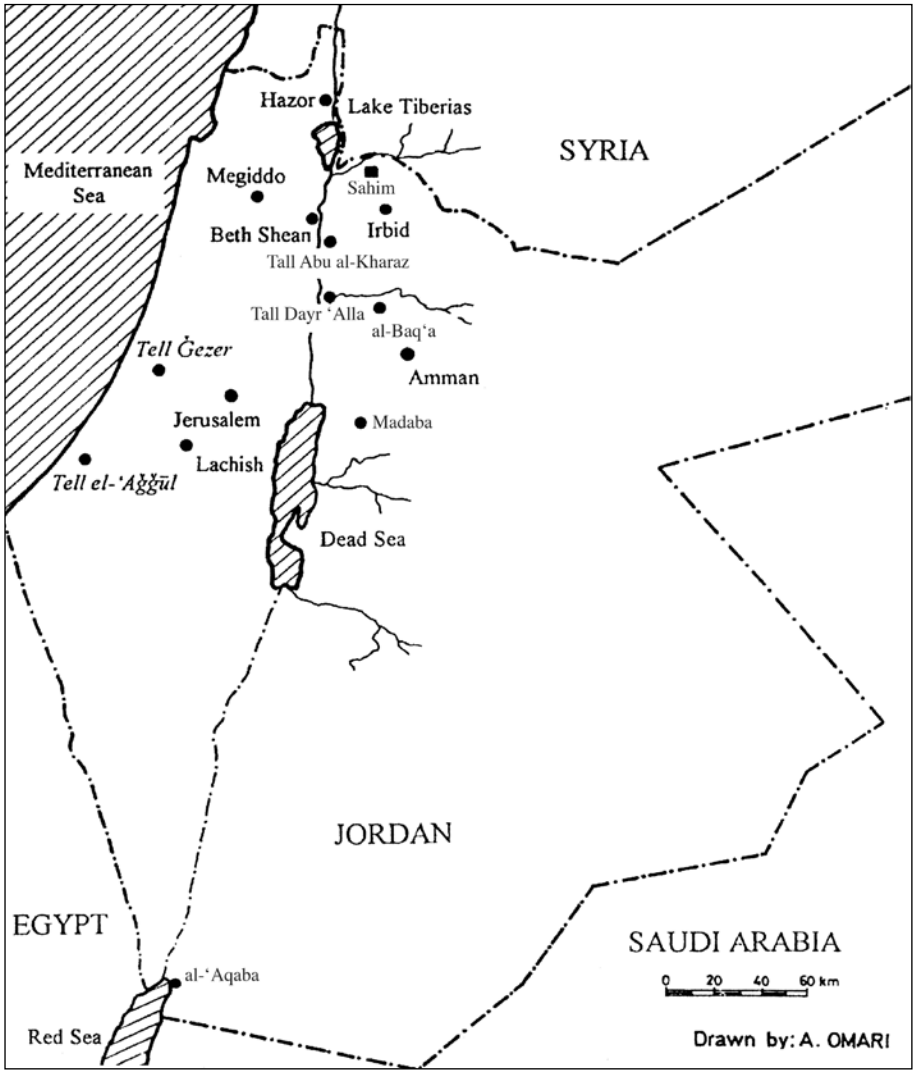
This paper examines the recently excavated LBA architectural remains in order to shed light on the urban character of the site, apart from the religious quarter on the northern slope. In addition, excavated buildings dating to the Middle Bronze Ages (MB) II-III and the LB / Early Iron Age (IA) periods are also discussed.

A preliminary study of LBA architecture found at Tall Dayr ʻAllā during the most recent seasons (1994 - 2004) defined two types of structure:

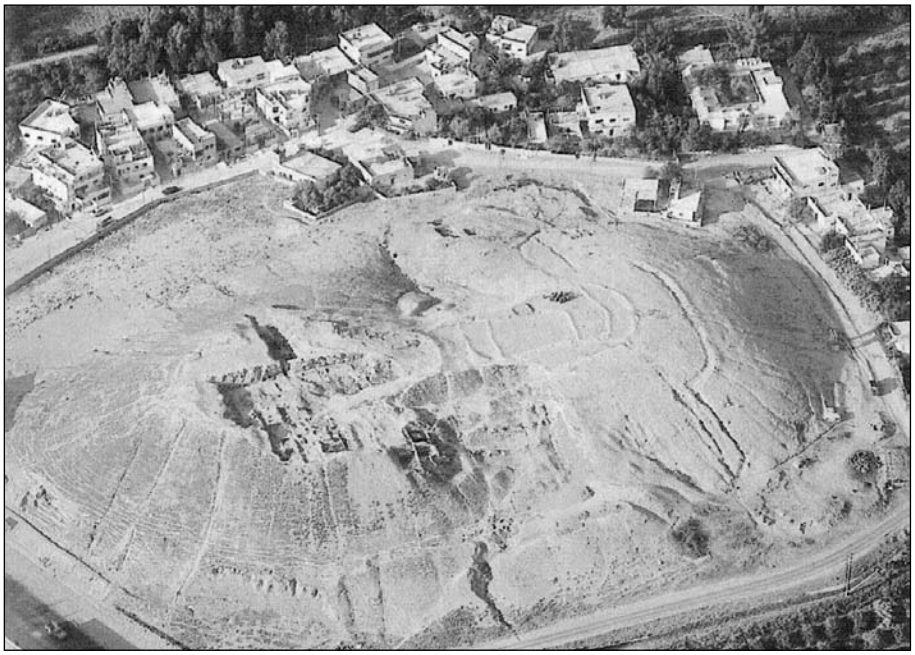
1. Broad room (*breitraum*) houses.
2. Pillared houses.

These houses were built of mud-brick and, as demonstrated by the remains of a fallen ceiling,

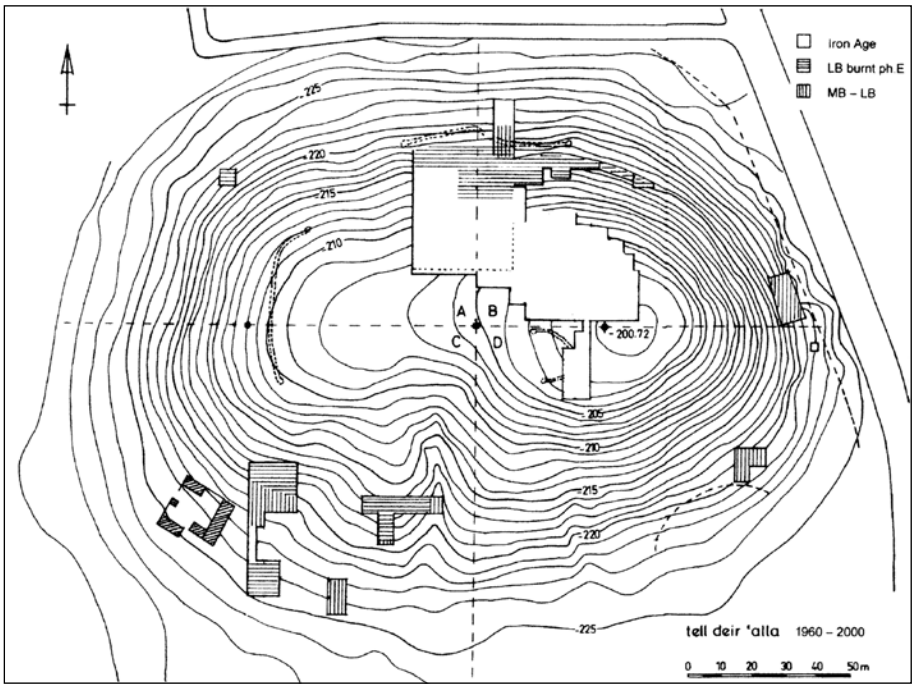
[1] The Tall Dayr ʿAllā Archaeological Project is a joint venture of Leiden University (Holland) and Yarmouk University (Irbid, Jordan). It started in 1960 as a Leiden University excavation project, directed by H. J. Franken. After a gap following the fifth season in 1967, excavations were resumed by Franken in 1976. From 1979 they were co-directed by G. Van der Kooij and M. Ibrahim, first in collaboration with the Department of Antiquities of Jordan and, since 1980, with Yarmouk University. Excavations resumed in 1994, with a series of five seasons ending in 2004 (co-directed by G. Van der Kooij and, since 1996, Z. Kafafi).



1. Map showing location of Tall Dayr ʿAllā



2. Aerial view of Tall Dayr ʿAllā (after G. Van der Kooij 2006).



3. Excavated areas at Tall Dayr ʻAllā (after G. Van der Kooij 2006).

were roofed with reeds covered with a mud layer.

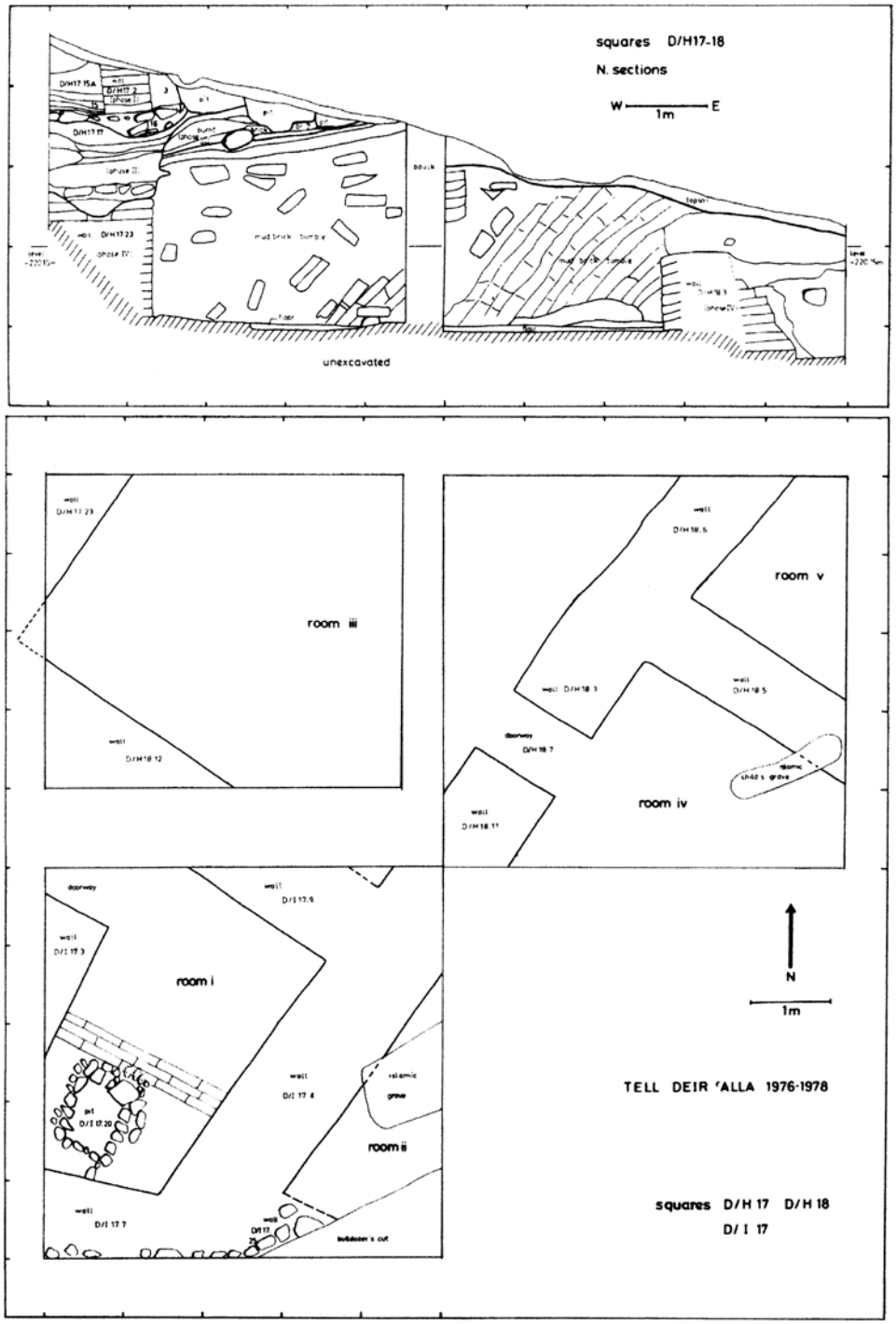
A. Middle Bronze Age II-III / Late Bronze Age I Architecture

The MB II-III period settlement was established on a low natural hill of laminated Lisan clays, with about half a metre of reddish-brown loess on top (Franken and Ibrahim 1977-1978; Kooij 2006: 214). Van der Kooij (2006: 202) has argued that the centre of the site may have been settled prior to MB II, because Chalcolithic sherds were occasionally recovered from the MB and LB deposits at the site. Alternatively, these sherds could have been brought to the site from Tall Qaʻdān, which is located a few hundred metres north-east of Tall Dayr ʻAllā and also yielded Chalcolithic sherds (Kafafi 1982).

During the 1976 - 1978 seasons, part of an MB III building consisting of five rectangular rooms was uncovered on the south-eastern side of the tall. It was constructed of two rows of mud-brick walls on 1m. wide stone foundations, some of which stood up to 2-2.5m. high. The floors were made of hard-beaten dark grey soil mixed with pebbles and small stones. Owing to the small amount of pottery recovered, the excavators judged that this was not a domestic building. In Room I, a bench constructed of three rows of mud-bricks and a rounded stone-lined pit were exposed. MB II-III ceramic vessels, some of which were of the type known as bichrome ware (Franken and Ibrahim 1977-1978: Pl. XLII, 1) were found inside the building. Moreover, two MB II-III bronze tools were found directly on the floor of the pit (Franken and Ibrahim 1977-1978: 75-76).

Room III is the largest room, measuring ca. 5.5m. in width and more than 6m. in length. The excavators realised that this room was accessible from Room IV through a 1.15m. high doorway over which a wooden beam, presumably a lintel, was laid. In addition, there was no clear evidence to suggest that this room had ever been roofed. It is therefore probable that Room III was an open courtyard (Franken and Ibrahim 1977-1978: 78), meaning that this MB II-III building consisted of a large open courtyard surrounded by small rooms (FIG. 4).

At the beginning of the1998 season, the excavators decided to cut back the eastern side of the tall, which had been partially bulldozed when the main road was widened and shops constructed. To this end, a step trench measuring 15m. north-south, that extended 5m. to the west, was excavated. This area was designated Area X. The excavations started 5m. from the southernmost part of the trench, where three squares (XB1+2, XC1+2 and XD1+2) were dug. Here, Lisan marl or clay was reached a few metres above modern street level. The archaeological deposits excavated in this trench attained, in some areas, a height of 6.5m. and produced remains dating to the MB II-III and LB I periods (Van der



4. Section drawing and plan of MB structures excavated 1976-1978 (after Franken and Ibrahim 1977-1978; Van der Kooij 2006).

Kooij and Kafafi 1998: 12-13) (FIG. 5).

The earliest MB structures on the eastern slope of the tall were constructed directly on the natural loess surface. They were built of mud-brick, sometimes on stone foundations. The small parts of the first settlement that have been exposed so far show reasonably solid mud-brick architecture with courtyards and walls 1-1.5m. wide. The courtyard in Area X includes a cooking area with bread ovens and ashy occupation debris. Unfortunately, owing to the narrowness of the excavated area, the full plan of the exposed structures still unclear. To date, a few sherds of Tall al-Yahudiyyah ware (MB II-III) have been found in the deposits attributed to this phase and, additionally, a bronze adze (Van der Kooij and Kafafi 1998: 13).

In the later stages of the MB, a large wall crossing Square B2 and secondary walls in Squares XC

5. General view of the excavated step trench (Photo by G. van der Kooij).

and XD were constructed. In addition, courtyard accumulation associated with several walls occurred; a bronze axe was found here. The well-constructed buildings had several rooms, seemingly well-planned to judge from the layout of the walls; these were differently orientated in the two small areas of excavation (FIG. 6).

The most characteristic pottery found in these two phases is that which is decorated with chocolate-on-white painting, which dates to the end of the MB and beginning of the LB.

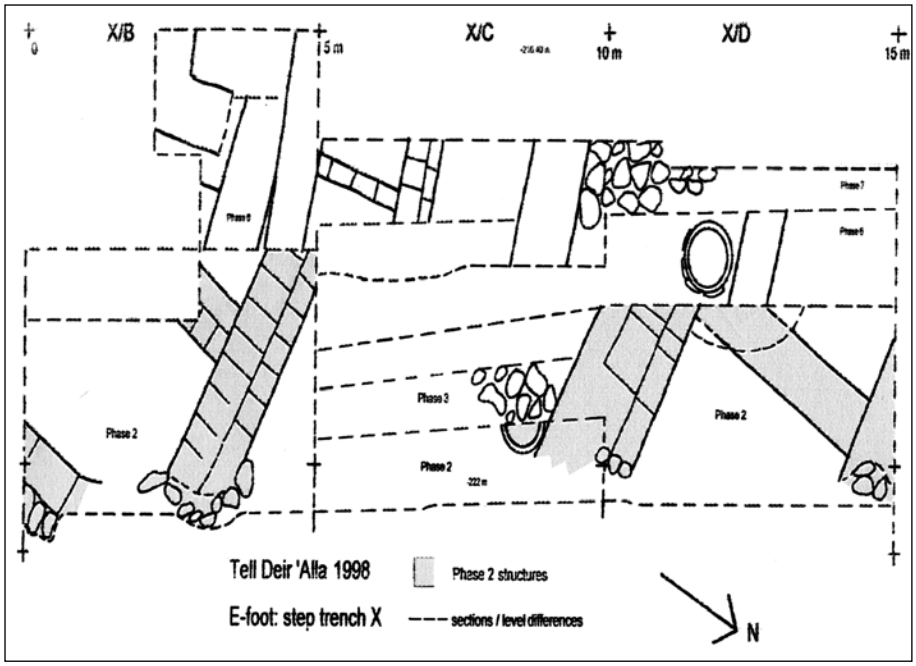
During the 2000 season further MB and LB archaeological remains were excavated in two squares (C/ P and Q9), each measuring 5 by 5m, located on the southern slope of the tall (Van der Kooij and Kafafi 2002: 31).

To conclude, the MB II-III archaeological remains so far excavated at the site of Tall Dayr ʻAllā may demonstrate that the earliest occupation of the site had an urban character. However, it is not clear how far the site originally extended owing to the small exposures of MB material.

B. The Late Bronze Age Architecture

It is not possible to establish use of space in the LB built-up areas on the basis of the fragmented data obtained from the early excavations, except for the temple in the northern quarter and probable domestic areas to the east and south-south-west. A study of the LB architecture exposed during the most recent (1996, 1998, 2000 and 2004) excavations at Tall Dayr ʻAllā is presented below.

1. South-south-west slope (Area C / I, J and P): In the 1994 season, the excavators decided to begin the first excavations on the south-south-west slope of the tall with the aims of exposing pre-Iron Age archaeological remains and gaining a better understanding of the nature of the settlement. As a result of the excavations in Areas C / I and J, rectangular structures have been uncovered. The earliest of them is a curved wall, orientated east-west and 1.5m. wide. It was built of very hard mud-bricks using the local Lisan clay, with reed or wood between the courses. Additional mud-brick walls were exca-



6. Plan of Area X showing MB/LB architecture (after G. Van der Kooij 2006).

vated in this area and some of them were built on stone foundation (Ibrahim and Van der Kooij 1997: 106) (FIG. 7).

2. South slope (Areas C / J and K): In the 1998, 2000 and 2004 seasons, the excavators decided to work on the central part of the southern slope, with the aim of examining the extent and character of the LB phases and the transition to the IA (Van der Kooij and Kafafi 1998, 2002). Thus, in 1998 season five squares (C / K6, L6, M6, K7, and K3) were opened (Van der Kooij and Kafafi 1998: 11). Excavations continued in this area during the 2000 and 2004 seasons with the aim of recovering further archaeological data relating to the last phase of the LB and the beginning of the IA. As a result of these excavations it became necessary to reconsider some of the conclusions reached on the basis of the 1960s fieldwork on the northern slope of the site. The 2000 and 2004 extensions were needed in order to understand the use of space in the two main excavation areas: the central part of the southern slope and the foot of the southern slope of the tall.

In the central area, a large broad room (*breitraum*) building measuring at least 10 by 6m. has been partially exposed (FIG. 8). It seems to consist of an open courtyard or main room surrounded by four small rooms — two each along the north and south sides — and an elongated room with a mud-brick platform extending along its western side

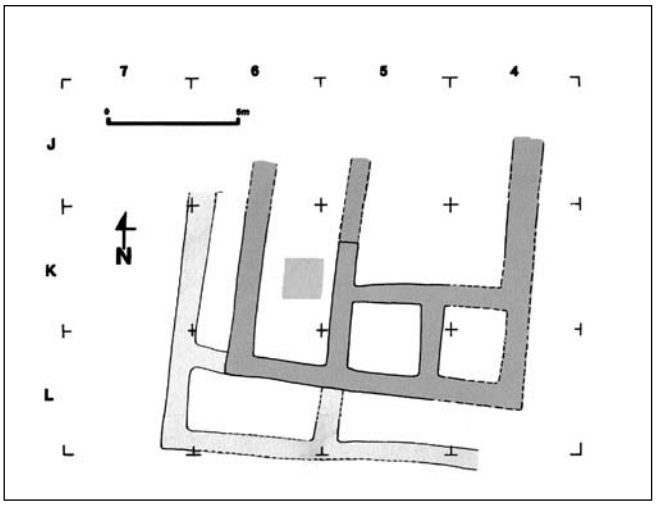
8. General view of the excavated *breitraum* building on the southern slope (photo by Y. Zu'bi).

(FIG. 8).

The walls of this building were constructed of very hard mud-bricks, each ca. 50-60cm. long, 25cm. wide and 10cm. high. A layer of mud mortar was used in the construction process. The outer walls range in width from 1.4 to 1.3m.; the inner walls are 0.8m. wide (FIGS. 9, 10).

The ceiling, which may have been carried on wooden posts, was constructed of wooden beams

7. Squares C/I and J14 on the lower south-west slopes of the tall (photo Y. Zu'bi, after Ibrahim and Van der Kooij 1997).



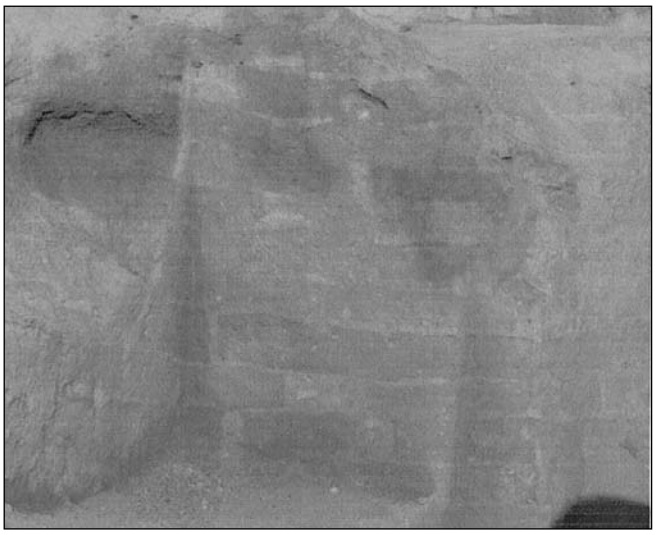
9. Plan of the *breitraum* building (drawn by Ali Omari).

underlying a layer of reeds, which in turn lay under a layer of mud.

In this building clay tablet fragments, with an unknown script, were found; two of them fitted with three fragments recovered the previous season, thereby making up two complete tablets. With these finds a new attempt to decipher them may be successful (see FIG. 11).

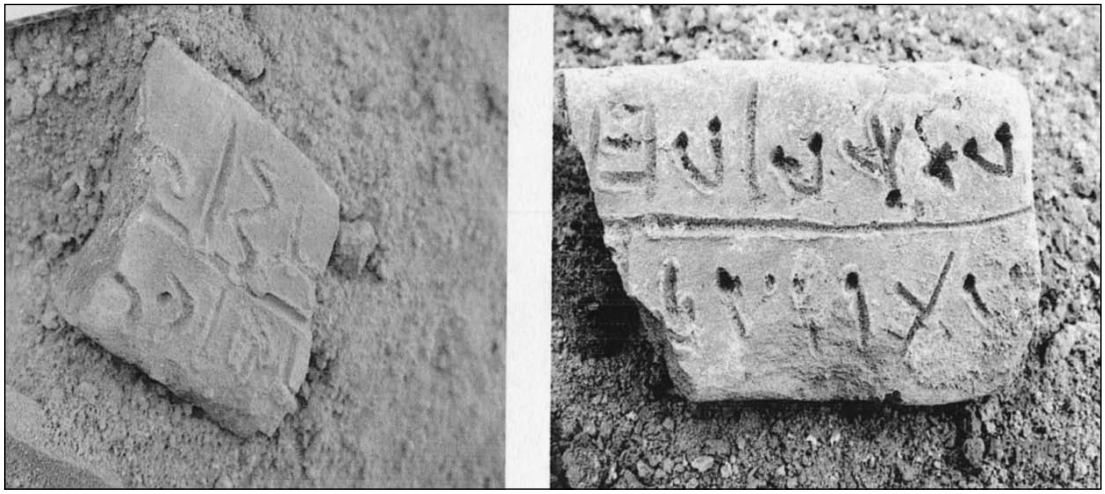
Much better understood are the rooms of a subsequent rebuilding, still just before the IA. These rooms included space for food storage and preparation, with large jars that contained an oily liquid and a large saddle quern with complete with grinding stone, both of the local (Zerqa bed) sandstone (FIG. 12).

This excavators realised that this large building has two LB III structural phases. Its final use was during the latest phase of the LB, when it was destroyed by a fire that was caused by an earthquake at around 1180BC. The excavated clay tablets suggest that its first phase should be dated to LB III (ca. 1300 – 1200BC) (FIG. 13).



10. General view of a mud-brick wall (photo by Y. Zuʻbi).

12. One of the small rooms in the large building (photo by Yousef Zuʻbi).



11. Inscribed clay tablets fragments found in the *breitraum* building (photo by Yousef Zuʻbi).

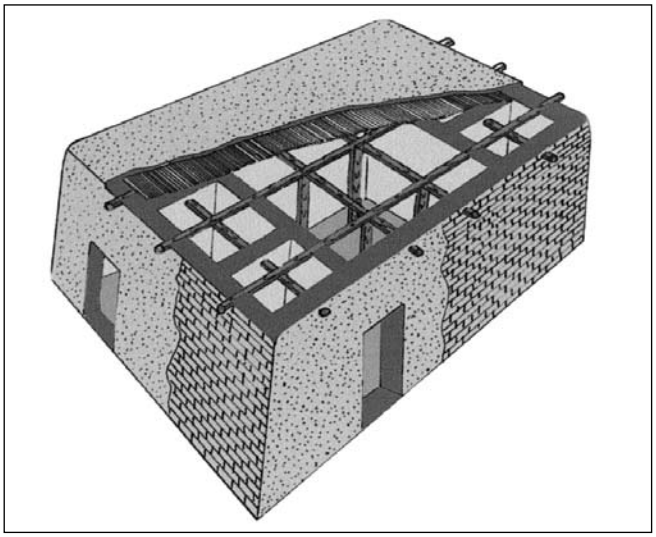
13. The burned layer, which separates the two phases (photo by Yousef Zu'bi).

To sum up, despite the fact that this architectural complex has not been completely uncovered, its plan and the archaeological finds recovered from within it suggest that it was used for domestic purposes, or perhaps as as an administrative building. A reconstructed plan of this *breitraum* building is presented in Figure 14.

3. The South Foot of the Tall: In 1982 a narrow ditch was dug along the south foot of Tall Dayr 'Allā in order to divert run-off water from the modern town. The north section of this cut contained heavily burned mud-brick structures including, perhaps, a kiln. The excavators therefore decided to investigate this area by opening a very small trial trench. Three occupational phases were recognised: an upper one represented by several pits of different sizes, a middle one comprising the re-use of a building that was constructed during the lower and earliest phase, which dates to the latest phase of LB III (Ibrahim and Van der Kooij 1997: 108) (FIG. 15).

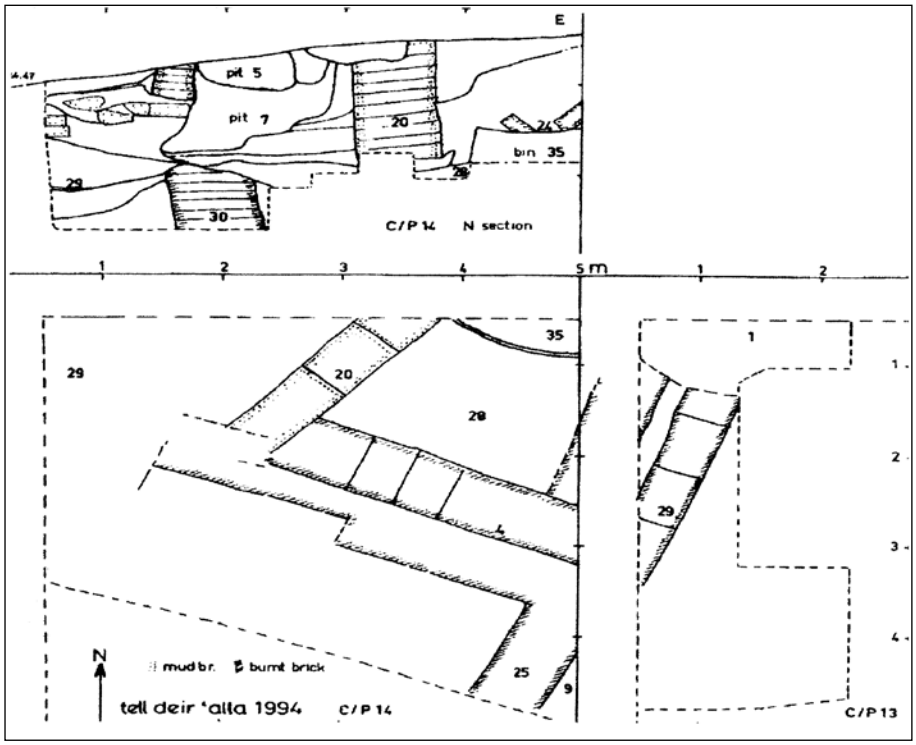
Furthermore, in 1994 two more squares (C / P13 and 14) yielded a complex of mud brick walls and burnt debris in their earliest phases. Both the roof debris and mud-bricks are heavily burned, giving them a red-brown colour (FIG. 16). Unfortunately, the floor of this building was not reached, but in the meantime fragments of corroded copper alloy, together with crucible fragments, may indicate metal-working activities nearby. The finds in this complex included a spindle, flint blade, basalt pestle, small haematite stone, large Egyptian clay-seal impression and a clay tablet. The excavators have suggested that this area functioned as a place for metal-working and storage (Ibrahim and Van der Kooij 1997: 108).

The 2000 and 2004 excavations at the foot of the tall, partly exposed an extension of the industrial activities discovered in 1994, and also a poorly understood mud-brick construction about 10m. wide and at least 10m. long, that was associated with the burned phase but which was not, for the most part, burned itself (FIG. 17). On top of this construction were the burned remains of a row of four thick pillars, spaced 70-80cm. apart from each other. Unfortunately the space behind them, to the west, remains unexcavated. To the south of this row of wooden pillars was a stone pavement with a step at

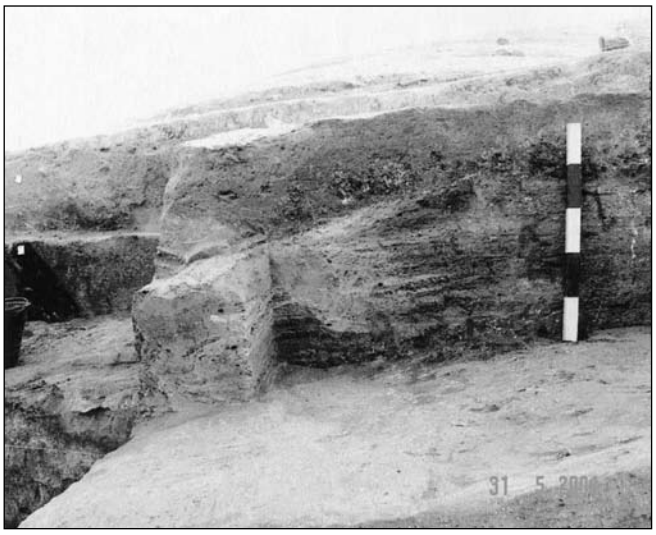


14. Reconstruction of the *breitraum* building (drawn by Ali Omari).

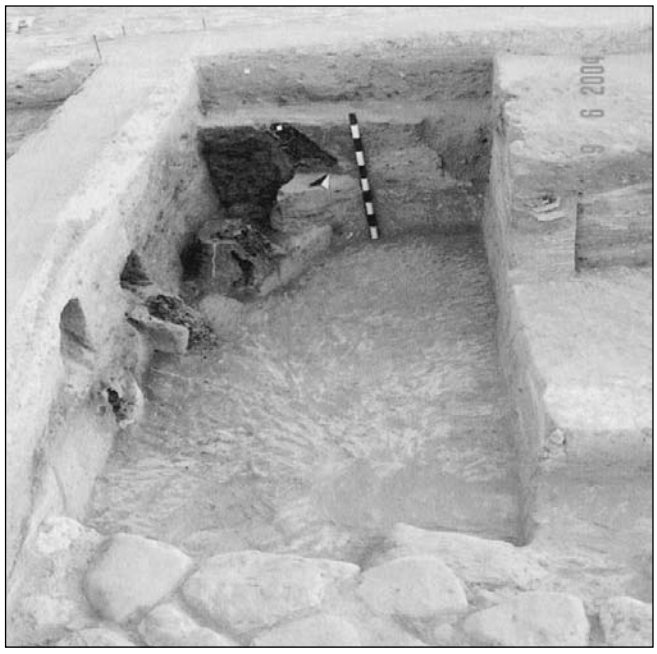
15. General view of the area of the south foot of the tall (photo by Yousef Zu'bi).



16. Plan of the excavated structures in Squares C/P 13 and 14 (after Ibrahim and Van der Kooij 1997).



17. General view of the burned phase at the south foot of the tall (photo by Yousef Zu‘bi).



18. General view of the four burned wooden pillars and the stone pavement south of them (photo by Yousef Zu‘bi).

its southern edge that leads to the top (FIG. 18).

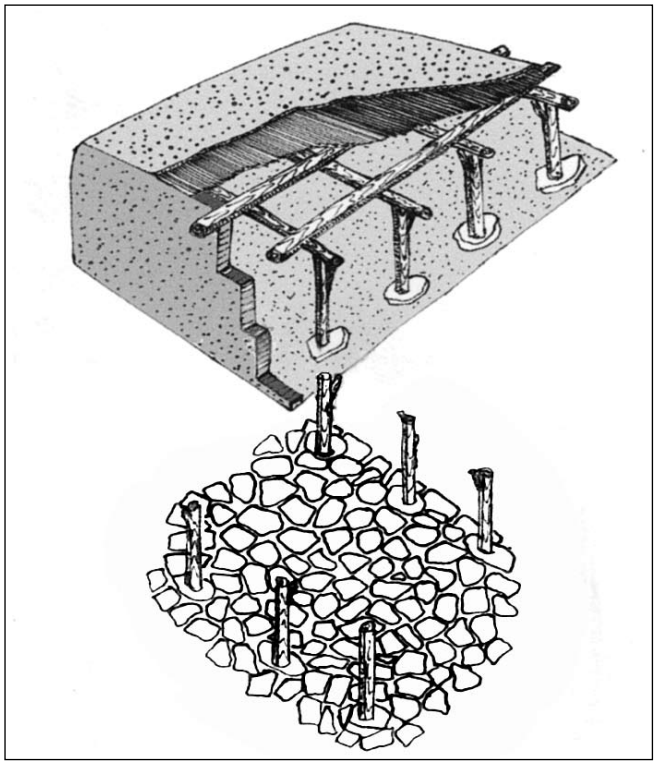
The plan of this building and its method of construction is indicative of the so-called ‘pillared house’, known from several parts of the ancient Near East. Despite the fact that the western part of this building still unexcavated, a tentative reconstruction is presented in Figure 19.

This type of building is dated to ca. 1250 - 1150BC (Herr 1997: FIG. 20); it seems that the house was destructed in a major fire.

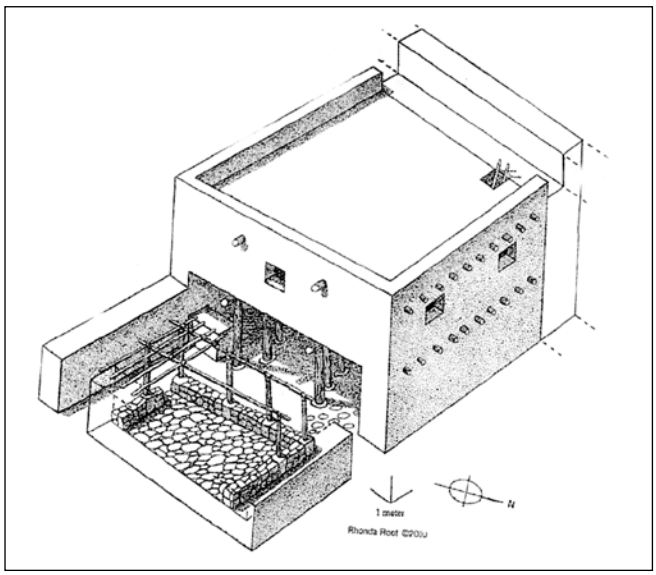
By way of comparison, several LB III / IA I sites in Jordan and Palestine have yielded architecture interpreted as domestic structures. In Jordan, the sites of Tall Irbid, Tall al-Fukhār, Tall al-‘Umayrī, Saḥāb, al-Lajjūn, Jāwā South, Mudayna al-Mu‘arrajah, Mudayna al-‘Ūlyah and Gharah have all produced buildings described either as ‘four-room houses’ or as ‘pillared houses’ (Kafafi

2002; Herr and Najjar 2001).

At Tall al-'Umayrī, a four-room house and a larger building have been excavated, yielding several objects inside them (Clark 2004; Herr 2000; Herr and Clark 2007). Two houses dating to the LBIII / IA I period were exposed within the city walls. One is a two-storey building, having the ground plan of a four-room house with pillar bases dividing the long room. Collared-rim jars were positioned along the side walls of the 'broad room'. On top of this LBIII / IA I construction was a store room dating to IA I. The excavator dates the house to the period 1250 - 1150BC (Herr 1997).



19. Reconstruction of the 'pillared house' at Tall Dayr 'Allā (drawn by Ali Omari).



20. Reconstruction of the 'pillared house' at tall al-'Umayrī (after D. Clark 2004).

The site of al-Lajjūn is located approximately 80km. south of 'Ammān, on the northern edge of the Wādī al-Mūjib. The excavator has argued that a pastoral group had settled in this fertile spot and established a village with casemate wall by the end of the second millennium BC. One of the excavated structures, measuring ca. 10m. in width by ca. 8m. in length, is of the so-called 'pillared-house' type. It was constructed at the summit of the north-western part of the site and consists of three parallel walls running north-south, which were interrupted by transverse east-west walls. The house consists of six rooms and had a single entrance in the east wall. It has been suggested that this 'pillared house', which has been dated to IA I, may have been the residence of a village *shaykh* (Homes-Fredricq 2000).

Conclusion

The LB domestic structures described above demonstrate that Tall Dayr 'Allā was a large site or a city by the end of the period under discussion. This contradicts the published results of the first excavations on the north side of the tall, which convinced H. Franken that it functioned as a place of ritual, serving transhumant groups who lived in the vicinity of the site.

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Judah Versus Edom in the Eastern Negev

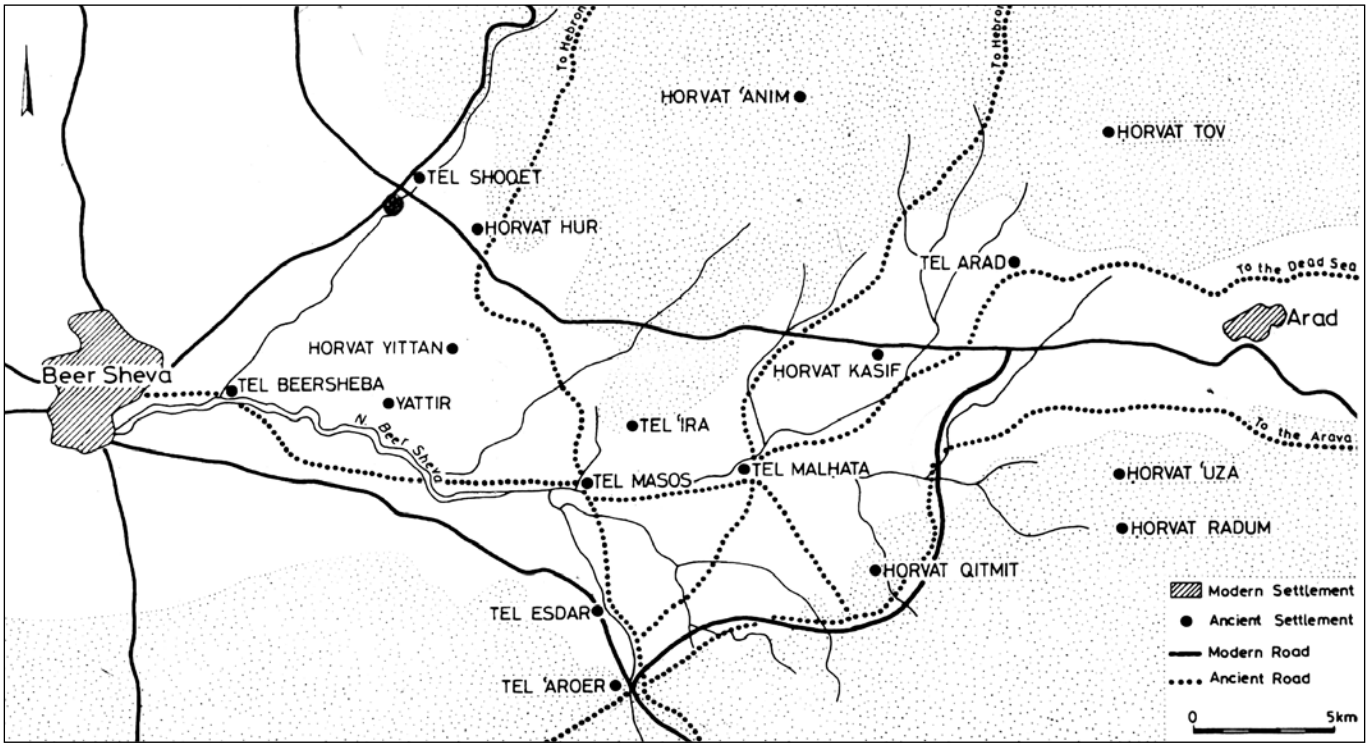
The quantity of Edomite material discovered at seventh century BC sites in the Beer Sheva valley, located in the eastern Negev desert in southern Israel, has greatly increased over the past few decades. Significant finds have been made at Arad fortress, Horvat Uza, Horvat Qitmit, Tel Aro'er and Tel Malhata (FIG. 1)

Arad

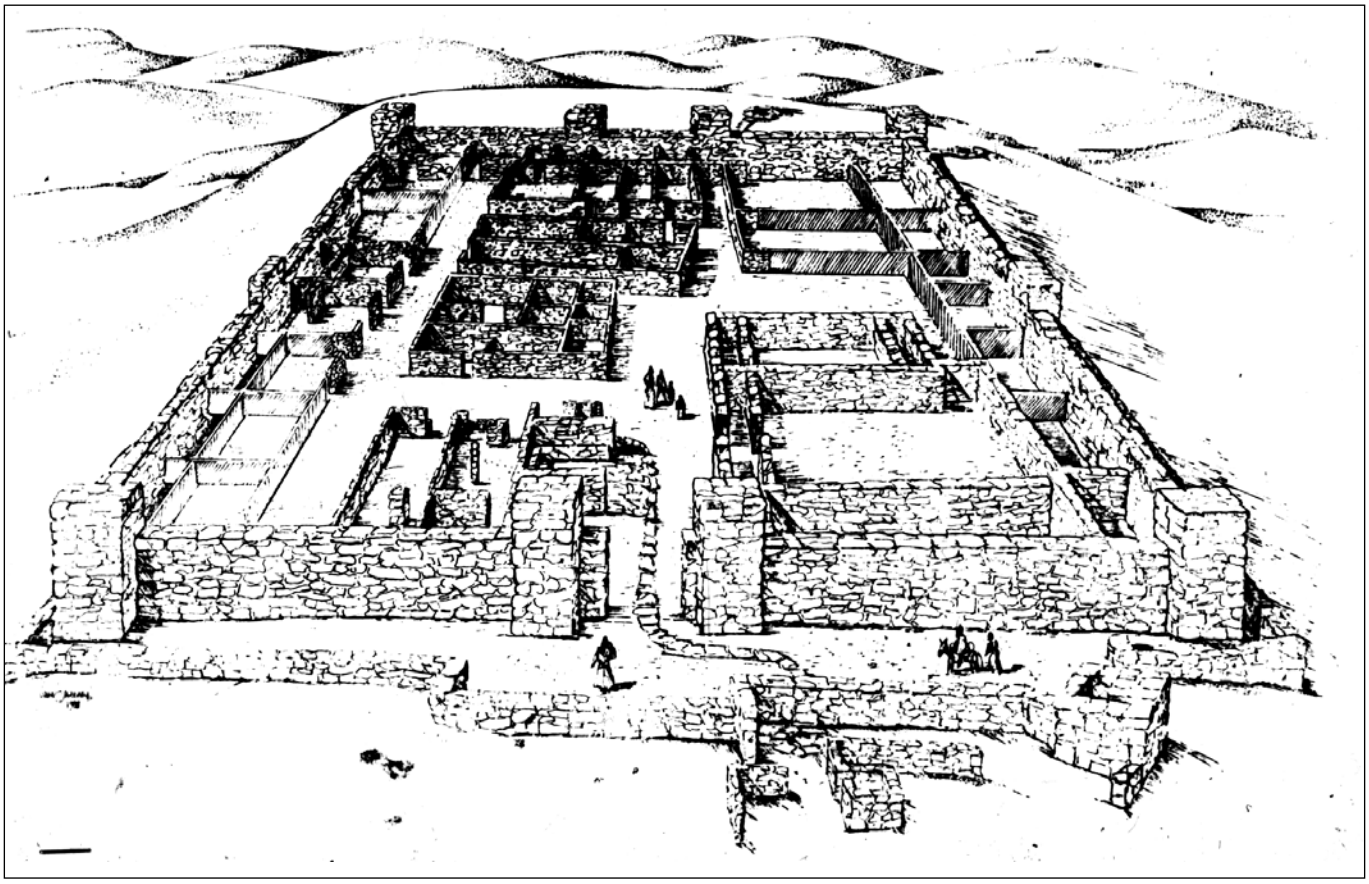
Two fragmentary Hebrew inscriptions (*ostraca*) discovered at this site in Stratum VI, which dates to the beginning of the sixth century BC, mention Edom as a political entity. In Inscription No. 40 (Aharoni 1981) we find "the letters from Edom" and "the evil that Edom has committed", while in Inscription No. 24 (Aharoni 1981) the commander of the fortress is ordered to send immediate reinforcements to a settlement called Ramat Negev "lest the Edomites come". It therefore seems that this settlement, apparently located close to the eastern border of Judah, was under threat of Edomite attack.

Horvat Uza

This is a towered fortress dating to the seventh century BC (Beit-Arieh 2007), located along the ancient road identified by Y. Aharoni (1958: 35) as the Biblical "Way of Edom" (FIG. 2). 35 Hebrew inscriptions (*ostraca*) were found at the site, including complete Edomite *ostracon* (Beit-Arieh 2007:



1. Map of Beer Sheva valley and excavated sites.



2. Horvat Uza: isometric plan of the fortress.

133-137) (FIG. 3). The latter comprises a letter of command sent from an Edomite personage bearing the name of *Imlk* to an Edomite named *blbl* living in the fortress of Uza; it includes a greeting in the name of Qos, the chief god of Edom.

3. Horvat Uza: the Edomite *ostracon*.

Horvat Qitmit

This is an Edomite shrine dating to the late seventh or early sixth century BC, located ca. 5km. east of Tel Malhata (Beit-Arieh 1995). More than 800 artifacts were found in the shrine, mostly of which were a cultic nature alien to the culture of Judah (FIG. 4). These items include various human and animal figurines, anthropomorphic stands, stands adorned with human and animal figurines, cultic bowls, a macehead with three horns, seven fragments of inscription incised on pottery sherds — some bearing the theophoric name of Qos (see above) — and a seal with the inscription *lsbnqos* (leshubnaqos). Sherds of decorated Edomite vessels were also recovered, as were Edomite cooking pots, which made up most of the pots unearthed at the site. Petrographic analysis has demonstrated that although the cooking pots were produced in the region of Edom, the iconographic objects and stands were produced from local clay sources in the eastern Negev, suggesting that these artefacts were made by Edomites inhabiting that same region.

4. Horvat Qitmit: artifacts from the shrine.

Tel Aro'er

Excavations were carried out at this site between 1975 and 1982 by the Israel Department of Antiquities and Hebrew Union College. A large quantity of Edomite pottery was found in a stratum dating to the seventh century BC, as were two Edomite inscriptions: (1) a seal bearing the name *lqosa*, the Edomite god Qos, and (2) an *ostracon* fragment written in Edomite (Biran 1993). During an advanced stage of processing the finds from the excavation, which was recently carried out in advance of final publication, large quantities of additional Edomite pottery were also registered.

Tel Malhata

According to excavations conducted at the site, Tel Malhata was a major city in the Judean Negev that flourished during the eighth and seventh centuries BC. During the course of the seven seasons of excavation that took place up to 2000 (Kochavi 1993; Beit-Arieh 2008), large quantities of Edomite pottery were uncovered, including vessel types known from the site of Buṣayrah in Edom. The Edomite material also included *ostraca* and a ceramic figurine depicting a male figure playing a two-caned flute. The shape of the face and the production technology of the figurine are identical to those of a goddess figurine from Qitmit, suggesting they were both produced in the same workshop (Beit-Arieh 1995: 315) (FIG. 5). Excavations at this site, like those at Horvat Uza, were conducted jointly by Tel Aviv University and Baylor University.

As well as the above-mentioned sites, so rich in Edomite finds, we should also mention two sites located nearby but outside the Judean Negev: Tall al-Khalīfah and 'En Hazeva.

Tall al-Khalīfah is located on the Gulf of Eilat coast and was excavated between 1938 and 1940 by N. Glueck. Stratum IV, dated to the seventh century BC, has been identified as being associated with an Edomite fortress (Pratico 1993). As well as Edomite pottery, Edomite inscriptions were also discovered here (Glueck 1971), reflecting Edomite control of the fortress during this period.

'En Hazeva, is located in the central Aravah along the Edomite border. The site was excavated by the Israel Antiquities Authority project (Cohen and Yisrael 1995) and has not yet been published in final form. The excavators have described the discovery of Edomite pottery in the final phase of the fortress, dated by them to the seventh century BC, and an Edomite seal bearing the inscription *imskt* (son of) *vhzm*, probably an Edomite personal name. Outside the fortress, near the eastern fortification wall, the remains of an Edomite temple were exposed, with a *favissa* containing small altars, anthropomorphic stands and broken cult vessels of the same type and shape as those found at Horvat Qitmit.

In light of the Edomite finds from the eastern Negev described here, a number of questions arise regarding their interpretation. Do these finds represent trade, or the quiet penetration of an Edomite population? Are they physical traces of Edomite caravans that plied a trade route crossing the Beer Sheva valley that led to ports on the Mediterranean coast, or should they be interpreted as evidence for

5. Tel Malhata: Edomite figurine of a double flute player.

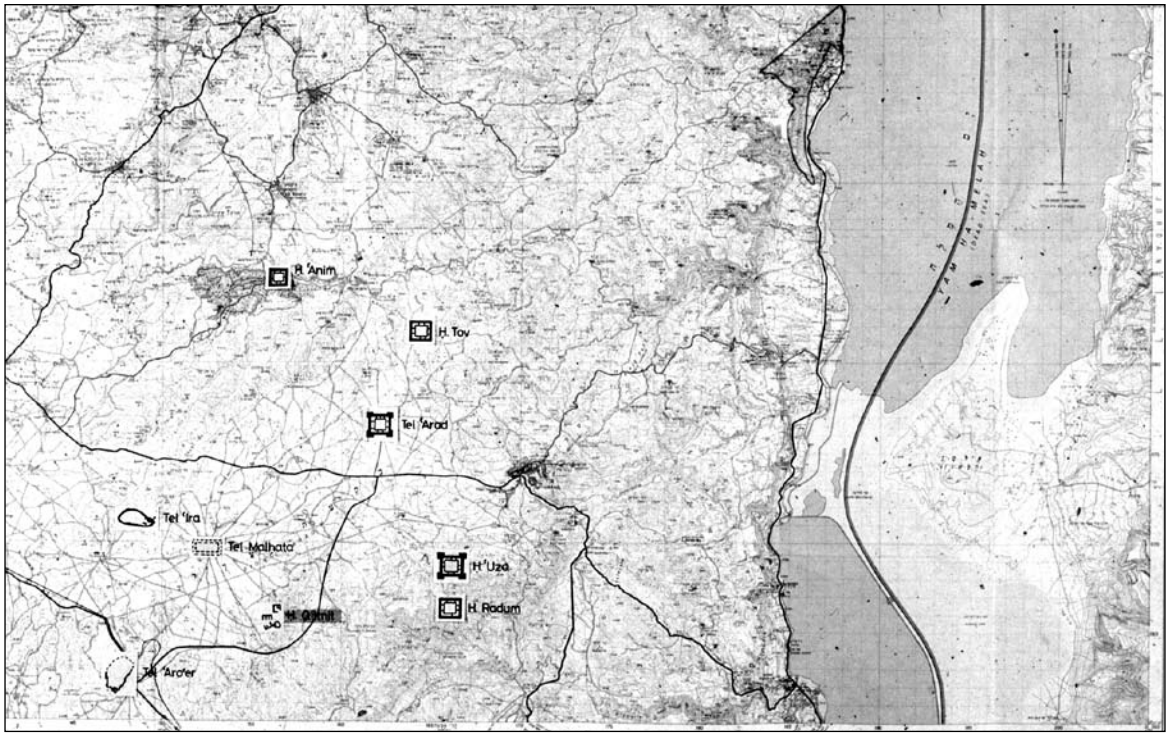
an aggressive Edomite penetration of Judah, with control of this important section of the trade route as its objective? It should be noted that all of the above possibilities have been mooted by various scholars and all, at the current stage of research, are entirely reasonable. A resolution must be based on clear historical or archeological data, or preferably both.

In my opinion, the facts seem to support the last hypothesis, that is an aggressive Edomite incursion for economic reasons. It would appear that Edom took advantage of the unstable political situation during the second half of the seventh century BC, which resulted from the weakening of Assyria, hiterto the major power in the region, and the subsequent lack of Assyrian control over the international trade route, as well as the preoccupation of Judah with the rising threat of Babylonian power. The evidence for this view is summarized below:

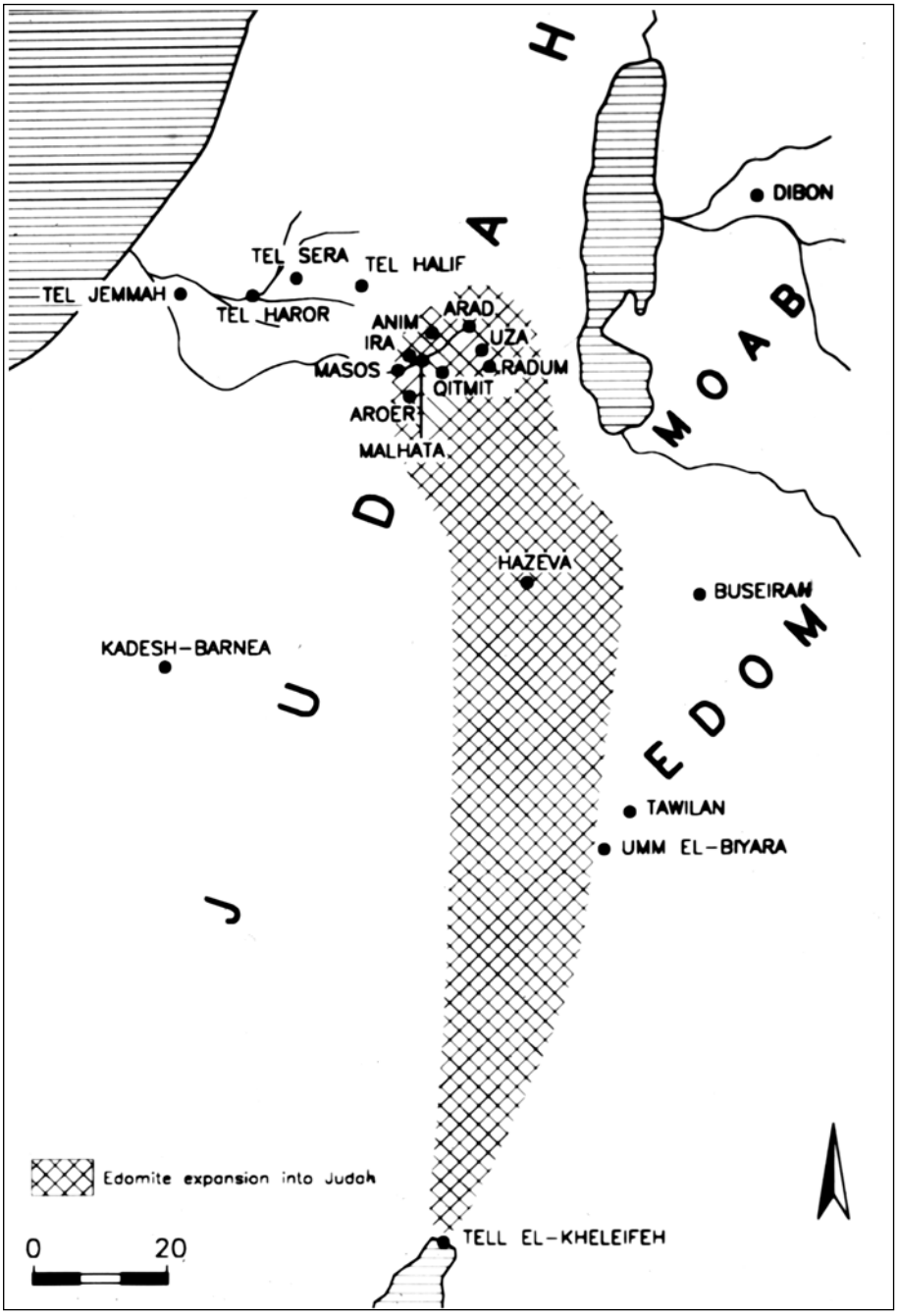
New fortresses were constructed in the region (Uza, Radum, Horvat Anim and Horvat Tov, as well as Arad which already existed), thereby creating a defensive line to the east (FIG. 6).

The existence of the Edomite temple at Horvat Qitmit, whose purpose was to fulfill the cultic needs of an Edomite population that had settled in the region.

The abundance of Edomite artifacts character-



6. Map of defensive line in the eastern Negev.



7. Map of Edomite expansion into Judah.

istic of a sedentary rather than nomadic population, including locally-produced pottery and cult items, and the presence of inscriptions indicative of a high level of culture among this population.

Ostracon 24 from Arad is a historical document expressing fear of an impending Edomite attack on Judah, i.e. "lest the Edomites come".

The deep enmity expressed in the Bible towards Edom, perhaps as a result of Edomite penetration of Judean territory.

In summary, a study of the settlement distribution map of the eastern Negev at the end of the Judean Kingdom reveals a significant strengthening of defenses in comparison with previous periods, emphasizing the direct relationship between the fortifications and the abundance of Edomite finds in the area. It seems that this defensive activity was organized by Judah to protect its territory against Edomite aggression. However, owing to political events elsewhere, Edom was able to realize its ambitions and successfully invade Judean territory (FIG. 7).

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From Jericho to Mount Nebo: Results of Recent Excavations of Conder's Circle

The Mt Nebo Survey has mapped the region around Jabal Nebo for archaeological sites in an area measuring 8km. by 8km. which includes two major wadi systems, Wādī Mūsā and Wādī 'Ayn Judaydah (Jadīdah). Megalithic monuments and dolmen fields are prominent features in the landscape, as already recognized by Colonel Conder when he surveyed the region of eastern Palestine in the late 19th century. In his report he described and presented drawings of many of the dolmens with details that are still recognisable today (Conder 1889). Among Conder's discoveries, one in particular was remarkable. Close to a large dolmen field located on the southern slopes of the Wādī 'Ayn Judaydah (Jadīdah), on a small spur, he observed a large circular structure which he described in the following way: (.. an oval platform surrounded by a rubble wall and divided into two irregular portions by a wall…). He was obviously puzzled by its shape and size. The platform resembled a large circle and measured more than 100 metres in diameter. Conder also contemplated its meaning, and he writes that the wall crossing the structure was oriented according to solstice indicating a ritual function of the monument. These were, however, speculations. The huge circle remained enigmatic.

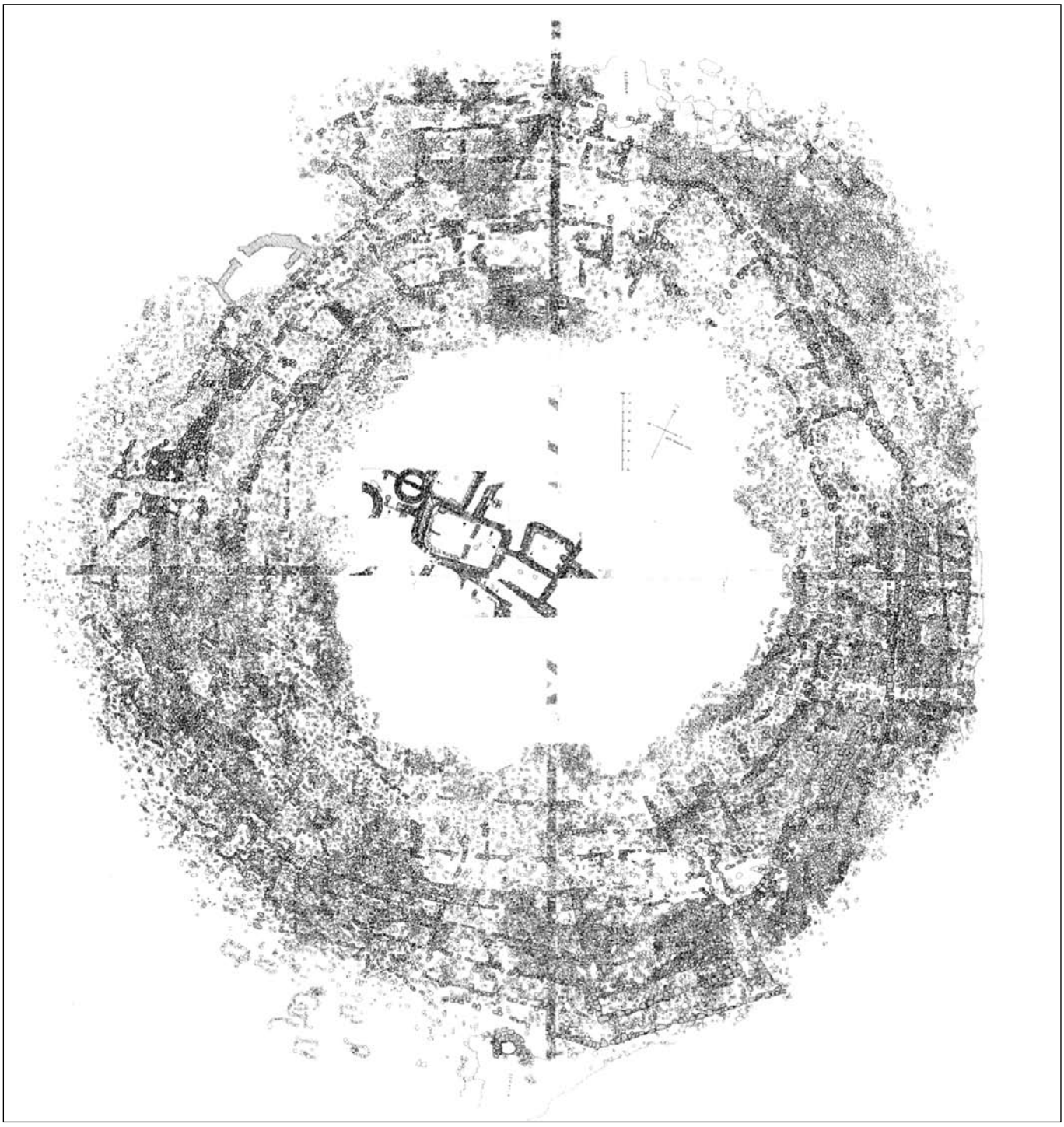
During the Nebo survey (Mortensen and Thuesen 1998) Conder's Circle still remained a challenge for our understanding of the settlement system of the region. Sherds and other artefacts collected on the surface pointed to a date contemporary to the neighbouring dolmen field. The site was mapped as MN 1, in some way indicating its archaeological priority in relation to other sites in the region. Therefore, it was decided that the monument should be closely investigated after the conclusion of the regional survey in 1999. This investigation included drawing a top plan and excavating test trenches in selected areas.

Four seasons of excavation and mapping of Conder's Circle have so far been carried out, beginning in 2000. Peder Mortensen has been in charge of the tedious and time-consuming work of measuring and drawing the entire structure (Mortensen and Thuesen 2004). The impressive result (FIG. 1) facilitates our continued work on the site and has revealed many of the architectural principles of the circular structure. Meanwhile small-scale excavations were carried out on the site in order to obtain a better understanding of its function[1].

The main objective of the excavations was to obtain insights into the function of the monumental circular stone enclosure. In the landscape today, the structure appears as a huge ring or enclosure of stones and boulders, which is most easily recognized from the surrounding hills and aerial photos. The structure measures more than 100 metres in diameter and has a thickness of 10-15 metres. Today it has a rather flat top with steep slopes on the outer side, especially towards the west, where the monument is not protected by steep wadis. The inner face slopes moderately. In many places fragments of walls could be observed on the surface of the enclosure and there was a clear indication of a protruding rectangular structure in the SE section.

The detailed measuring and plan-drawing of

[1] Inge Mortensen assisted in the mapping of the site. In the excavation the authors were assisted by Carmelo Pappalardo from the Franciscan Archaeological Institute and one or two local workmen. I wish to express my appreciation and gratitude to our Jordanian colleagues in the Department of Antiquities at 'Ammān and Mādabā, for always being helpful and supportive, and to the Franciscan Archaeological Institute at Nebo under the direction of Michele Piccirillo for many years of fine and productive collaboration and hospitality.



1. Conder's Circle.

the monument eventually produced an overview of the main principles of the structure by combining the many small sections of recognisable walls on the surface. In addition, two-one metre wide test trenches were cut N-S and E-W across the site and through its centre. In the trenches, excavations were completed down to any recognisable structures. The observations made in the trenches also supported the mapping of walls visible on the surface of the enclosure.

Inside the enclosure, the trenches revealed remains of thick-walled stone architecture, located primarily in the central and NW section of the enclosure. After this discovery it was decided to open

larger areas in 5 by 5 metre squares beginning at the very centre of the structure where the two trenches cross each other and where stone walls had been discovered. During two seasons of excavations more than 200m^2 have been opened up. The aerial photo shows the extent and position of the squares (FIG. 2).

According to the finds, the enclosure and most of the remains at the site dates back to the EBA I (ca. 3300-3000 BC). There has been some recent agricultural activity in the southern part of the enclosure, and during the Byzantine period a large wall was built across it. It is the remains of this wall that Colonel Conder recognised and which appears on his drawing. During the Byzantine period, the population apparently used the enclosure and divided it with a wall into a habitation area in the north with small fields in the south. The re-use of building stones and field clearance may explain why so little is left of the original EBA structures inside the enclosure.

As a main objective of the project was to understand the enclosure, the few overlying Byzantine remains were removed in order to obtain a better impression of the EB architecture. The results so far suggest that the enclosure and the associated architecture belong to one coherent phase of activity. The building located inside the enclosure shows only minor modification, such as dividing a larger room into two smaller units and re-use of earlier foundation walls. This interpretation is also supported by pottery and other small finds.

The walls of the building are constructed on a stone foundation of which only the lowest courses are preserved. There is no indication of how the superstructure was constructed in the areas exposed so far. The buildings were built on an uneven surface which has resulted in some variation of building and floor levels across the site. The large central room seems to have been dug down as a basement, but here the floors have not been reached. In other rooms, no clear floors have been identified so far owing to the limited preservation of the walls. The remains reveal a building composed of a number of rectangular rooms connected through doorways (FIG. 3). In some of the rooms there are large stones, probably supports for pillars carrying a roof. There are corridors and open areas. In the western part of the enclosure two large circular structures are located, one of them built up against the wall of the building. The contents of the circular structures did not yield any clear evidence of their function, but the shape and context of the structures are suggestive of their use as storage facilities.

2. Aerial photo of Conder's Circle showing excavated squares.

The architecture displays a number of characteristic features. The walls are built with two rows of stones forming the wall faces. These stones are normally 30-50cm. in size. Between these rows is a filling of smaller stones. The rooms have rounded corners and on the inside low benches are built along the walls. This tradition has facilitated our work in identifying outer and inner spaces. Doors are placed in the centre of the long wall and at the door sill the pivot stone for the doorpost is, as a rule, placed on the interior side of the doorway.

Of special interest are some stone-built features found in two of the rooms of the building. They are semi-circular structures built up against a wall (FIG. 4). The outer facings comprise large flagstones set on edge; inside the feature is packed with stone pebbles. One of the features was looted between two seasons and we therefore excavated the one found in 2005. It turned out to be empty. We concluded that the features functioned as small platforms or supports.

The most intriguing structure at the site is the monumental circular enclosure. The mapping of recognisable wall fragments on the surface combined with observations made in the trenches has made it possible to obtain a better understanding of the structure (FIG. 1). The enclosure is a highly complex construction, which is in fact is not round but polygonal. It comprises several concentric walls, built as stairs and with a wider wall on top. In the SE part there is a rectangular foundation, which is reminiscent of a tower. The entire enclosure represents a considerable investment and co-ordination

3. Remains of architecture found inside Conder's Circle. Doorways indicated with arrows.

of resources in order to separate the enclosed building from the outside world. The protective character of the enclosure walls is enhanced by using the natural topography of the area, by placing the site on a spur on the wadi slope, where it is protected on three sides by steep slopes and ravines. The monumental enclosure was a fortification that protected the enclosed buildings and their contents.

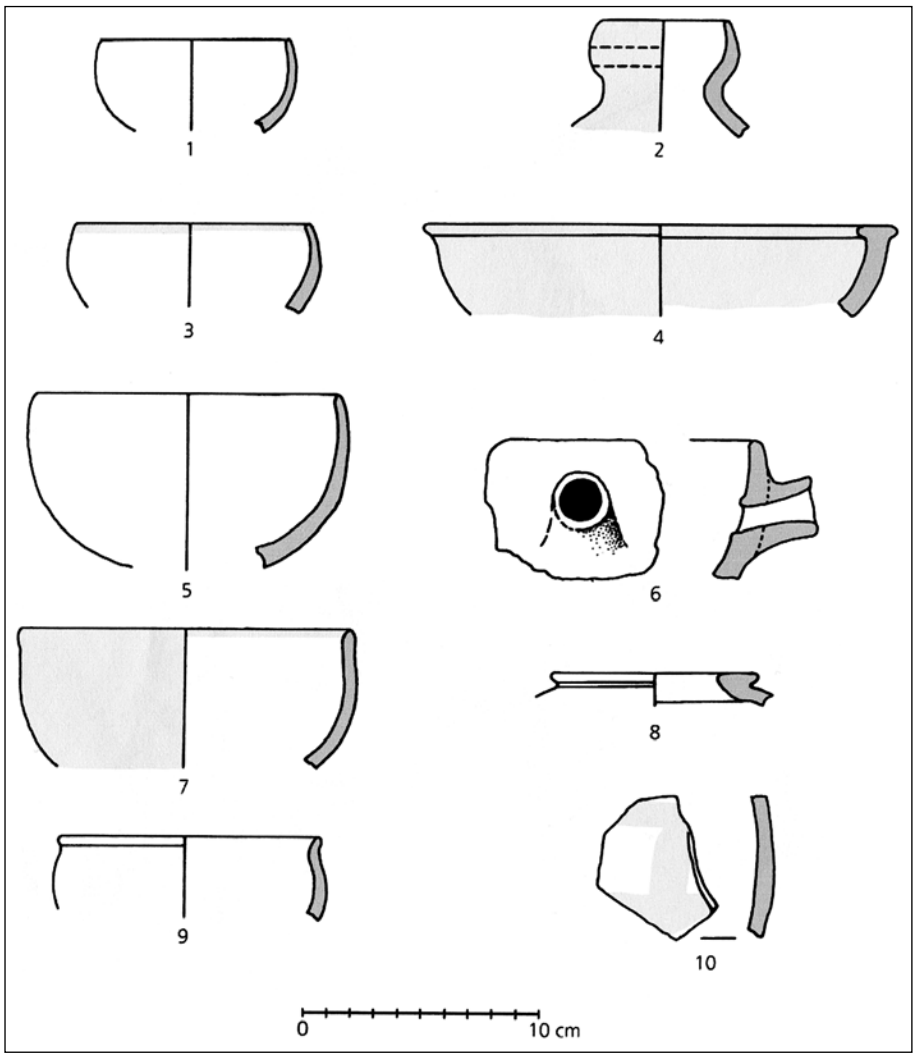
The most abundant artefacts are potsherds, which provide us with the most precise date for the site. Figures 5-8 show some of the typical shapes, which place the site within an EB I context, perhaps with a beginning in the very Late Chalcolithic period. The inventory includes both open and closed

4. Semi-circular feature in the central room.

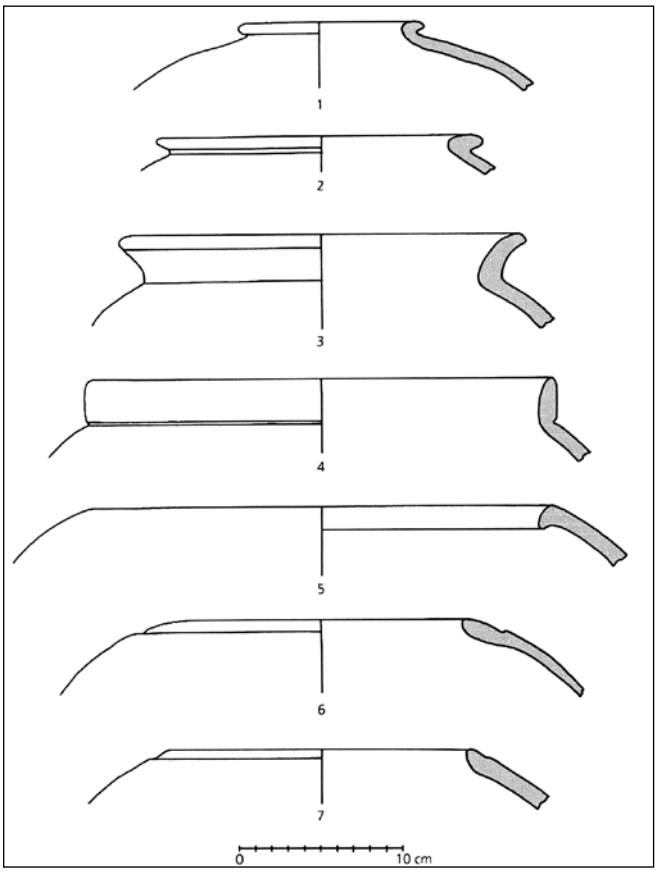
shapes. Very large storage jars were found broken in the fill of the large central room, indicating that this room had been used for storage. Another typical ceramic attribute is the ledge handle, which occurs in several variations. Normally the pottery is undecorated and coarse-tempered with small chips of flint. The surface shows many shades, ranging from buff-reddish to black. In a few cases there are traces of reddish-brown paint. Finger indented bands are applied to the large jars. Other diagnostic finds include fan scrapers of tabular flint and Canaanite blades. Fragments of basalt vessels were also recovered.

We have earlier argued that the finds from Conder's Circle place the monument within a regional system including a large dolmen field on the hill to the west and south of the enclosure, and a large village or settlement that was discovered during the survey and is located closer to the wadi and the spring (Thuesen 2004). This interpretation is now supported by finds from the excavation of the site.

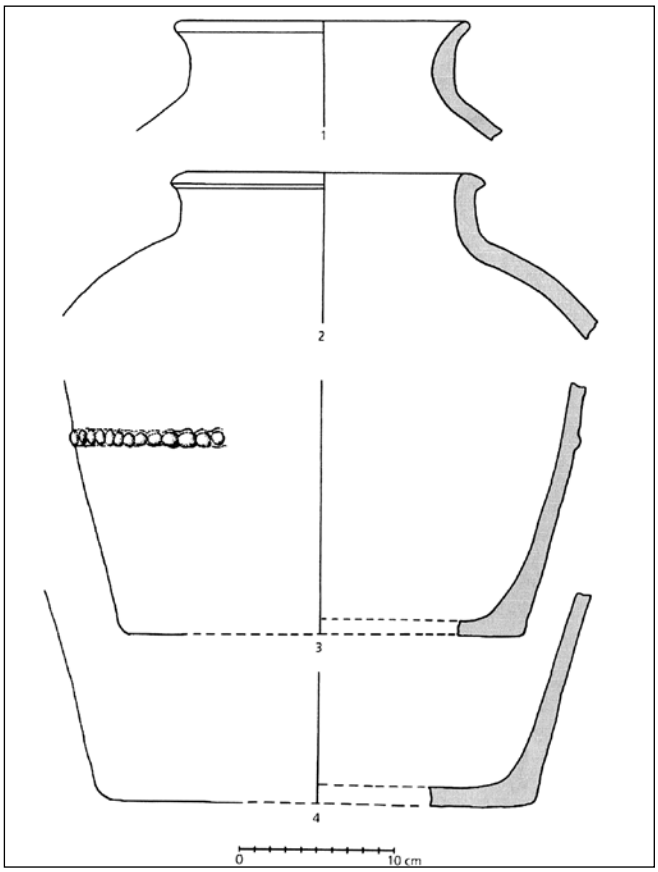
Conder's Circle is unique in its structure and position in the Judaydah (Jadīdah) wadi system, which connects the plateau and the Jordan valley. The finds demonstrate the presence of a substantial



5. Pottery, open shapes.



6. Pottery, closed shapes.



7. Pottery, storage jars.

population with an economic potential that allowed for the construction and co-ordination of a huge fortification that was probably used to protect agricultural products, as indicated by the round silo-like structures and the numerous large storage jars found in the large central room.

The Nebo survey has not only documented a large number of archaeological sites. It has also demonstrated that what might at first sight appear to be a topographically complicated and difficult landscape for human activity did not necessarily result in marginalisation. During the Late Chalcolithic and EBA, the Wādī Judaydah (Jadīdah) was an area of intensive human activity and settlement. The escarpment leading down to the Jordan valley was not a hinterland, but an important area of cultural activity.

Furthermore, we are now beginning to appreciate that the region also was part of a larger regional system, as newly released finds form Jericho have demonstrated. During Garstang's excavations in the 1930s, followed by Kenyon's discoveries in the 1950s, architecture was found at Jericho that shows close parallels with that from Conder's Circle, as recently suggested by the Palestinian-Italian expedition to Tall as-Sulṭān / Gerico (Nigro 2005: Pianta II and III), e.g. rectangular architecture with rounded corners, silos and interior benches along the walls (FIG. 9). It therefore appears that there was a direct cultural and material link between Jericho and 'Ayn Judaydah (Jadīdah).

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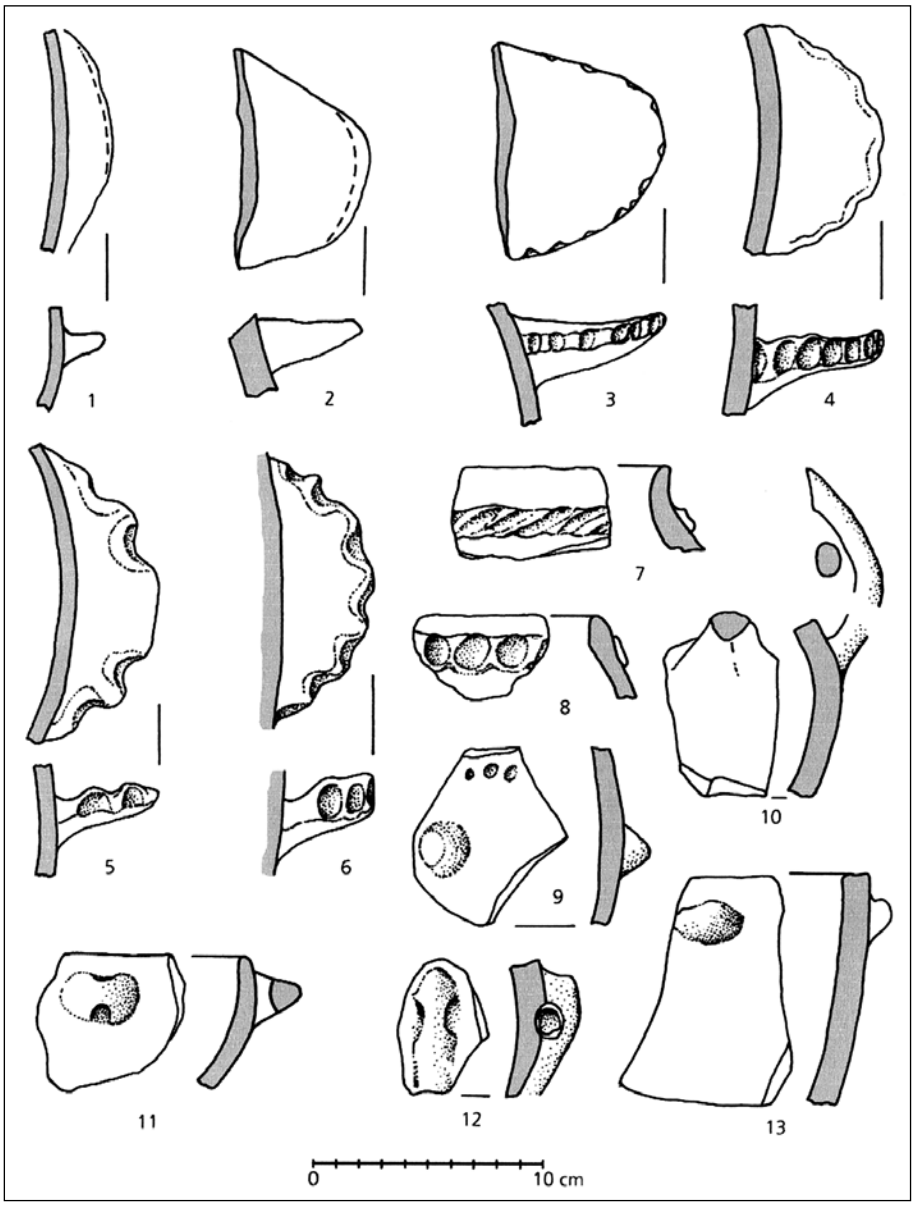
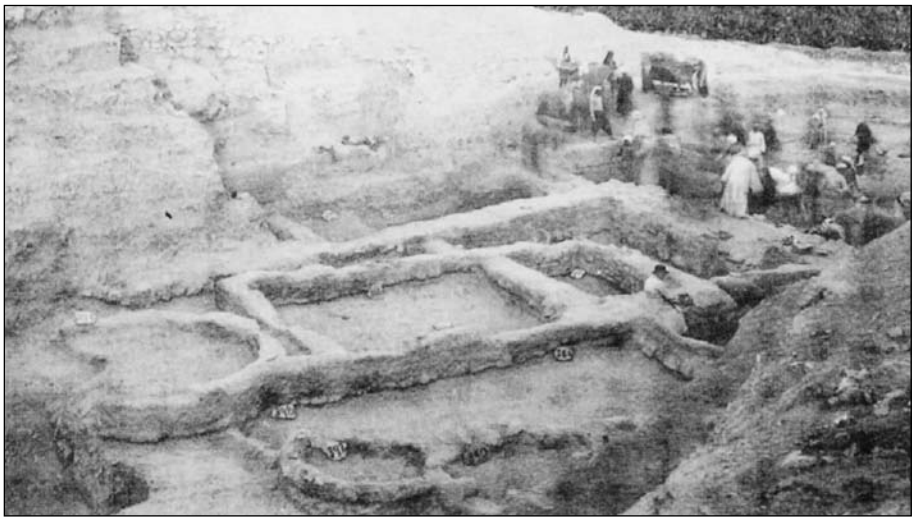


8. Pottery, ledge handles.



9. Architecture from EBA I Jericho (after Nigro 2005).

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Tall al-Fukhār 1990-93 and 2002

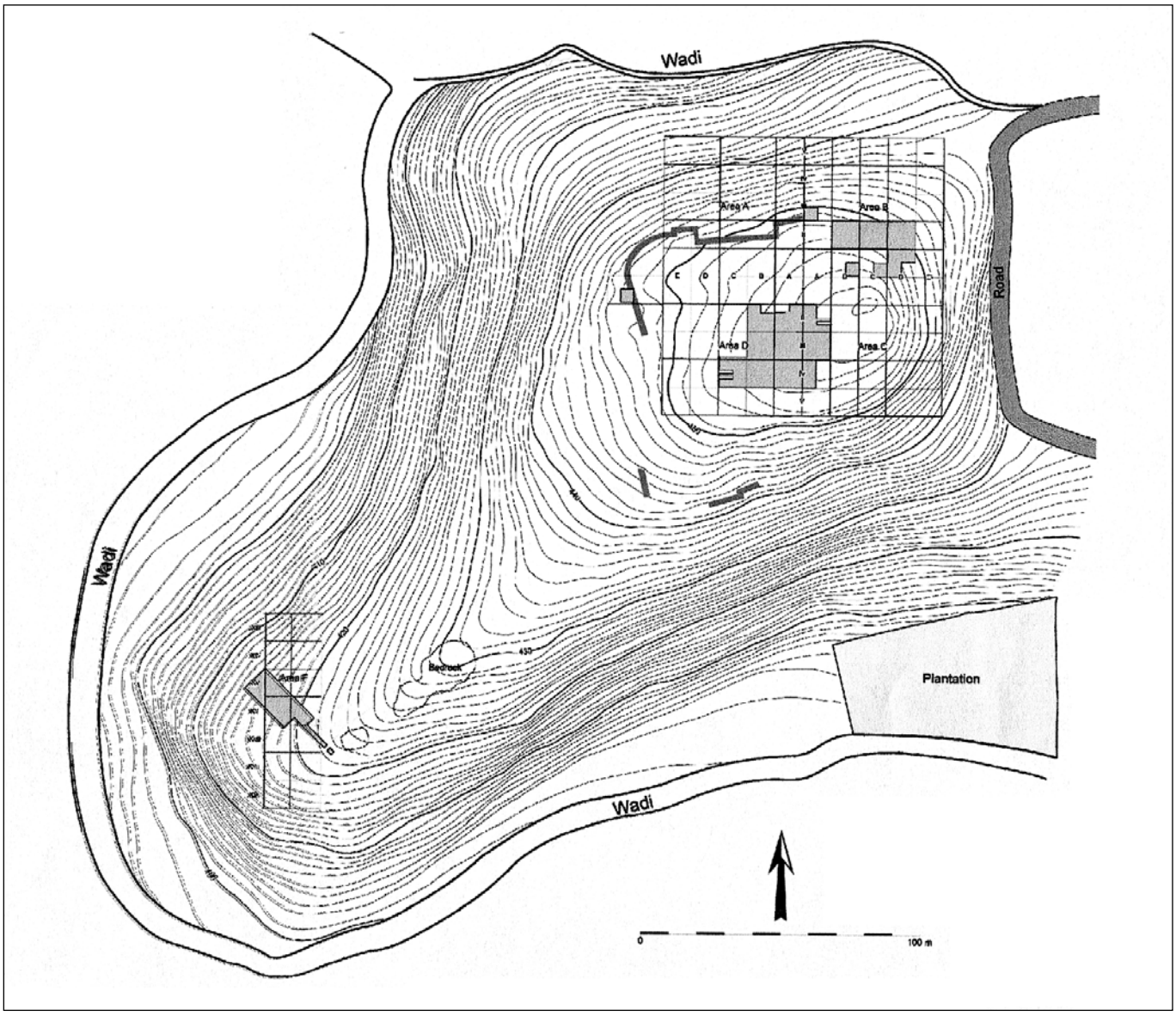
Tall al-Fukhār (PG 2397.2219) is situated on a spur into Wādī ash-Shallāl (Shallala), which cuts its way from south to north between Irbid and ar-Ramthā. It is one of a cluster of talls: Tall al-Subba, Tall Umm al-Riglen, Khirbat az-Zaraqūn and Tall al-Fukhār, which together testify to occupation at least from the Chalcolithic to the Byzantine periods, undoubtedly due to the nearby copious water source of ʻAyn ash-Shallāla. The site lies at the junction of the north - south route from Mesopotamia to Jordan and the west - east route from Tiberias to Derʻa. In the years 1990 - 93 a Scandinavian team under the direction of, first, Magnus Ottosson from Uppsala University and, later, John Strange from the University of Copenhagen conducted four campaigns at Tall al-Fukhār. A preliminary account of these campaigns was presented in 1995 at the Conference for the History and Archaeology of Jordan in Torino, by John Strange and Patrick E. McGovern (Strange 1997; McGovern 1997) (FIG. 1).

In subsequent years, while working on the material for publication, the necessity of a final campaign to clear up some problems was felt. This campaign was conducted in 2002. It was considered especially important to identify, if at all possible, the Early Bronze Age I settlement which was tentatively indicated by the presence of several EB I sherds in fills. It would also be important to find some Late Bronze Age buildings in addition to the palace and the wall system already located. As a 'dog leash survey' (Strange 1997: 400) had revealed a concentration of Early Bronze Age and Late Bronze Age sherds on the middle and lower part of the saddle, it was decided to excavate a trench from the top of the saddle down to the crest of the tall in an area (Area F) near to the wadi. The excavation produced a fine section showing all the layers in this part of the tall.

The site was initially chosen, partly at the instigation of Professor Mittmann who worked at Khirbat az-Zaraqūn on the other side of the wadi, and partly because Magnus Ottosson wished to find archaeological evidence of the Aramaeans who penetrated into the region after 1000BC. Magnus Ottosson concentrated on the fortifications at the north-west side of the tall (Area B) and tried to find the gate, while John Strange excavated a 10m. by 10m. trench at the highest part of the tall (Area C) from the modern ground surface to bedrock to determine the history of Tall al-Fukhār; this trench was widened considerably to the west and north (Areas D and A) in the upper layers. We identified stratified deposits dating — albeit with some breaks — from the Early Bronze Age II - III periods (possibly even from Early Bronze Age I) to the Hellenistic period. There was also some later activity, the most recent being a series of graves from 1932, when the local bedouin buried their dead on top of the hill after a battle with the inhabitants of Ramtha, and some shrapnel from 1971. The place is still visited by bedouin every year.

The earliest stratified deposits from the Early Bronze Age II were associated with a fine floor made of ashlars between two walls in Area C; however, our knowledge of it is limited by the size of the sounding, just 2 by 2m. square. Above it we found eight more EB II - III floors, testifying to a rich city culture contemporaneous with Khirbat az-Zaraqūn. However, because we found Early Bronze Age IB pottery in the fills, we believe that the town was founded in this earlier period and must be the 'mother tall' of Khirbat az-Zaraqūn, which was established when Tall al-Fukhār became too small for all of the activities undertaken there in the EB II period (FIG. 2).

In Square F V, we excavated an installation situ-



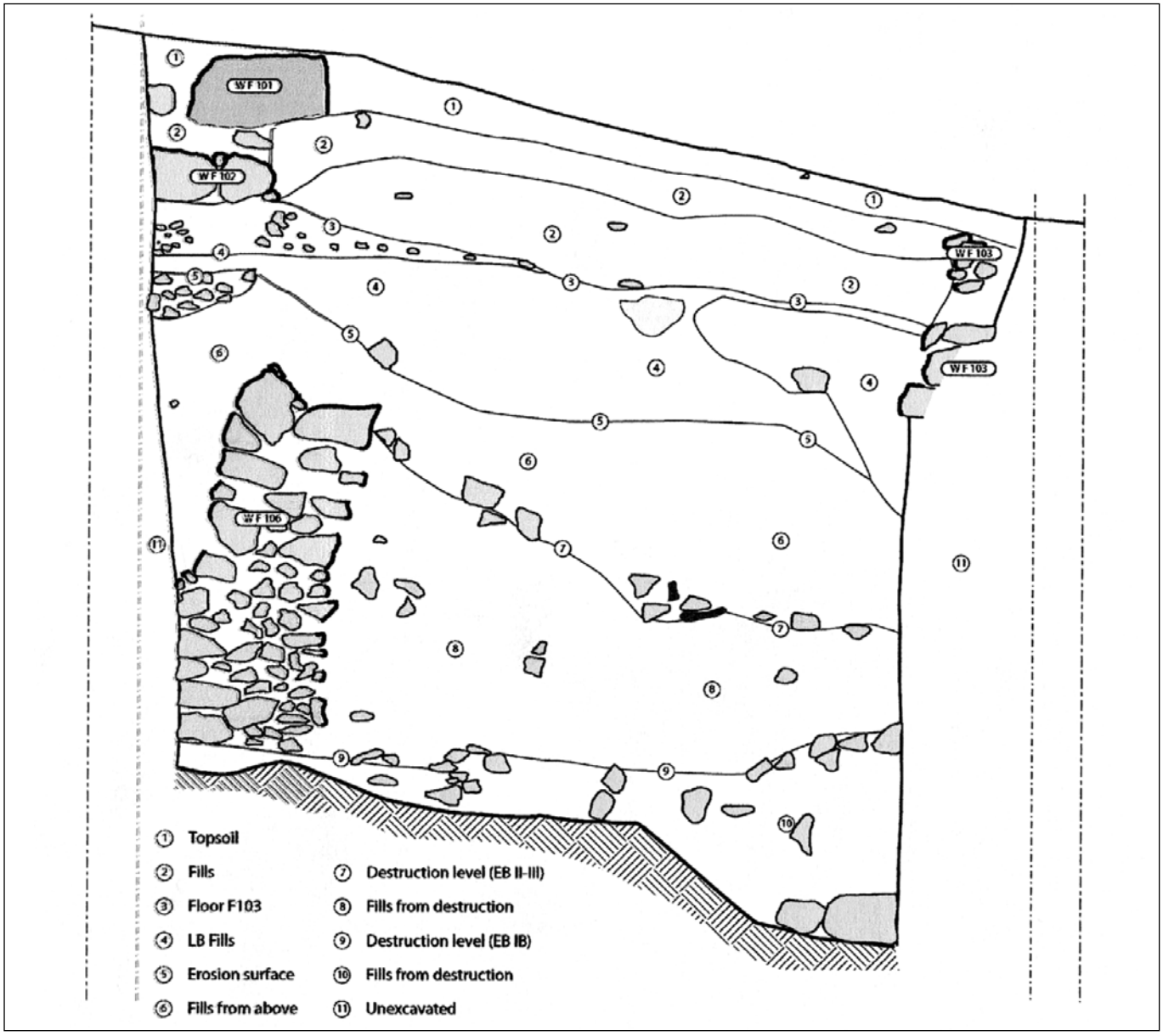
1. Tall al-Fukhār.

ated on bedrock — which must presumably be the earliest activity on the tall — comprising a wall of three stones and a floor, all lying under an EB II terrace wall (Wall F 106; the installation is not shown in the section). Although the pottery recovered there was too sparse to be dated, we presume that this installation was from the Early Bronze Age IB and corresponds with pottery found in fills elsewhere. Alternatively, it must date to the very beginning of the EB II - III period.

The abovementioned terrace wall was part of a series of parallel terrace walls built along the contours of the tall. These walls were constructed in preparation for building houses; we actually found two houses, some walls and a fine floor made of ashlars akin to the floor in Area C. Apparently the whole tall was built-up in the Early Bronze Age II - III, at the same time that Khirbat az-Zaraqūn flourished on the other side of the wadi.

At the end of the Early Bronze Age the site was abandoned as a permanent settlement but, on the basis of intermediate Early - Middle Bronze Age pottery, may subsequently have been visited by squatters, although we found no traces of buildings as at Khirbat az-Zaraqūn (Ibrahim and Mittmann 1986: 3-6).

After the intermediate Early - Middle Bronze Age, in Area C we found a grave with two Mid-

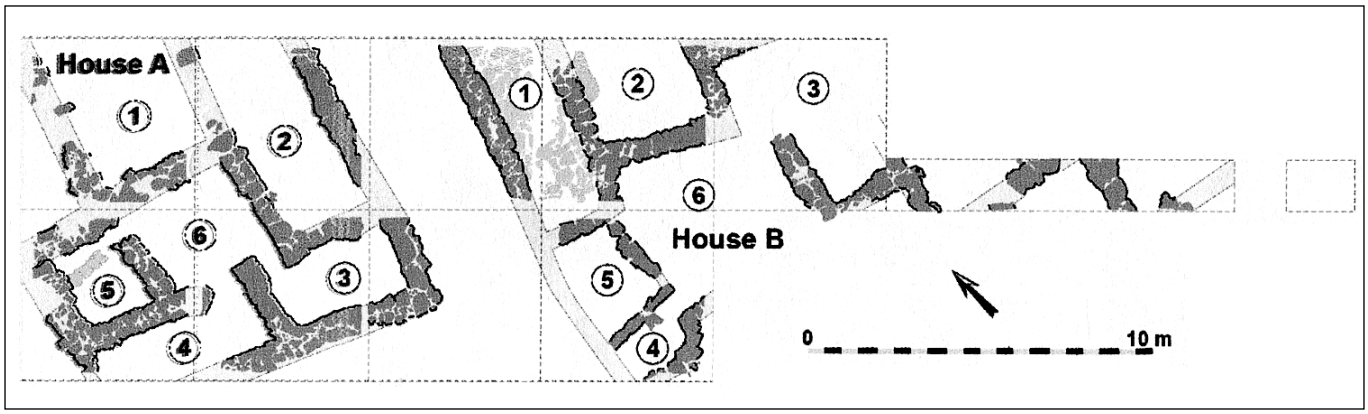


2. Section through Area F.

dle Bronze Age skeletons — a man and a woman — and possibly also some walls testifying to the presence of settlement in this period. At this time the lower part of the tall was probably used for agricultural purposes; we found no stratified deposits there, despite the presence of a fair number or sherds from this period. At the end of the Middle Bronze Age or in the transition to Late Bronze Age IA, new houses — part of a residential quarter — were built in Area F (FIG. 3).

The houses, *viz.* House A and House B, were found on each side of a street running along the contours of the tall. They were dated by the presence of a considerable amount of chocolate-on-white pottery, including a whole vessel, together with other LB I pottery. Even though we only found datable floors from the end of the Bronze Age onwards, the houses were all probably in use throughout the Late Bronze Age to judge from the pottery in the fills. That the houses were residential is indicated by the presence of querns, mortars, *ṭābūn*(s) and other utensils.

The presence of a few collared-rim jars used as ṭābūn, a characteristic marker of the Late Bronze and Iron Ages — including Iron Age IA and IB on the top of the tall — could be used to argue for



3. Houses from the Late Bronze Age.

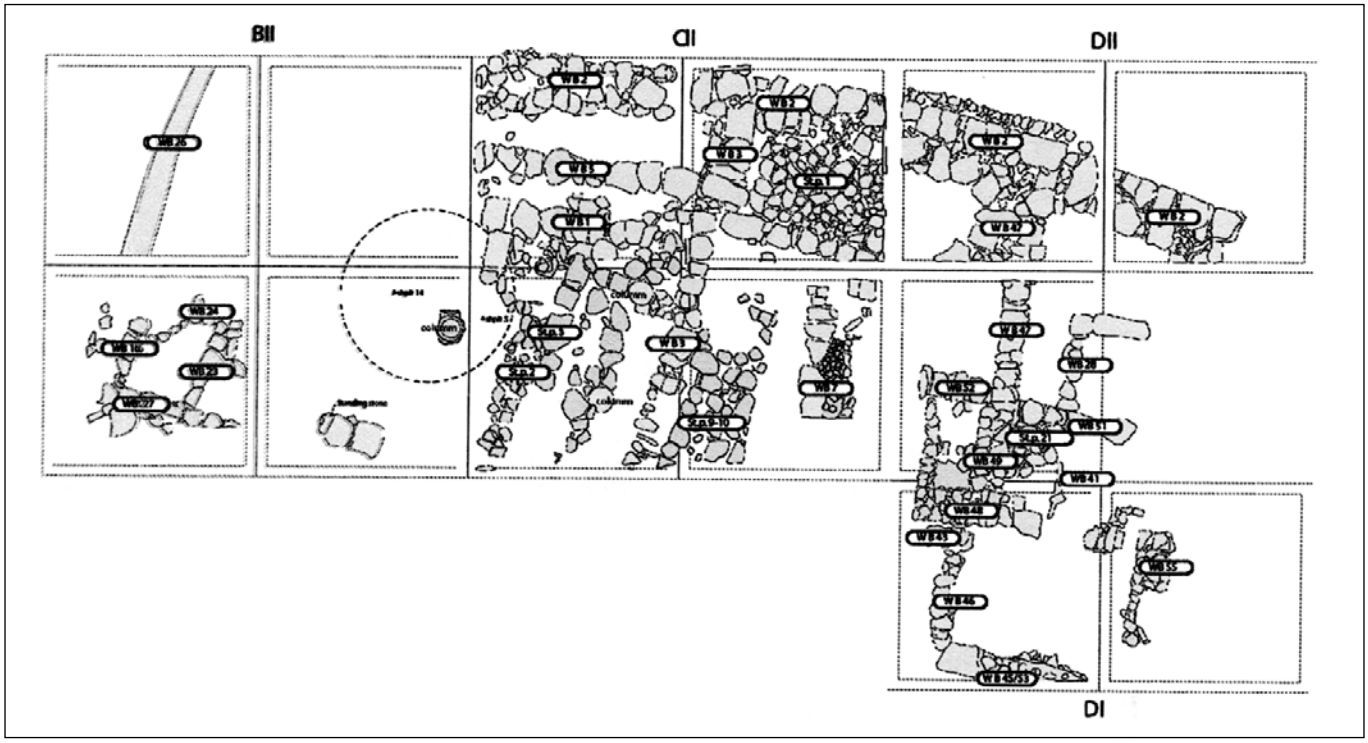
an extension of occupation into the Iron Age in this area, but more probably reflects the presence of squatters in the ruins of the buildings after the Bronze Age, when the slopes of the tall was used for agriculture by the inhabitants of villages on its top.

In Area C we found a large palace dating to the Late Bronze Age IIB, with some chocolate-on-white sherds and imports from the north in the destruction layer demonstrating that it had a Late Bronze Age I - IIA predecessor (Strange 1997: 403). The palace was at least 25m. long and was situated along the southern crest of the tall, with a courtyard in front of it. It was built on massive foundations of large stones with walls of mud-brick; it had an upper storey, which crashed down when the building was destroyed around 1200BC. The entrance to the palace was slightly set back from the facade, with a finely made staircase and strong 'tower', perhaps a kind of primitive Bit Hilani. It was not, like so many other buildings in Jordan, an Egyptian-style governor's residence; still it is tempting to associate the palace with the re-assertation of Egyptian power in the Rameside period, which is testified to by the Egyptian stelae found nearby (Strange 2001: 295) and the possible identification of the site with Zarqu from the Amarna letters proposed by Jens Kamlah (Kamlah 1993). Apart from its sheer size, the finds in the debris of the palace were also interesting and included imported wares from Mycenae and Cyprus and heirlooms from an earlier period, among them a small female figurine pendant of glass showing a nude pregnant goddess of the Hathor-type, together with other imports from Mesopotamia. The palace was contemporary with the massive city wall and a possible gate at the northern side of the tall.

In its last phase, the palace was inhabited by squatters and was finally destroyed, probably as a result of earthquake. Immediately above it, with foundation trenches cut into the palace walls, we found a village dating to the transitional Late Bronze - Iron Ages, with another village of different layout on top of it; both villages shed light on this period. In the gate and wall area of Area B, the walls were overbuilt over by floors made of large stones and houses, which re-used Bronze Age building components. This village was abandoned in the 11th century BC (FIG. 4).

After a hiatus of more than 400 years, the tall was occupied again, this time in connection with a possible Persian government installation with some buildings and a great number of stone-lined silos. Unfortunately these were all empty so the purpose of the complex remains obscure. The lower part of Tall al-Fukhār was used for agriculture; this is demonstrated by terrace walls being built partly on Late Bronze Age house walls along the contours of the tell, probably during the period when the possible Persian government building occupied the top.

In the Hellenistic period, Tall al-Fukhār was dominated by a large Hellenistic villa with 16 rooms, some of which had fine floors made of cobbles covered with mud-plaster, or even ashlars, all set around a courtyard and built on the walls of an earlier Hellenistic settlement (Strange 1997: 406). In connection with the villa, we found two dumps where locally-produced Hellenistic pottery — derived from the Iron Age / Persian pottery — was mixed with fine Hellenistic tableware from the third century BC. This may give us a better date for the local Iron Age IIC and Hellenistic pottery and result in a better understanding of the Ptolemaic period in Jordan as a whole (TABLE 1).



4. Area B; building elements from the Early Iron Age (pl. 2,4,1).

TABLE 1. Main occupational phases at Tall al-Fukhār.

I	Early Bronze Age IB	3600-3050 B.C.
II	Early Bronze Age II - III	3050-2350 B.C.
II B	Intermediate EB - MB	2350-2000 B.C.
III	Middle Bronze Age IIA	1800-1500 B.C.
IV	Late Bronze Age I - IIA	1500-1400 B.C.
V	Late Bronze Age IIB	1400-1150 B.C.
VI	Transition LB - Iron Age (Iron IA and IB)	1150-900 B.C.
VII	Iron Age IIC / Persian Period	600 - 350 B.C.
VIII	Hellenistic Period	300 - 150 B.C.
IX	Post-Hellenistic Period (Roman - Byzantine)	150 B.C.-650 A.D.
X	Topsoil with graves from1932	650A.D.- Present
Area F		
A - I	Early Bronze IB	
B - II	Early Bronze II - III	
C - II B	Intermediate EB - MB	
D - III	Middle Bronze IIA	
E - IV	Late Bronze I - IIA	
F - V	Late Bronze IIB	
G – VI	Transition LB - Iron Age (Iron IA and IB)	
H – VII	Iron IIC / Persian Period	
I – X	Topsoil	

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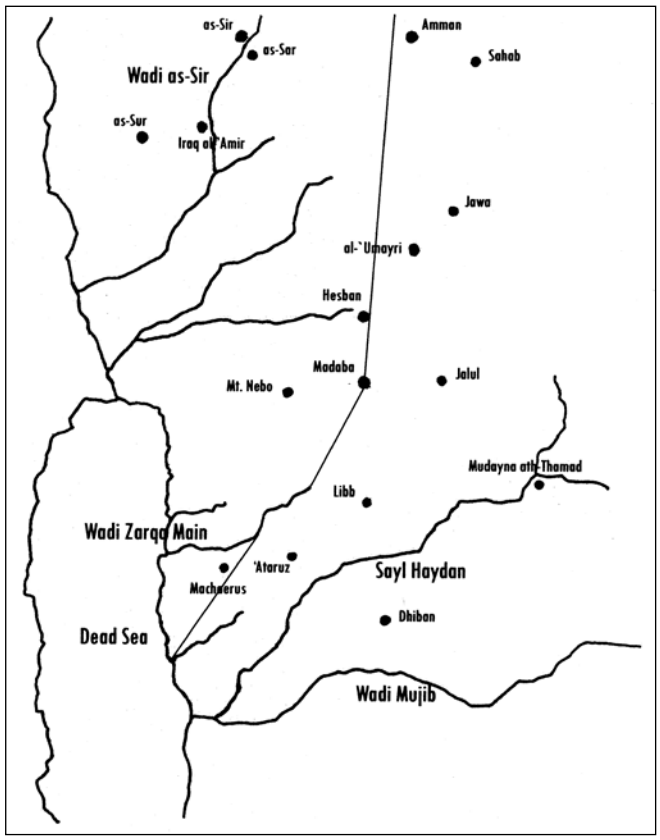
Drawing the Borderline: the Nabatean, Hasmonean and Herodian Kingdoms in Central Jordan

In the analysis that followed his extensive Transjordan survey, Glueck (1939; 1970) suggested that the border of the Nabatean kingdom ran from the north end of the Dead Sea to Mādabā, roughly along the course of the Wādī Zarqā' Mā'īn, and continued eastward to the desert. Examining the distribution of pottery in Transjordan, Glueck noticed the "complete" absence of Nabatean pottery in the region north of this east-west line. This observation, as illustrated in Figure 1, led to the thesis of "the Madaba line," which set the northern limit of the Nabatean realm at Mādabā. Once the Mādabā line was set up, Glueck (1939, 1970) proposed another thesis that the northern part of the Nabatean kingdom in Hauran and southern Syria was reached, not through northern Jordan, but through the desert route via the Wādī as-Sarḥān. This thesis later led to the view that the area north of the east-west Mādabā line constituted Hasmonean-Herodian Parea and the confederation of cities called the Decapolis, and that this confederation served as a buffer zone between the Hasmonean-Herodian state and the Nabatean kingdom (Abel 1938; Freyne 1980; Smith 1966; Spijkerman 1978; Will 1985).

Needless to say, Glueck's thesis of the Mādabā line provided a foundation for the subsequent debate over the northern limit of the Nabatean state. According to recent scholarship, contrary to Glueck's proposal, the Nabateans were present in the region north of 'Ammān, and Nabatean communities in the Decapolis cities provided the basis for a direct route to the Hauran from southern Jordan (Gatier 1986; Graf 1986). In a similar fashion, scholars suspect the credibility of the buffer-zone thesis on the basis of the Jewish settlements in the Decapolis and the continuous Jewish-Nabatean conflicts in the region (Graf 1986; cf. Avi-Yonah 1977; Tcherikover 1966).



1. Nelson Glueck's Madaba line.

The purpose of the present study is to revisit the enduring and intense controversy surrounding the limit of the Nabatean kingdom in central Jordan, centering on Glueck's thesis of the Madaba line, i.e. the border between the Nabatean kingdom and Hasmonean-Herodian Parea. Although there have been a large number of studies devoted to the questions of whether or not the Nabateans were present north of 'Ammān and what kind of relationships they maintained with the Decapolis cities, researchers have generally avoided examining the issues of where the boundary line lay between the

Nabatean and Hasmonean-Herodian kingdoms and how it changed during the course of Hellenistic and Roman periods[1].

This article proceeds in three parts in order to amend this research *lacuna*. The first section begins with a discussion of historical and textual evidence related to the north-western border of the Nabateans in central Jordan and thus the eastern limit of Hasmonean-Herodian Parea. The second section provides a review of archaeological findings related to the Nabatean, Hasmonean and Herodian kingdoms in central Jordan. The third section presents a comparison and discussion of historical and archaeological evidence. In the process, we promote an alternative to Glueck's "one-size-fits-all" thesis for the whole late Hellenistic and early Roman period. The discussion involves a historical division of the period into four stages and, in turn, describes how the borders between the Nabatean, Hasmonean and Herodian kingdoms changed during these stages[2].

Historical Evidence

The Mādabā Plains Region

According to historical evidence, in 129BC the Hasmonean king Hyrcanus I captured Seleucid holdings at Mādabā and Samaga in an effort to expand his kingdom to the east and gain commercial and military footholds along the King's Highway (Josephus' *Antiquities of the Jews* [hereinafter *Ant*] 13.9.1)[3]. The six-month siege of Mādabā clearly indicates that the city was situated outside of the Hasmonean control prior to this battle, despite their earlier victory over "sons of Jambri", probably members of a nomadic Arab tribe from Mādabā (1 *Maccabees* [hereinafter *Macc*] 9:35-42; *Ant* 13.1.2 and 4; for the Jambrites see Milik 1980; Harrison 1996a; Bowersock 1983). Mādabā appears again in the list of cities of Moab held by Alexander Jannaeus during his reign (*Ant* 13.15.4). In 76 / 75BC, however, Hyrcanus II offered Mādabā and Libb, along with ten other Hasmonean-held cities, to the Nabatean king Aretas III in return for his help in the civil war between Hyrcanus II and his brother Aristobulus II (*Ant* 14.1.4). Later, two funerary *stelae*, both of which are dated to the reign of Aretas IV, were erected at Mādabā and Umm ar-Raṣāṣ by a Nabatean military commander to commemorate his father and son (Claremont-Ganneau 1897; Harrison 1996a; Milik 1958).

The political history of Tall Ḥisbān appears to differ slightly from that of Mādabā. Ḥisbān seems to have been captured by the Hasmoneans during the reign of Hyrcanus I and remained under Has-

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[1] Having laid out the background and purpose of this study, it is timely to consider the potential meaning and nature of boundary in the ancient world taking into account both similarities and differences between ancient and modern times. Like modern states, Grosby (2002: 23) correctly points out, ancient kingdoms probably presupposed a conception of a territory that is not only bounded but also perceived to be somewhat contiguous within those boundaries. Besides, the ancient kingdoms presumably valued their territory as highly as do modern states and attempted to either preserve or expand it as much as possible.

Nevertheless, this boundary is likely to have been more ambiguous and fluid than is generally acknowledged in modern times. The principal contrast is a different level of transhumance across the political and geographical border; the ancient state borders did not serve to keep out general population as strictly as do the modern borders and thus, in antiquities, people could move from one state to another for various social and economic activities without much regulation or restriction (cf. Parker 1986). A consequence of such demographic fluidity is the possible existence of a compact territory, city, or fortress owned by one nation in the middle of the territory belonging to other states (cf. Ji 2002; Wahlin 1993). Presumably, the ownership of these "territorial islands" outside of the regular political and geographical territory was jealously preserved and protected by the state so that they could be inherited through the state political lineage.

A similar view may be posed about the late Hellenistic and early Roman period in central Jordan. Along with the preceding discussion, the author assumes that the geographical divide between the Nabatean and Hasmonean-Herodian kingdoms was perceived as important to both the Nabateans and the Jews in general and played a crucial role in the emergence and development of their kingdoms, although the across-border transhumance was relatively common in the ancient period, and the division along the border was much less conspicuous as measured by modern political and economic criteria.

[2] The author's sincere gratitude goes to Drs. Khairieh 'Amr and Jong Keun Lee who read and commented on the earlier drafts of this paper. They also brought some additional related literature to the author's attention. Yet, any errors or shortcomings in this article belong solely to the author.

[3] There is some dispute over the identification of Samaga with as-Sāmik. Most scholars identify it with as-Sāmik (Avi-Yonah 1977; Vyhmeister 1989). Yet, the Ḥisbān survey team visited as-Sāmik and collected sherds at the site three times in two different seasons, but failed to find any Hellenistic sherds. Hellenistic sherds were also absent at the sites in the immediate vicinity of as-Samik, which can be called "neighboring places." This fact raised the question of the identification of Hellenistic Samaga. As a result, Ibach (1987: 170) rules out as-Sāmik as a candidate for Hasmonean Samaga. However, recall that as-Sāmik includes early Roman pottery that is often hard to distinguish from late Hellenistic pottery. Furthermore, "neighboring places" do not have to be located in the immediate vicinity of the site. Notice that al-'Āl and Umm Sirab, two major Hellenistic sites in the region, are situated only 2 to 3km northwest of as-Sāmik. Accordingly, the author still considers as-Samik a good candidate for Samaga, although it is not improbable that it may be found at al-'Āl and Umm Sirab.

monean rule at least until the death of Herod the Great. The site was probably added to the Hasmonean territory in 129BC when Hyrcanus I captured Samaga and Mādabā (*Ant* 13.9.1; Vyhmeister 1989). Ḥisbān is also noted alongside Mādabā in the list of the cities of Moab that belonged to the Hasmoneans at the beginning of the reign of Alexander Jannaeus (*Ant* 13.15.4; Avi-Yonah 1977). However, the similarity between the two cities ends here. Unlike Mādabā, Ḥisbān is absent in the list of twelve cities that Hyrcanus II delivered to Arates III (*Ant* 14.1.4). This absence likely indicates that the city remained under the control of the Hasmonean rulers throughout the last days of the Hasmonean kingdom and into the beginning of the Roman period. This does not mean that Ḥisbān remained the same all the way through to the end of the early Roman period. Well after the death of Herod the Great, it is possible that Ḥisbān fell temporarily into the hands of either the Nabateans or of other Arab tribes since, during the early days of the first Jewish revolt, insurgent Jews sacked and attempted to capture the city of Ḥisbān and its district (Josephus *The Wars of the Jews* [hereinafter *Wars*] 2.18.1). This view differs from Avi-Yonah's alternative view (Avi-Yonah 1977: 77) that Ḥisbān was ceded by Hyrcanus II and retaken by Herod the Great after his victory over the Nabateans.

A couple of other facts also support this argument. First, during the early Roman period, Ḥisbān appears to have been a military colony of Herod the Great. In Josephus' *Antiquities of the Jews* (15.8.5), we are told that Herod selected some horse-men from his armies and settled them at Ḥisbān / Esbus. Second, this view is in accordance with the geographical division of the Mādabā plains into northern hilly and southern plateau regions. Both geographically and topographically, the Mādabā plains is clearly divided into a northern hilly and southern plateau area, and this sub-division is related to the settlement and political history of the region during the Iron Age and the Roman-Byzantine period (Ji 1998a). Traditionally, the southern plateau is a pastoral zone and thus has been inhabited primarily by nomadic tribes. In contrast, the northern hilly area constitutes an agricultural heartland with cities, small villages and farmsteads. This sub-regional division may also be applicable to the late Hellenistic and early Roman periods, during which the nomadic Nabateans may have controlled the southern plateau region, whereas sedentary Hasmonean-Herodian farmers settled in the hilly area of Ḥisbān and al-'Umayrī.

The 'Ammān-Wādī as-Sīr Region

The historical accounts of 'Ammān are quite different from those of Mādabā and Ḥisbān. First, in about 170BC, Jason — the Hellenizing Jewish high priest — was deposed and forced to flee twice into "the region of Ammanitis". According to *The Book of Maccabees* (2 *Macc* 4:26-27, 5:8-9), charges against him were laid before "Aretas, tyrant of the Arabs" and he fled again, this time to Egypt. MacAdam (1992: 31) identifies Aretas the tyrant as Aretas I, the Nabatean king. If this identification is correct, the implication is clear that the 'Ammān region was under the control of the Nabateans during the mid-second century BC. Second, two additional accounts in *The Book of Maccabees* (1 *Macc* 5:6-8; 2 *Macc* 12:17-19) also attest to the presence of Nabateans in the region. According to these accounts, Judas Maccabees attacked and captured Jazer and Charax, two cities in Ammanitis, both of which were under the command of Timotheus. Although the identity of Timotheus remains ambiguous, MacAdam and others suggest that he was a Greek *strategos* of Ammanitis in the pay of the Nabatean king (Bar-Kochva 1989; Goldstein 1976; MacAdam 1992). In addition, it should be recalled that Jazer and Charax are usually identified as Khirbat as-Sīr and Khirbat as-Sūr respectively (Avi-Yonah 1977; Goldstein 1983; MacAdam 1992). Given that this identification is plausible, the entire region of the Wādī as-Sīr and 'Irāq al-Amīr is likely to have been Nabatean during the early second century BC, after the death of the Tobiad Hyrcanus, but was soon turned over to the Hasmoneans during the early days of the Maccabean revolt. However, there is nothing to indicate that 'Ammān fell into the hands of the Hasmoneans; it appears to have remained firmly under Nabatean control throughout the period under discussion.

In addition to the Maccabean account there is Josephus, who in the year 135BC says that the 'Ammān region was under the control of Zenon Cotylas and his son Theodorus, "tyrants of Philadelphia" (*Ant* 13.13.3; *Wars* 1.4.2). MacAdam (1992: 31) suggests that they may have been Nabatean military commanders with Hellenized names. Once again, Josephus attests to Alexander Jannaeus' siege of Philadelphia, however the Nabateans withstood these attacks by the Hasmonean king (*Ant*

13.13.3; *Wars* 1.4.3). There is further textual evidence for the contention that Philadelphia and its vicinity were part of the Nabatean territory during the transition from late Hellenistic to early Roman periods. According to Josephus, in 65BC Aretax III besieged Jerusalem in order to intervene in the family quarrel about succession between Aristobulus II and Hyrcanus II. Pompey threatened a Roman invasion of the Nabatean kingdom unless the king withdrew his forces from Jerusalem. Arates III was terrified and retired from Judea to Philadelphia (*Wars* 1.6.3). This account suggests that Philadelphia was under the control of the Nabateans during the period from the mid-second century BC until the Roman invasion (MacAdam 1992).

This seems also to be the case during the early Roman period. According to Josephus' account (*Ant* 20.1.1-3), in 44 – 45AD the Judean procurator Cuspius Fadus had to settle a dispute between the Jews in Parea and the Nabateans in the city of Philadelphia regarding the boundaries of the village called Zia. Zia is commonly identified with modern Zay, several kilometers west of the city of as-Salṭ (MacAdam 1992: 33). At this point, it is worth mentioning Tall al-Jādūr, the best candidate for ancient Gadar, one of four capital cities of the Parea with its own toparchy. Tall al-Jādūr is located near the modern city of as-Salṭ, just a few kilometers south-west of the village of Zay. This fact, added to the previous observation, indicates that the as-Salṭ region was probably settled by Jewish residents and that the boundary between them and the Nabateans at ʻAmmān was located somewhere between ʻAmmān and as-Salṭ.

In contrast, the fate of the Wādī as-Sīr region — south of Tall al-Jādūr — remains somewhat vague during the early Roman period. In 31 BC, Herod waged a war in the ʻAmmān region against the Nabateans and took possession of a fort belonging to the Nabateans (*Wars* 1.19.5). MacAdam (1992) identifies this fort with Khirbat as-Sūr. However, in the author's view this identification is not without problem, since as-Sūr is situated within the boundaries of Parea, far to the west of Tall al-Jādūr and ʻAmmān. A better candidate might be Khirbat Sār near the modern city of Wādī as-Sīr, where the ʻIrāq al-Amīr survey team found copious early Roman pottery (Ji and Lee 2002). In this vein, it should be recalled that the historical sources are silent concerning Jazer, which was captured by Judas Maccabees in the mid-second century BC. This could mean that Jazer remained securely under the control of the Jews during the transition from the Hasmonean dynasty to the Herodian kingdom.

If Jazer and the unknown fort were respectively located at Khirbat as-Sīr and Khirbat Sār, an intriguing question arises: could it be that the upper stream of the Wādī as-Sīr was the boundary between Hasmonean-Herodian Parea and Nabatean Ammanitis during the period between the Maccabean conquest of Jazer and Herod's victory over Malichus I in 31BC? In light of the historical summary above, it is certainly possible. Indeed, it is more likely in view of the fact that Tall al-Jādūr, identified with Parean Gadar, is located north of the upper stream of the Wādī as-Sīr.

The Libb-Machaerus Region

The literary evidence that comments on the region of Machaerus and the Wādī al-Mūjib is also relatively abundant and clear (Piccirillo 1979; Strobel 1974). According to Josephus (*Wars* 7.6.2), Alexander Jannaeus founded a fort at Machaerus after stabilizing his control of the Wādī Zarqā' Māʻīn region. In 57BC, the citadel was demolished for the first time by Gabinius when Pompey waged a punitive war against Aristobulus II. Herod the Great rebuilt a strong fort at the site in 30BC, soon after he became king of Judea. Ancient historians and geographers are silent about what happened to Machaerus during the period of 57-30BC. However, in view of the fact that the Nabateans were most likely aiming for the territory west of the modern King's Highway during this period, it is not impossible that they extended their control into the Machaerus region after the Gabinius' victory over the Hasmoneans at Machaerus.

Upon the death of Herod the Great in 4BC, his kingdom was divided into three parts. Herod Antipas inherited the Machaerus region as part of Parea. Machaerus came under direct Roman administration following the death of Herod's nephew Agrippa (44AD) and was dismantled once again in 72AD, during the Jewish revolt against the Roman Empire (*Wars* 7.6.1-4). In the meantime, Herod Antipas fell in love with his cousin Herodias and had to divorce his legitimate wife, a Nabatean princess. Upon discovering her fate, the Nabatean princess went to Machaerus without informing Herod Antipas of any of her intentions and from there fled to her farther, Aretas IV, via Herodian fortresses in the Sayl Hīdān (*Ant* 18.5.1; Strobel 1997). Concomi-

tantly, we should not discount the possibility that Machaerus fell temporarily into the hands of the Nabatean ruler during the rule of Herod Antipas (Vyhmeister 1989: 12).

Two suggestions emerge from this textual exploration. The first point we can deduce is that the region of Machaerus was annexed into the Hasmonean realm no later than the reign of Alexander Jannaeus and to all intents and purposes remained part of Herodian Parea until the first Jewish revolt broke out. Nevertheless, this Hasmonean-Herodian occupation of the site was interrupted, possibly twice, by the Nabateans — once during the period 58-30BC and then again at some time before the first Jewish revolt in the first century AD. The second point is that the historical accounts strongly imply that the region of Hasmonean-Herodian Parea had a common border with the Nabateans somewhere near the gorges of Sayl Hīdān and Wādī al-Mūjib. This notion is based on the identification of Machaerus with Qal'at al-Mishnaqa and the location of Herodian fortresses in Sayl Hīdān and Wādī al-Mūjib (Piccirillo 1979; Strobel 1974, 1997).

What is unclear from the texts is whether or not Herod the Great ever recaptured the cities east of Machaerus, such as 'Aṭarūz and Libb, when he rebuilt the Hasmonean fort at Machaerus and fortified the surrounding area. We have no textual reference to what happened to the areas of 'Aṭarūz and Libb after Hyrcanus II handed Libb over to Aretas III. One scenario is that the 'Aṭarūz-Libb area was again incorporated within Herodian Parea late in the first century BC when Machaerus was rebuilt. Another scenario is that these cities remained within the bounds of Nabatean territory despite the Herodian advance toward Machaerus and Wādī al-Mūjib.

Archaeological Evidence

The Mādabā Plains Region

Having explored the historical record, we now turn to archaeological evidence. In 1993, Harrison (1996b) conducted a collection of surface sherds covering 166 squares, each measuring 50 x 50m., in order to understand changes in settlement patterns at Mādabā. Nabatean pottery was present in 22 squares and early Roman in 23 squares. The strong representation of Nabatean pottery in the survey posits that the early Roman settlement at Mādabā took place under the auspices of the Nabateans and that their occupation was both widespread and intensive. This view accords with the results from subsequent excavations that produced a wealth of Nabatean material evidence.

Additionally, we now have stratified evidence for the late Hellenistic settlement at Mādabā: a series of walls, at least two towers, various cooking installations and large quantities of pottery and coins (Harrison *et al*. 2000; van Elderen 1972). Ferguson (2002), based on his analysis of the archaeological evidence, credibly suggests that Mādabā was occupied during the late-second and early-first centuries BC and had "clear connections with the Hasmoneans" during the late Hellenistic period.

The relatively strong representation of Nabatean activity in Mādabā stands in contrast with the archaeological evidence from nearby Mount Nebo. Despite decades of excavation, there is no conclusive evidence for Nabatean settlement and activity in the Mount Nebo area (cf. Piccirillo and Alliata 1998). In similar vein, Gitler (1998) studied 157 coins recovered between 1969 and 1996, but his catalogue lacks Nabatean coins. In contrast, coins minted in the time of Alexander Jannaeus are common in the Mount Nebo area, indicating a Hasmonean presence in the area during the first century BC (Ji and Lee 2004).

On the other hand, excavations at Ḥisbān have discovered two settlement phases dated to the late Hellenistic and early Roman periods. Stratum 15 appears to have been a late Hellenistic military fort with a small number of buildings at the foot of the fortress. Mitchel (1992) relates this stratum to the Hasmoneans and dates it to the period of 198-63BC. According to a new interpretation, however, Stratum 15 is more likely to have been inhabited from the late-second century to the mid-first century BC, and the fort at the site appears to be associated with Alexander Jannaeus rather than his Hasmonean predecessors (Ji and Lee 2004). In conytrast, Stratum 14 appears to represent the early Roman period. Mitchel (1992, 1994) suggests that early Roman Ḥisbān was a small village around the Hasmonean fort on the summit of the site that was occupied by Herod's veterans. A further observation that supports the hypothesis of continuous Jewish settlement at Ḥisbān is the smooth and gradual transition from Stratum 15 to Stratum 14.

This point can be established more firmly once we take two additional findings into consideration. First, note the discovery of early Roman tombs with a rolling-stone door and interior individual loculi

at Tall Ḥisbān (Waterhouse 1994, 1998). This type of tomb is not only unusual in Jordan, but is also geographically associated with the Jerusalem area (Kritzeck and Nitowski 1980). To date, there is no hint that tombs with rolling-stone doors are found elsewhere in Jordan, especially in the Nabatean heartland of southern Jordan. This indicates that the early Roman settlers at Ḥisbān were closely associated with the Herodian Jews in the Jerusalem area, rather than the Arab and Nabatean tribes east of the Jordan River. Second, the ceramic corpus also points to the existence of a Herodian population at Ḥisbān during the early Roman period. According to Sauer (1994), early Roman pottery from Ḥisbān contrasts with contemporary ceramic assemblages from other sites in Jordan. The best parallels come from Qumrān, Masada, Machaerus, Khirbat al-Mukhayyaṭ and ʻIrāq al-Amīr. It is noteworthy that all these sites were part of the Herodian kingdom or Parea. The distinctive nature of the Ḥisbān pottery led Sauer to conclude that Ḥisbān was part of Herodian Parea, not Nabatea, during the early Roman period.

At Tall Ḥisbān, the 1968-74 excavations yielded more than 250 coins, including five Hasmonean and 19 Nabatean coins (Terian 1971, 1974, 1976). All of the Hasmonean coins, except for one from the time of Antigonus Mattathias, were minted during the reign of Alexander Jannaeus. All the Nabatean coins are assigned to either Aretas IV or Rabbel II. Of particular interest to us is the discovery of an Alexander Jannaeus coin from the bedrock surface associated with the late Hellenistic fortress (Mitchel 1992: 161; Terian 1976: 134), which gives a clue to the construction date of the late Hellenistic fortress and its relationship to the Hasmonean kingdom. Given the discovery of this coin, the early years of the first century BC could be regarded as a *terminus post quem* for the construction of this fortress, with Alexander Jannaeus as its builder. Equally interesting to us is the stratigraphic distribution of Nabatean coins; three coins came from Stratum 14 and seven from Stratum 13. No Nabatean coins were found in Stratum 15 and Stratum 12 (see Mitchel 1992: 161-163). One may argue that this relatively narrow distribution of Nabatean coins indicates the Nabatean connection with Strata 13-14. The virtual absence of ceramic and other artifactual evidence for Nabatean activity at Ḥisbān, however, still imposes limitations on the validity of such an interpretation for Strata 13-14 (Mitchel 1992: 64).

A potential analogy exists at Tall al-ʻUmayrī. During the late Hellenistic and Roman periods, Tall al-ʻUmayrī was a farming village with domestic buildings, semi-circular bins and several pits (Herr *et al*. 1999). The ethnic identification of this village stands out all the more clearly once the plaster-lined bath of Field A is taken into consideration. This bath is a typical example of the ceremonial bath known as *miqveh*, which was associated with the Jewish population during the late Hellenistic and Roman periods (cf. Reich 1990)[4]. The question of the exact date of the ritual bath at Tall al-ʻUmayrī remains unresolved. Originally, the excavators dated it to the early Roman period on the basis of the latest pottery associated with the installation (Herr *et al*. 2000; Lawlor 1991; personal communication with Douglas Clark 2001). A more probable explanation is that this installation belongs to the late Hellenistic occupation on the southern summit of the site (cf. Herr *et al*. 1999). The late Hellenistic remains cluster on the central and south sides of the summit, including Fields A, H, and L. Note that the bath was located in Field A. Similarly, it is noticeable that no early Roman architecture has as yet been uncovered at Tall al-ʻUmayrī, although Roman sherds are sporadically found on the surface. In any case, a Hellenistic date for the ritual bath is not easily dismissed as no definitive evidence is available; on the basis of its presence at the site, Tall al-ʻUmayrī appears to have been Hasmonean and Herodian in the late Hellenistic — early Roman period.

The Ḥisbān survey team visited 148 sites within a 10km. radius of Tall Ḥisbān (Ibach 1987). Sherds of the Hellenistic and early Roman periods were found at 21 and 57 sites respectively, with a heavy concentration in the region between al-ʻUmayrī and Ḥisbān. Nabatean evidence is noticeably absent in the survey area. Only two Nabatean sherds were found during the three seasons of surface exploration, both of which came from Tall Jalūl on the desert fringe (Ibach 1987). Equally noteworthy is the absence of Nabatean evidence at Tall al-ʻUmayrī and its surroundings. Despite years of extensive excavation, distinctive Nabatean pottery sherds were

[4] The author would like to thank Nachum Sagiv, who originally led his attention to the ritual bath at Khirbat ʻAṭarūz, and its historical and archaeological importance to the study of the Hasmonean and Herodian periods in Jordan.

not found anywhere in the al-'Umayrī survey region (cf. Herr *et al*. 1996, 1997, 1999, 2000). The al-'Umayrī survey team visited 140 sites within a 5km. radius of the site and documented 19 early Roman sites (Boling 1989; Christopherson *et al*. 2002; Younker 1991). This number is larger than the seven attributed to the Hellenistic period. This relative abundance of early Roman evidence stands in stark contrast to the total absence of Nabatean evidence within a 5km. radius of al-'Umayrī. In the author's view, these oddities in the survey data — combined with the presence of a ritual bath at Tall al-'Umayrī — tilts the balance of probability in favor of Hasmonean and Herodian control of the Ḥisbān and al-'Umayrī region during the late Hellenistic and early Roman periods.

Given that Tall Jalūl is the only solid evidence for a Nabatean presence that has come out of the Ḥisbān-al-'Umayrī survey, we continue to examine the results of the ongoing excavations and intensive surveys at this site. The excavation team have recovered abundant evidence for Iron Age I and II settlements, but no data — except for a small amount of post-Persian debris in Field B — for Hasmonean and Nabatean settlement at the site (Herr *et al*. 1996; Younker and Merling 2000; Younker *et al*. 1996). In 1976 and 2000, the Ḥisbān survey team conducted intensive surface surveys at Jalūl, which yielded approximately 4,800 diagnostic sherds (Groves, Borstad, and Christopherson 1995; Ibach 1978). Two hypotheses arise from this result. First, the scarcity of Hellenistic pottery points to a potential gap in occupation at Jalūl during the Hellenistic period, despite the discovery of a few Hellenistic sherds from the pit in Field B (personal communication with Gary L. Christopherson 2002). Second, in contrast to the Hellenistic period, Jalūl was clearly occupied during the early Roman period; the discovery of Nabatean pottery during the 1976 survey could indicate that this Roman settlement was connected with Nabatean activity at the site at this time (Ibach 1978). Third, we turn to the results of the survey around Jalūl. According to the Jalūl regional survey, there are only four archaeological sites within a 5km. radius of the site, one of which yielded Hellenistic and Nabatean sherds. This result clearly suggests that the Jalūl region, like Tall Jalūl itself, was sparsely settled during the Hellenistic and early Roman periods. In all likelihood, the Nabatean presence at Jalūl and its surroundings was connected with nomadic or commercial activities rather than permanent settlement.

The 'Ammān-Wādī as-Sīr Region

One of the most noteworthy results of the series of excavations at 'Ammān Citadel is the extensive late Hellenistic — early Roman occupation revealed on both the lower and upper terraces. Furthermore, this occupation appears to be linked to the Nabateans (Bennett 1979; Russell *et al*. 1997; Zayadine 1973, 1977; Zayadine, Najjar and Greene 1987). Specifically, excavations on the lower terrace revealed the remains of early Roman architecture with a floor upon which Nabatean coins of Aretas IV were found (Zayadine 1973), thereby suggesting that the area was used by the Nabateans during the first half of the first century AD. The early Roman settlement was built upon the late Hellenistic one. There are no traces of violent destruction between the late Hellenistic phase and the early Roman one. This is somewhat surprising given the Hasmonean attack on the city at about 100BC; perhaps it remained intact despite the war. When excavations progressed to the upper terrace of the citadel, Zayadine (1977) again uncovered the remains of a late Hellenistic — early Roman settlement and reservoir, followed by another early Roman phase. A Nabatean date for the reservoir is possible, given the discovery of decorated Nabatean ware in the foundation trench of its walls. A bronze coin of Aretas IV found on the floor of the reservoir is further evidence for a Nabatean link with this feature.

The Roman Forum has additional evidence for late Hellenistic — early Roman — Nabatean activity in the 'Ammān area (Hadidi 1974). The stratigraphy of the excavated area shows a mixture of late Hellenistic and early Roman sherds, coins and artifacts. What is particularly interesting for the present study is the fill underneath the second century Roman building phase. This foundation fill includes Hellenistic sherds and Seluecid coins, all of which date to the second century BC. Also note the discovery of one Sidonian and two Nabatean coins from the same fill. The Sidonian coin dates to 60/59BC; one Nabatean coin is of Aretas IV and the other of Rabbel II. The complete absence of early Hellenistic and Ptolemaic sherds and coins is striking. This suggests that the settlement around the Roman Forum was founded in the Seleucid period and continued in use into the first century AD, very likely under the auspices of the Nabatean kings. Analysis of the coins from the 1964-67 excavations

provides supporting numismatic evidence (Hadidi 1973). The coin catalogue includes three Seleucid coins, dated to the second and early-first centuries BC, and four Nabatean coins of Aretas II, Aretas IV and Rabbel II [5].

Turning to the area south of ʻAmmān, we see no evidence of later Hellenistic and early Roman settlement at Saḥāb (Ibrahim 1972, 1974, 1975). The Saḥāb regional survey documented more than 130 sites (Ibrahim *et al*. 1984). Of these, only two sites yielded Nabatean sherds, whereas five and seven sites yielded late Hellenistic — early Roman and early Roman pottery respectively. Much the same can be said for Tall Jāwā. Several seasons of excavation at Jāwā have uncovered no Hellenistic or early Roman occupation phases (cf. Daviau 1992; 1993; 1994; 1996). Given these results, the Jāwā-Saḥāb region appears to have been sparsely occupied during the Hellenistic and early Roman periods.

As stated above, the Wādī as-Sīr region is thought by most scholars to be related to the early Hasmonean expansion east of the Jordan and their wars against the Nabateans. Excavations at ʻIrāq al-Amīr uncovered a late Hellenistic — early Roman settlement phase comprising two sub-phases, with a short period of abandonment between the two (Lapp 1962, 1963). In addition, the Wādī as-Sīr region has been the subject of intensive surveys which show that the area around ʻIrāq al-Amīr generally experienced a relatively high level of human activity during the late Hellenistic and early Roman periods (Ji 1998b, 2001; Ji and Lee 1999, 2002; Villeneuve 1988). For the moment, we are especially concerned with the evidence from Khirbat as-Sūr, Khirbat as-Sīr and Khirbat Sār. Different survey teams have visited Khirbat Sār and collected Hellenistic and early Roman material, indicating that it was resettled at this time (Glueck 1939; Ji and Lee 1999, 2002). The survey data from Khirbat as-Sīr and Khirbat as-Sūr also suggest that they were in use during the Hellenistic — early Roman periods.

There is also numismatic evidence for the Hasmonean connection with the late Hellenistic — early Roman settlements in the ʻIrāq al-Amīr area. The excavations at ʻIrāq al-Amīr yielded one Hasmonean coin of Alexander Jannaeus and three Nabatean coins of Aretas IV (Lapp 1983). Another Hasmonean coin was recovered in the area of the monumental gateway to the Qaṣr al-Abd and was dated to the reign of Alexander Jannaeus (Dentzer, Villeneuve and Larché 1983). At Khirbet as-Sūr, the ʻIrāq al-Amīr survey team conducted a coin survey, which yielded six Hellenistic and early Roman coins, including one Hasmonean coin of Hyracanus I and one Nabatean coin dated to Malichus II (Ji and Lee 2004). The Hasmonean and Nabatean coins from Khirbat as-Sūr, along with those from ʻIrāq al-Amīr, are important to our discussion of the late Hellenistic history of the region; they may point to Hasmonean and Nabatean activity during this period. Until now, however, there is no architectural or ceramic evidence for specific Nabatean settlements in the region to support the late Nabatean numismatic evidence from the village of ʻIrāq al-Amīr. What is also noteworthy is the absence of distinctive Nabatean sherds at and around Khirbat as-Sūr, Khirbat as-Sīr and Khirbat Sār.

The Libb-Machaerus Region

Excavation of the Hellenistic-Roman remains at Machaerus has demonstrated that a Hasmonean fort was built there during the reign of Alexander Jannaeus and subsequently underwent substantial transformation under the auspices of Herodian rulers during the early Roman period (Bianchi and Faggella 1993; Corbo 1980; Corbo and Loffreda 1981; Loffreda 1980; Piccirillo 1979, 1980). The author's ongoing excavations at nearby Khirbat ʻAṭarūz have also uncovered late Hellenistic — early Roman ceramic fills and building remains linked with the Hasmonean-Herodian settlements. A case in point is another example of the underground ritual bath known as *miqveh*, this time located on the eastern slope of Khirbat ʻAṭarūz. As mentioned above, this type of bath was associated with the Hasmonean-Herodian population.

Far more difficult to determine is the extent of the

[5] In the late 1980s, a systematic archaeological survey was mounted in the north Greater Amman region (Abu Dayyah *et al*. 1991). The survey team visited 222 archaeological sites and found Hellenistic and early Roman evidence at 14 and 61 sites, in the order given. This result indicates a moderate level of Hellenistic settlement in the region and a subsequent sharp increase in population during the early Roman period. In contrast, the ʻAyn Ghazāl survey shows a total lack of Hellenistic evidence and a very poor representation of early Roman in the northeast area of the Amman region (Simmons and Kafafi 1988). Unfortunately, however, in both surveys, the early Roman pottery was not further specified into Nabatean and general early Roman pottery, and hence, is not of great help for our purposes.

evidence for Nabatean occupation in the ʻAṭarūz-Machaerus region. Gleuck's survey of the Libb-Machaerus area indicated that Nabatean sherds are common at ʻAṭarūz, Machaerus and in the region between Wādī Zarqāʾ Māʻīn and Sayl Hīdān (Gleuck 1939: 131-136). At ʻAṭarūz, however, ongoing excavations have so far failed to recover any Nabatean evidence, which is in conflict with Glueck's survey report, although further excavations at the site may yet provide a definitive answer.

Not far from ʻAṭarūz is Khirbat Libb, a place mentioned several times in Glueck's survey report. Much of our current knowledge of the history of Khirbat Libb comes from the efforts of three separate archeological surveys, conducted by Glueck, Elder and the author. The results are however contradictory or, at best, inconsistent regarding the Nabatean period. Gleuck (1939) visited Khirbat Libb during his Transjordan survey and, as he claimed to have collected Nabatean sherds, asserted that it was occupied by the Nabateans. Libb was revisited by the author in summer 2001 as part of the ʻAṭarūz-Machaerus area survey. Although the entire area of ancient occupation has suffered from modern development, the survey team still managed to collect more than 400 diagnostic sherds at the site. Notwithstanding the presence of early Roman sherds, no distinctive Nabatean pottery was found on the surface. In one sense, this *caveat* is partially reconciled as Elder (2001) found two Nabatean sherds during his surveys of Khirbat Libb in 2000-01. Nevertheless, the dearth of Nabatean sherds at Khirbat Libb remains problematic in view of the quantitative analysis made by the surveyor, which demonstrated that Nabatean sherds constitute a near-zero percentage of the hundreds of diagnostic early Roman sherds gathered from the surface of Khirbat Libb and in its immediate vicinity.

On the other hand, the further we proceed from Libb to the east, the stronger the evidence for a Nabatean presence in the south-eastern part of the Mādabā plains becomes. This arid, desert fringe area includes several early Roman and Nabatean sites, plus the extensive Nabatean settlement and caravansary at Umm al-Walīd (Glueck 1934: 10-13, 1939: 137-139). The Limes Arabicus project also brought to light a cluster of Nabatean sites along the desert fringe in the south-eastern part of the Mādabā plains. In this area, according to Parker (1976; 1986), the Nabateans constructed a system of forts and watchtowers in order to defend their settlements and caravan routes, either building new structures or repairing earlier Iron Age II fortifications. The Nabatean period also witnessed an impressive settlement intensification at Mudayna ath-Thamad (Daviau, Mulder-Hymans and Foley 2000). The excavations at Mudayna ath-Thamad have revealed a major Nabatean settlement at this site, consisting of at least two settlement phases dated to the early Roman period.

Finally, remains of the Nabatean period are prominant on the Dhībān plateau. The Dhībān Plateau Survey demonstrated that 27 of the 421 survey sites in the region had fine Nabatean painted ware (Ji and Lee in press). Tushingham (1972, 1989) distinguished two periods of Nabatean settlement at Dhībān, both dated to the first century AD. Al-Lāhūn was also inhabited during the Nabatean period, as indicated by a small square temple built on bedrock in Area B2 and a large building complex in Area A1 (Homes-Fredericq 1986, 1989; Homes-Fredericq and Naster 1979). Also, three seasons of excavation at ʻArāʻir have revealed Hellenistic and Nabatean remains dated to the late Hellenistic and early Roman periods (Olavarri 1965). No interruption of settlement seems to have occurred between the Hellenistic and Nabatean periods.

Discussion

Textual Reconstruction of the Border Line

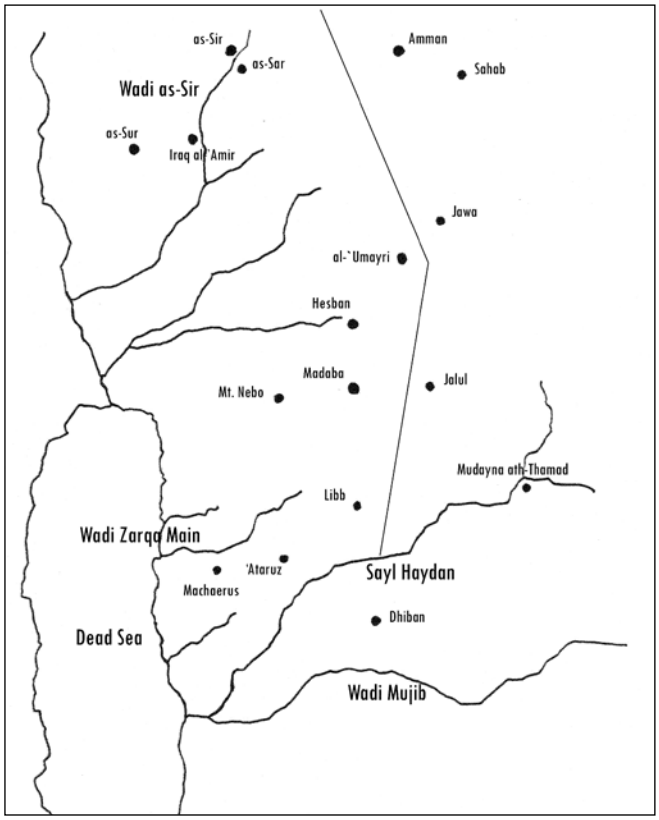
In light of the historical survey above, the late Hellenistic to early Roman period upon which we are concentrating can conveniently be divided into four eras, according to the history and chronology of the Nabatean, Hasmonean and Herodian kingdoms. The first period may be designated the Hasmonean expansion era, the second and early-first centuries BC. The second period would be the first Nabatean expansion era, the mid-first century BC, while the third period may be described as the era of Herodian expansion, the late-first century BC. The fourth period corresponds to the first century AD and is characterized by the revival of Nabatean fortunes in the area. Looking back over the early-second century BC, we can suggest that the region between ʻAmmān and the Dhībān plateau was largely under the control of Arab tribes and nomads (cf. *Ant* 12.4.11). These tribes possibly advanced westward to the as-Sūr region following the death of Tobiad Hyrcanus in the mid-second century BC.

The first stage of this historical sequence started during the mid- and late-second century BC, when

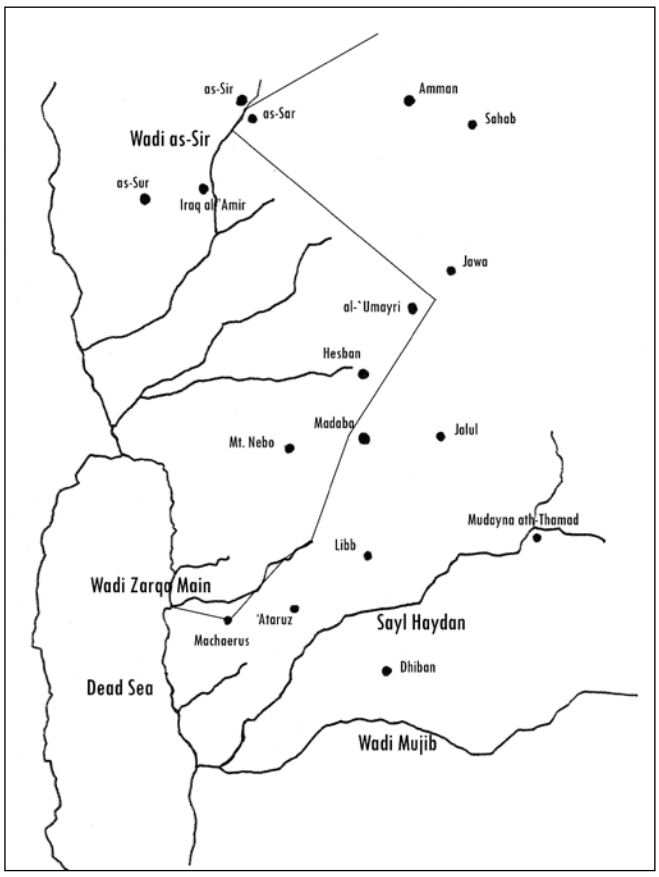
Maccabean leaders attacked and captured Jazer and Charax in the ‘Irāq al-Amīr region and the cities of Mādabā and Samaga on the Mādabā plains. The Hasmonean territory continued to expand southward to Sayl Hīdān during the reign of Alexander Jannaeus, who built a fort at Machaerus and possibly other smaller defensive structures in the region. Ḥisbān and Libb are not mentioned in the list of the cities captured by the Hasmoneans, but very likely they were also incorporated around this time, as they are mentioned later as being among the cities of Moab that were in the Hasmonean hands during the reign of Alexander Jannaeus. Further expansion of Hasmonean territory appears to have been blocked by Obodas I and Arates III, both of who defeated Alexander Jannaeus in their wars in Transjordan which occurred about 20 years apart. Be that as it may, in the mid-second and early-first century BC, the eastern limit of the Hasmonean kingdom seems to have run through al-‘Umayrī, Ḥisbān, Mādabā and Libb, from Tall al-Jādūr and as-Sīr in the north to Sayl Hīdān in the south (see FIG. 2). The western boundary of the Nabatean realm seems to have run along a line connecting ‘Ammān and Mudayna ath-Thamad via Jalūl.

The civil strife between Aristobulus II and Hyrcanus II led to a substantial reduction of Hasmonean territory in central Jordan. The cities of Libb and Mādabā were delivered to Aretas III. Possibly, the area of ‘Aṭarūz and Machaerus also fell into Nabatean hands after the destruction of Machaerus by the Roman army in 57BC. At the same time, the Nabateans seem to have advanced westward in the Wādī as-Sīr region and built some fortresses, as implied by the statement that Herod the Great later took a fort possessed by the Nabateans. The hilly region of al-‘Umayrī and Ḥisbān, however, appears to have stayed in Hasmonean and Jewish hands. This being the case, we may suggest that the advancing Nabatean people stopped along the line of Wādī as-Sīr, ‘Ammān, Saḥāb, Mādabā and the Wādī Zarqā’ Mā‘īn (see FIG. 3).

The third phase of border dispute began with the emergence of the Herodian kingdom. The early reign of Herod the Great was characterised by successive wars, but Herod decisively defeated Malichus I in the ‘Ammān region in 32-31BC. In all likelihood, the Nabateans had to give up towns and fortresses in the region of Wādī as-Sīr. After Machaerus fell under Herodian control, Herod rebuilt the Hasmonean fort at the site. He also stationed some of



2. The Hasmonean expansion period.



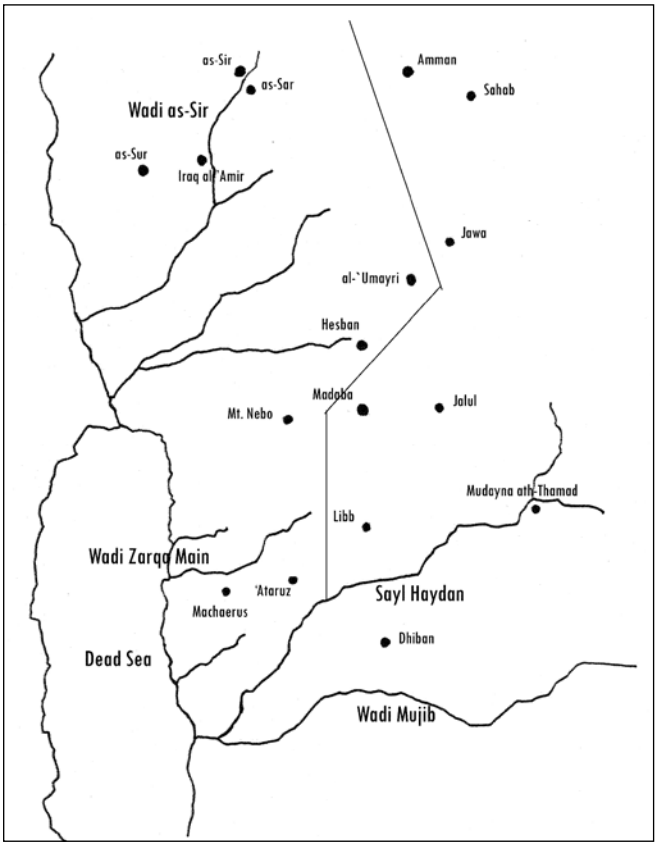
3. The first Nabatean expansion period.

his army veterans at Ḥisbān to protect the area from his enemies. It is uncertain whether or not Libb and Mādabā became part of Herodian Parea. It is possible that the Herodian expansion failed to reach Libb and Mādabā at this time, given the absence of textual evidence. This view would concur with the written record that a Nabatean *strategoi* ruled in Mādabā during the first century AD. If so, in the second half of the first century BC the eastern limit of the kingdom of Herod — and thus the western border of the Nabateans — would have been represented by the eastern and western extent of the Hasmonean and Nabatean kingdoms in the late-second and early-first centuries BC, although the Nabateans continuously maintained control over the regions of Libb and Mādabā (see FIG. 4).

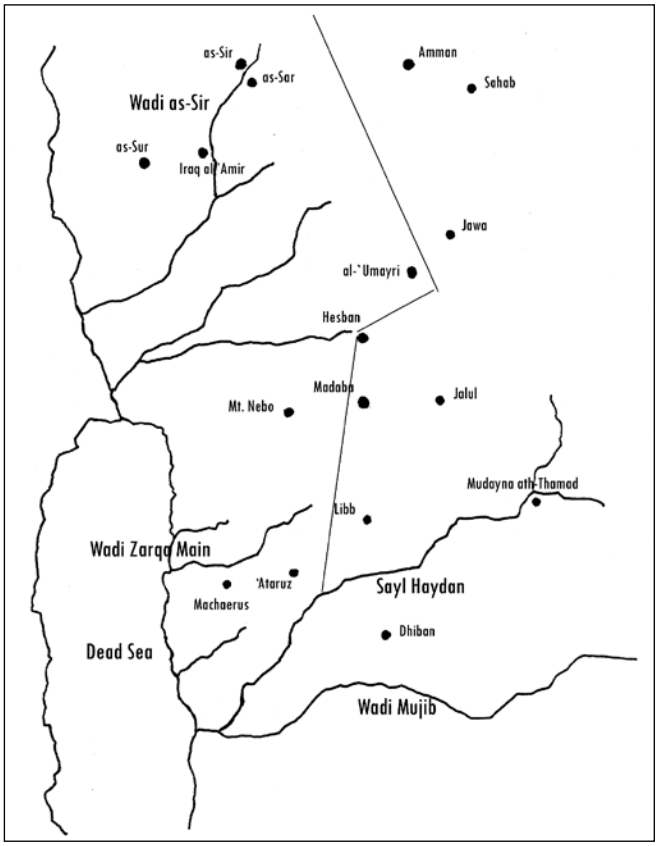
After the death of Herod the Great, Ḥisbān was probably taken over by a non-Jewish population, in view of the fact that that insurgent Jews sacked Ḥisbān and its vicinity at the outbreak of the Jewish war. These new inhabitants could have been Nabateans from the area of Mādabā, or else they were other Arab tribes from east of the Mādabā plains. Looking at the archaeological evidence from Ḥisbān, they are more likely to have been non-Nabatean Arab tribes, although the possibility of a Nabatean connection cannot entirely be ruled out. In any event, the new inhabitants probably had close economic ties with the Nabateans given the use of Nabatean coins at Ḥisbān. On the other hand, according to Josephus' *Antiquities* 18.5.1 — which describes the political history of Herod Antipas — the Machaerus region may temporarily have fallen under the influence of the Nabateans. Except for this possible interruption, the 'Aṭarūz-Machaerus region seems to have remained part of the kingdom of Herod Antipas during the first century AD. Thus, the western boundary of the Nabatean kingdom at that time can be drawn along the line of 'Ammān, Saḥāb and Mādabā (see FIG. 5). The historical records are again silent about whether or not Libb constituted part of the Nabatean kingdom, but the absence of textual evidence suggests that this may have been the case. The remaining southern part of the Nabatean boundary is therefore likely to have run along the line Mādabā-Libb-Sayl Hīdān.

Comparison to Archaeological Evidence

The archaeological data, to our dismay, do not entirely support the textual reconstruction of border



4. The Herodian expansion period.



5. The second Nabatean expansion period.

changes in the Nabateans and the Hasmonean-Herodian kingdoms outlined above. The historical description of the Wādī as-Sīr region is susceptible to change as research is ongoing in that region. The same is also true for the extent of Hasmonean-Herodian control in the Libb-Machaerus region during the mid-first centuries BC and AD In particular Gleuck's report of Nabatean pottery at and around Libb and Machaerus presents a special problem for the hypothesis of Hasmonean-Herodian dominance over that region. Responding to this dilemma, Gleuck (1939: 146) focused on the marriage of Herod Antipas to the daughter of the Nabatean king Aretas IV. This, in turn, led him to relate the appearance of Nabatean pottery in the region to the short-lived *detente* between Herod Antipas and Aretas IV. In keeping with this view, one may point to potential trade between the Nabateans and the inhabitants of the Hasmonean-Herodian kingdoms. Another tenable answer can be found in the aforementioned interruptions in Jewish control of the region. Thus, the Nabatean pottery found by Glueck in the Libb-Machaerus region may have been associated with one of these two waves of Nabatean expansion into the area north of Sayl Hīdān. In short, the questions of whether or not and, if so, when the Nabateans controlled the regions of Wādī as-Sīr, Libb and Machaerus warrants further fieldwork and studies of archaeological data.

Despite these *caveats*, however, the general credibility of the above historical reconstruction is bolstered by some impressive consistency between archaeological and textual data. First of all, the excavations at ʻAmmān Citadel and the Roman Forum are indicative of a Nabatean connection with early Roman settlement in the ʻAmmān region, which is in harmony with the historical records. The excavation reports for the ʻAmmān Citadel do not offer up any definitive insights into the relationship between the Nabatean settlers and their late Hellenistic predecessors. However, it is likely that — as in the early Roman period — the late Hellenistic settlement was also associated with the Nabateans in view of the smooth and peaceful transition into the early Roman period.

For Mādabā, the archaeological evidence also seems to be fairly consistent with the ancient texts. On the basis of archaeological evidence currently available, it can be suggested that Mādabā was settled by or associated with the Nabateans in the early Roman period. There is also material evidence to show that Mādabā could have been occupied by the Hasmoneans at some point during the late Hellenistic period, even though the exact nature of this Hasmonean occupation remains somewhat elusive and awaits further excavation and publication.

In addition, the settlements to the south-east of Mādabā have convincing evidence of Nabatean activity; examples include Umm al-Walīd and Mudayna ath-Thamad. Similarly, there are also large numbers of early Roman Nabatean sites on the Dhībān plateau. The author has ascertained through surface survey that many of the early Roman Nabatean sites on the Dhībān plateau also include a number of sherds dated to either the late Hellenistic period or the transition to the early Roman period (Ji and Lee in press). This fact may posit that, as in the ʻAmmān region, the earliest Nabatean activity on the Dhībān plateau occurred prior to the early Roman period. Related to these findings is the general infrequency of Nabatean settlements in the Jalūl-Saḥāb region. This suggests that, during the Nabatean period, the eastern Mādabā plains region probably served as a corridor for trade and traffic, rather than a settlement zone, that connected the Nabatean settlements in the ʻAmmān region with those on the Dhībān plateau and south-eastern Mādabā plains.

In contrast, Hasmonean-Herodian evidence abounds in the areas of ʻIrāq al-Amīr, Mount Nebo and the north-western Mādabā plains. This supports the historical accounts of Hasmonean and Herodian occupation of these areas. However, distinctive Nabatean pottery is absent or, at best, scarce in these regions. The area of Ḥisbān and al-ʻUmayrī has been systematically surveyed and excavated by various research teams, yet no trace of Nabatean settlement has so far been located in this area. The absence of Nabatean ceramic evidence is just as apparent in the Nebo and ʻIrāq al-Amīr areas. What is however clear is the relative abundance of Hasmonean coins in these areas, compared with ʻAmmān, Jalūl and the Dhībān plateau. Moreover, all the Nabatean coins so far found in the areas of Ḥisbān and ʻIrāq al-Amīr belong to the first century AD. Quantitative analysis has shown that at Ḥisbān and ʻIrāq al-Amīr, the entire Nabatean numismatic assemblages is made up of this late corpus of coins. Related to this finding is the discovery of a ritual bath at al-ʻUmayrī, which should be attributed to either Hasmonean or Herodian settlers at the site. Of course, casual use of material evidence to reconstruct the ethnic identity of the inhabitants of a

given region can be problematic (Graf 1986: 792). Nevertheless, we should not ignore potential affinities between material culture and ethnic identity (cf. Parr 1970, 1978; Schmid 1995).

Be that as it may, the combination of various findings gives weight on the thesis that the late Hellenistic occupation of the areas north of the Mādabā line occurred under the auspices of Jewish rulers rather than Nabatean kings. The same may also be true of the early Roman period, given the virtual absence of Nabatean sherds and non-numismatic artifacts at the sites under consideration. The early Roman tombs at Ḥisbān with a rolling-stone door, like those in the Jerusalem area, are also indicative of a Herodian occupation of Ḥisbān during the first centuries BC and AD. This suggests that most of the cities and towns in Wādī as-Sīr and the Ḥisbān-al-'Umayrī area were probably inhabited by Hasmonean and Herodian citizens alongside, most probably, a much smaller number of non-Jews.

Conclusion

This study helps us to re-evaluate Glueck's original thesis that the boundary of the Nabatean state should be drawn eastward from the Dead Sea to Mādabā, roughly along the line of Wādī Zarqā' Mā'īn. In view of the findings of the present study, Glueck may have misunderstood the nature of the northern border of the kingdom of Nabateans when he viewed it as fixed and permanent boundary along the Machaerus-Mādabā line during the late Hellenistic and early Roman periods. This study has shown that the border probably far more flexible than Glueck allowed. Put another way, the extent of the kingdom of the Nabateans in central Jordan now appears to fluctuate during the period in question, and these changes were closely tied with the vicissitudes of Hasmonean, Herodian and Nabatean fortunes east of the Jordan.

Despite frequent shifts in the border, the present study supports the idea that Glueck's original thesis was in some respects correct about the identification of the border of the Nabatean kingdom. For almost all of the period under consideration, the hilly region of Ḥisbān, al-'Umayrī and Nebo seems to have remained in the hands of the Hasmonean-Herodian state, although Ḥisbān may very briefly have come under the control of a non-Jewish population some time in the first century AD. In contrast, the 'Ammān region and the desert fringe of Saḥāb, Jalūl and the Dhībān plateau lay securely behind the Nabatean frontier. The east-west stretch of Wādī al-Wāla and Sayl Hīdān formed the southern boundary between the Nabatean and Jewish kingdoms, even though Herod built a couple of military fortresses in the middle of Wādī al-Mūjib and Sayl Hīdān during the early Roman period (Strobel 1997).

Finally, the present study has shown that, in central Jordan, the struggle between the Nabatean and Hasmonean-Herodian kingdoms centered on three areas: Wādī as-Sīr, Mādabā and Libb-Machaerus. The Hasmoneans took possession of the forts and towns in the Wādī as-Sīr region in the mid-second century BC. This area probably remained under Hasmonean and Herodian control for the rest of the late Hellenistic and early Roman periods, despite intermittent wars in the 'Ammān region between these rulers and the Nabatean kings and a potentially short-lived Nabatean expansion into the area prior to the rule of Herod the Great. The Hasmoneans extended their territory to Ḥisbān, Mādabā, Libb and Machaerus during the second century BC. However, Hasmonean control of Libb and Mādabā did not last long as they fell into the hands of Nabateans after the civil war between Hyrcanus II and his brother Aristobulus II. Ḥisbān also seems to have been incorporated, albeit for a short period and in a *de facto* manner, within the Nabatean state in the first century BC when a non-Jewish population group occupied the site.

In similar fashion, the question of who controlled the 'Aṭarūz-Machaerus area can be answered differently at different times. As noted above, Hasmonean influence reached this area during the reign of Alexander Jannaeus. Machaerus was destroyed by the Roman army in 57BC, after which the Nabateans likely expanded northwards across Sayl Hīdān and into the Machaerus area. Only after the establishment of the rule of Herod the Great did Machaerus once more come under Herodian control; the city was subsequently given to Herod Antipas after the death of Herod the Great. The clash with the Nabateans during the reign of Herod Antipas may however have resulted in a temporary setback for the Herodians in the 'Aṭarūz-Machaerus area.

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Crossroads and Sites at the Northern Edge of the Central Moabite Plateau

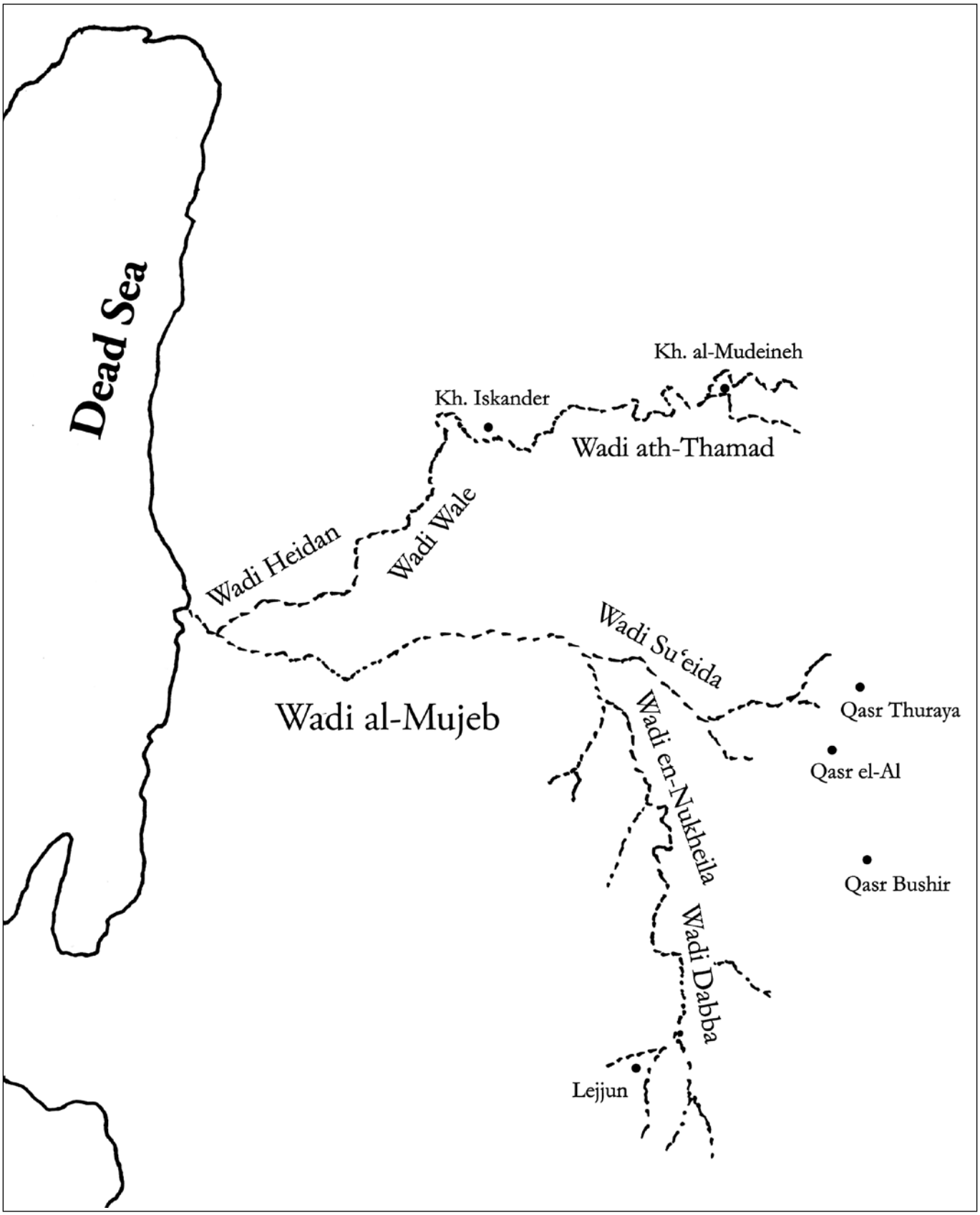
The central Moabite plateau and the Dhībān plateau are separated by a deep gorge, the Wādī al-Mūjib, which forms an impressive canyon (referred to by some as the "Grand Canyon" of the Hashemite Kingdom). Wādī al-Mūjib cuts deep into the plateau landscape, which has an elevation of between 750 and 900m. above sea level. At various points, the slopes drop up to 700m. into the depths. Wādī al-Mūjib drains into the Dead Sea at an elevation of *ca*. 400m below sea level. During the time of the Moabite King Mesha, this wadi was known as "Arnon". It appears that the name "Arnon" remained in use until early Byzantine times. It was only in the early Islamic period that the wadi became known as "al-Mūjib" (see Kloner and Ben-David 2003: 66 nt. 3).

No matter what the period — Middle Bronze Age, Iron Age, Hellenistic, Roman or Islamic times — people traveled, moving from west to east, north to south and *vice versa*. They made journeys from the Dhībān plateau to the southern Moabite plateau and back again. They marched through this area on military expeditions, for trade, in search of better pastures for their flocks, for sightseeing, hunting or simply to visit the in-laws on the other side of the mighty wadi.

Wādī al-Mūjib has various tributaries. A major one comes in from the Dhībān plateau to the north; it unites with the main wadi ca. 2.5km. east of the Dead Sea. Its lower section is called Wādī Hīdān; its central section — with Khirbat Iskandar as its main site — is called Wādī al-Wālā; its upper segment is Wādī ath-Thamad, with Khirbat al-Mudayna as one of the major sites in the area. Just east of the point where a modern dam holds back the winter rains, Wādī al-Mūjib bifurcates into eastern and southern tributaries. The eastern arm, Wādī as-Su'aydah and Wādī as-Sāliyah, climbs up the eastern plateau, collecting various smaller tributaries in the area of Qaṣr Bashīr, Qaṣr al-'Āl and Qaṣr ath-Thurayya. The southern arm is called Wādī an-Nukhaylah, known further to the south as Wādī ad-Dabba and Wādī al-Lajjūn (see FIG. 1).

Ancient travelers who wanted to cross Wādī al-Mūjib with its various tributaries on their way from the northern Dhībān plateau to the central Moabite plateau (or *vice versa*) had to find a way through either on narrow paths winding up and down the depths of the main wadi or follow one of the tributary wadis that led upwards until they finally reached the plateau.

During Roman times, the *Via Nova Traiana* crossed Wādī al-Mūjib by means of a bridge, the remains of which were described by various early travelers. Ulrich Jasper Seetzen, one of the first travelers through ancient Moab in the beginning of the 19th century, passed by Dhībān on 23 March 1806 and then crossed Wādī al-Mūjib. In his report he observed that the al-Mūjib was a very deep gorge in which there was water flowing westward. Down at the bottom were the remains of a bridge consisting of one arch, but it was no longer usable (Kruse 1854-1855: 1/410; see also Burckhardt 1822: 372f.). On 8 June 1818, two British officers, Irby and Mangles, traveled north from Karak and crossed Wādī al-Mūjib. They reported: "We proceeded to the northward, and in about two hours arrived upon the brink of the Wady Modjeb the ancient Arnon; on looking down, it has more the appearance of a precipice than a road, ... the Roman way coincides with the modern track very near to the brink, and again about half way down it ...; about half way the declivity is more earthy and shelving; here-about we recovered the Roman highway. It is not here as above, completely paved, but at regular intervals a line of stones is carried



1. Wādī al-Mūjib and its tributaries.

across the road in the manner of a step, to prevent the washing away of the earth from above ... We found several mile-stones; all those which were legible, were of the time of Trajan. ... In our ascent up the opposite side, we followed mostly the ancient road, and found some more Roman mile-stones; one of Marcus Aurelius" (Irby and Mangles 1823: 460f.; see also Smith 1904). During the years 1895, 1897 and 1898 Rudolf E. Brünnow and Alfred von Domaszewski, together with Julius Euting, made three research trips through the region east of the Jordan. They investigated what remained of the Roman road system and drew up various maps. Of special interest are the many photographs they took during their trips. They, too, crossed Wādī al-Mūjib and recognized the remains of the Roman bridge (see the photographs published by Brünnow and Domaszewski 1904-1909: 1/34). Towards the end of the 19th century the Turkish government built a new road through Wādī al-Mūjib.

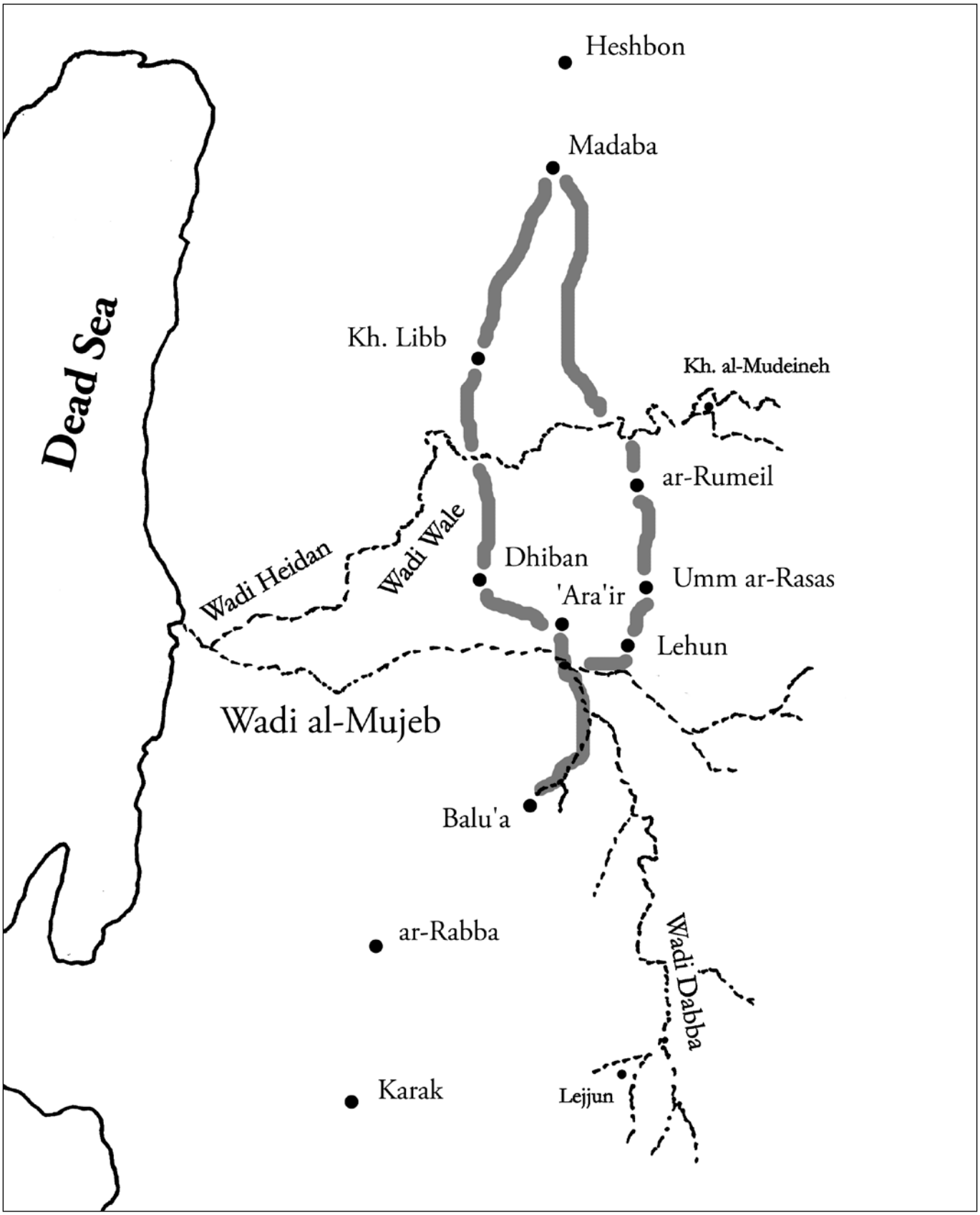
Even before the Roman period, important routes lead through the region east of the Jordan and Dead Sea. One of the predecessors of the *Via Nova Traiana* seemed to be the so-called "Road of the Kings", mentioned in the Hebrew Bible (e.g. Num 20:17; 21:22; see also Miller 1989: 12). However, the extent to which the course of these pre-Roman roads followed the later *Via Nova Traiana* is not clear at all (*contra* Glueck 1940: 15).

It appears that the Roman road — similar to its modern successor — descended into the Wādī al-Mūjib just south of Dhībān, winding its way down in tight bends. In so doing, the Roman builders seem to have taken a more or less direct route, the pre-Roman crossing being somewhat further to the east. During the Iron Age, two different routes led southward from Mādabā to Wādī al-Mūjib. One went south passing Khirbat Libb, crossed Wādī al-Wālā and went on to Dhībān and ʻArāʻir at the edge of Wādī al-Mūjib. The other route left Mādabā in south-easterly direction, crossing Wādī ath-Thamad and reached al-Lāhūn at the Wādī al-Mūjib via ar-Rumayl and Umm ar-Raṣāṣ. From both locations —ʻArāʻir and al-Lāhūn— tracks lead down into the wadi.

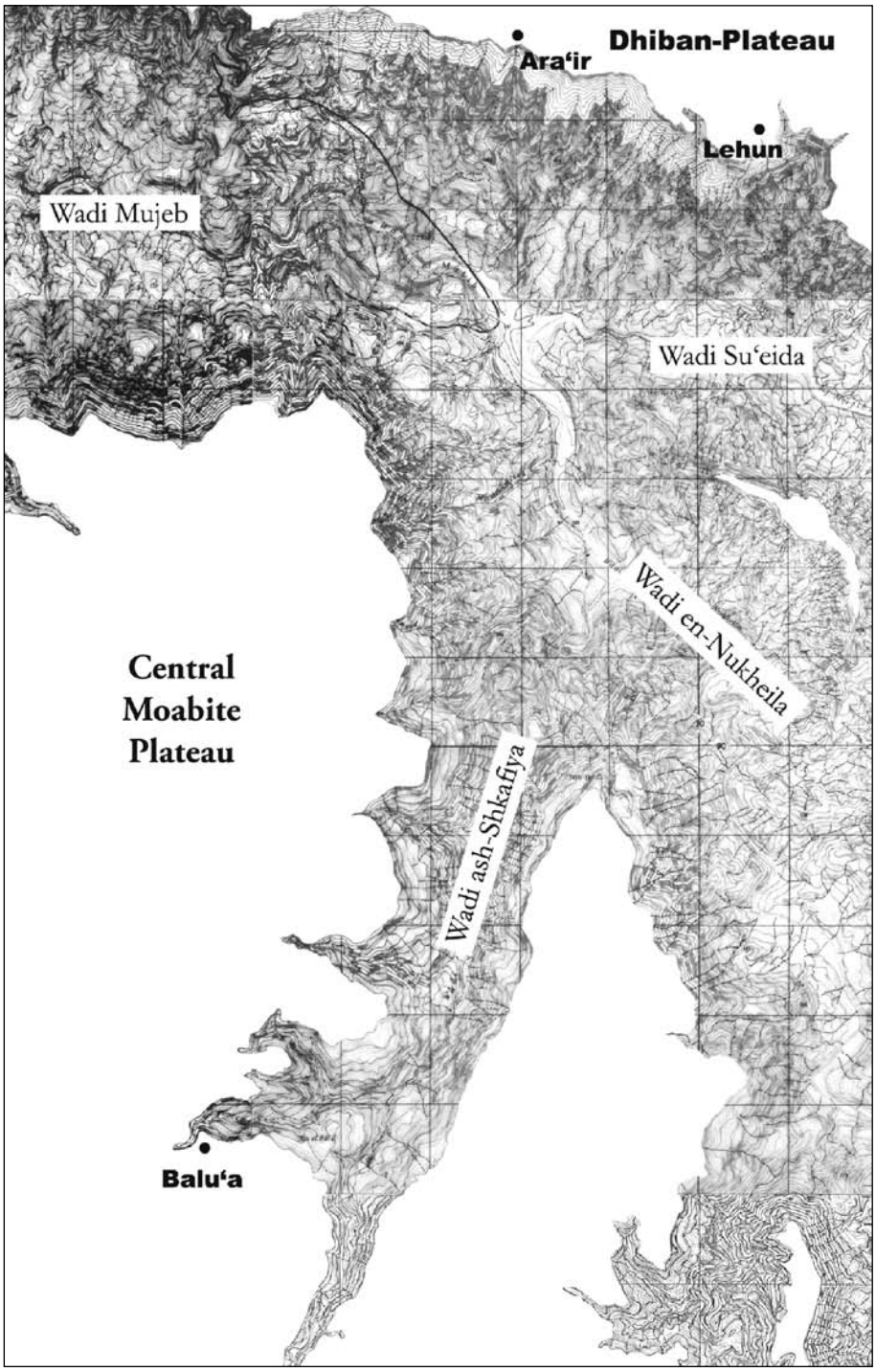
In Line 26 of his inscription, the Moabite King Mesha reports: "I built ʻAraʻir and made / repaired the highway at the Arnon". J. Andrew Dearman insists that "this is a reference to a section of the main N-S roadway, the so-called King's Highway… ʻArāʻir was a fortress / police station situated at the point where the highway crossed the northern edge of the Arnon and its function must have been to oversee traffic on the highway and to collect tolls for the roadway's use" (Dearman 1989: 191f.). Because of the direct association of King Mesha's highway with ʻArāʻir, it seems reasonable to link this highway with a route descending down into the wadi in the immediate vicinity of ʻArāʻir. However, Denise Homès-Fredericq, excavator of al-Lāhūn, contends that the best route across Wādī al-Mūjib would have been via al-Lāhūn (see Homès-Fredericq 1992: 200). If one considers the geomorphic condition of Wādī al-Mūjib and its tributaries, it becomes clear that the most convenient crossing appears to descend from ʻArāʻir. Nevertheless, excavations at al-Lāhūn, which appears to have been a very prominent site during the Iron Age, and a number of recently identified Iron Age site on the Dhībān plateau (see Ji and Attiyat 1997; Ji and Lee 1998, 2000) suggest that the eastern section of the major north - south route was frequently used. Both descents, that from ʻArāʻir as well as that from al-Lāhūn, provided a passable way down into wadi.

With regard to the route up on to the central Moabite plateau from the north, the most convenient ascent appears to have been through Wādī ash-Shuqafiyya. This wadi is directly in line with the possible descent at ʻArāʻir (see FIG. 3). Adding to the importance of this tributary wadi is the fact that this ascent is guarded by the major Iron Age site of Khirbat al-Bālūʻ at the edge of the plateau. Max Miller suggests that, for an ancient traveler approaching Wādī al-Mūjib from the north, "the easiest crossing in accordance with the natural lay of the land would have been to begin the descent into the al-Mūjib canyon at approximately Aroer (present-day ʻArāʻir), follow the canyon floor southeastward to the Wādī al-Bālūʻ [my Wādī ash-Shuqafiyya] junction, and then follow Wādī al-Bālūʻ [Wādī ash-Shuqafiyya] southward completing the ascent onto the southern Moabite plateau at approximately Khirbat al-Bālūʻ " (Miller 1989a: 12, see also 1989b: 594).

The area of the central Moabite plateau (Arḍ al-Karak) has seen a number of archaeological reconnaissance surveys over the past few decades. Among the most comprehensive were the "Archaeological Survey of the Kerak Plateau" of 1978 to 1982, directed by J. Maxwell Miller, Jack M. Pinkerton (see Kautz 1981; Miller 1991) and, more recently, Udo Worschech (see Worschech 1984,



2. Major pre-Roman routes east of the Dead Sea.



3. Wādī ash-Shuqafiyya.

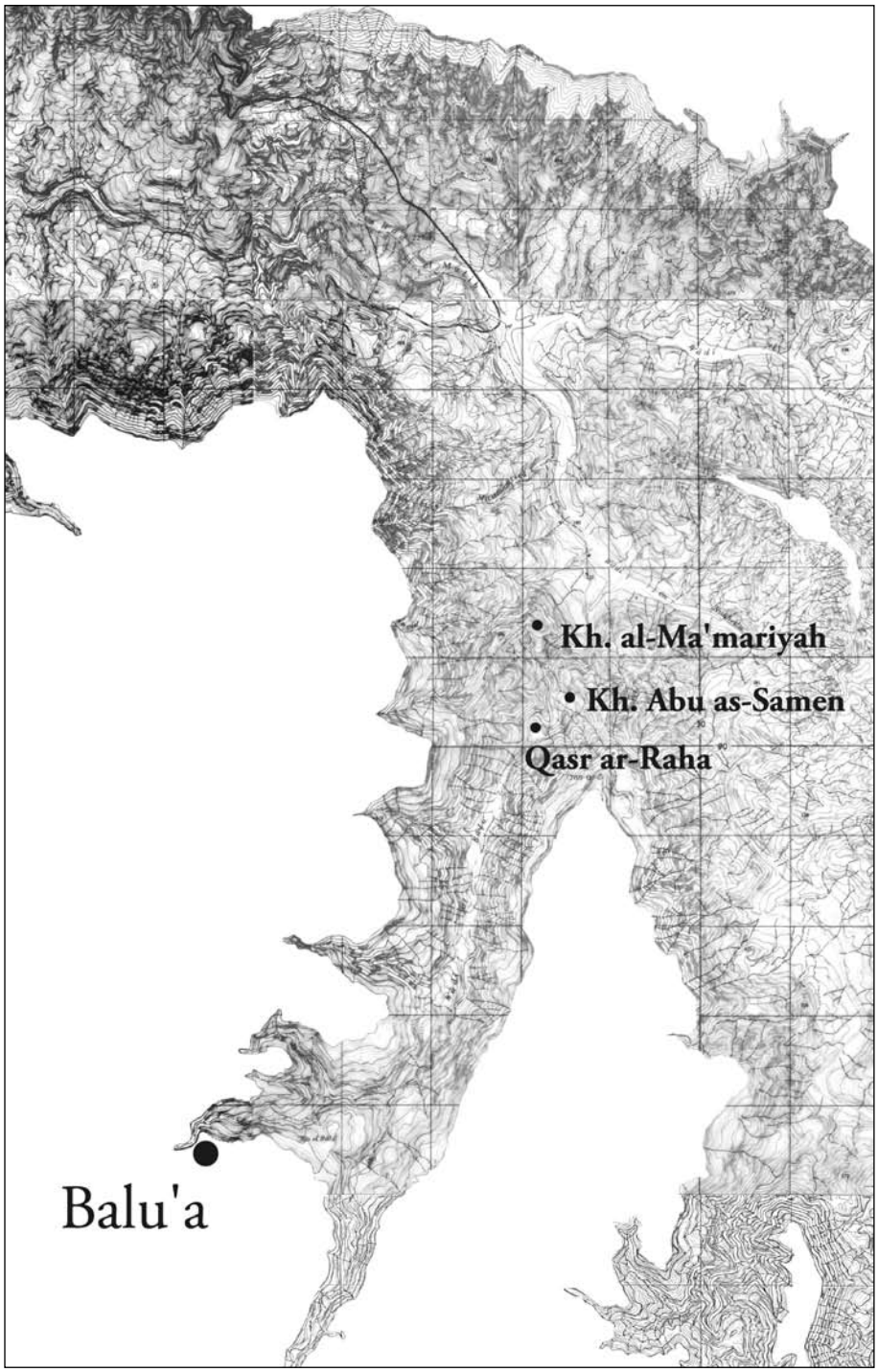
1985, 1986) and the Karak Resources Project directed by Gerald Mattingly (see Linton and Hoffman 2004; Mattingly and Pace 2007). Although these investigations have focused on the Moabite plateau or the slopes to the Dead Sea, the Wādī al-Mūjib itself has been left out.

Recently, an archaeological survey has been conducted in the area where the bridge of the modern highway crosses Wādī al-Mūjib. The Ministry of Water and Irrigation has been constructing a new dam at this point. As this new reservoir is to cover an estimated area of six square kilometers, it was necessary to assess the archaeological data, which would be inundated (see Abu-Shmais and Waheeb 1999). Apart from this survey, no other archaeological investigation of the area has been conducted in

recent years.

In 2001, Friedensau Adventist University started a small survey project in the area of Wādī ash-Shuqafiyya. During the course of these investigations, a number of sites — forts, watch towers, and fortifications — were discovered. Among the most prominent are Khirbat al-Ma'mmariyya, Khirbat Abū as-Samin and Qaṣr ar-Raḥa (see FIG. 4). These sites date mainly to the Iron Age and Roman periods (see Ninow 2002a, 2002b, 2003, 2006a). At Khirbat al-Ma'mmariyya, small sondages have been excavated in the meantime (see Ninow 2002c, 2004a, 2004b, 2005, 2006b).

The numerous sites and installations of Wādī ash-Shuqafiyya — many of them well fortified — indicate that this route through the wadi was frequently used in the past. The course of this route can be traced at various points. On the northern slope



4. Major Sites of Wādī ash-Shuqafiyya.

of Jabal al-Ma'mmariyya, the remains of the fortified pathway leading up Khirbat al-Ma'mmariyya and on to Khirbat Abū as-Samin is still visible (see FIG. 5). From there, the route went up to Qaṣr ar-Raḥa and then further up the wadi (see FIG. 6). The approach to the central Moabite plateau is guarded by the major site of al-Bālū'. Since many of the sites along this route have substantial quantities of Iron Age pottery, it appears feasible to identify King Mesha's "highway at the Arnon" with this route through Wādī ash-Shuqafiyya.

Another part of this road system has recently been identified by Amos Kloner and Chaim Ben-David in the area of Wādī an-Nukhaylah (see Kloner and Ben David 2003). This road was originally identified by Nelson Glueck, on the basis of aerial photographs, as the *Via Nova Traiana*. The question of how this part of the road linked up with the route through Wādī ash-Shuqafiyya remains to be investigated.

5. Fortified path to Khirbat al-Ma'mmariyya.

6. Path leading up to Qaṣr ar-Raḥa.

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The ‘Aqaba Castle Project

Excavations at ‘Aqaba Castle started in 2000 as a joint Belgian-British project organised by the Division du Patrimoine du Ministère de la Région Wallonne at Namur and the University of Cardiff [2]. In 2007 the Unité Mixte de Recherche of the CNRS (Lyon II) joined the project, which was placed under the aegis of the Council for British Research in the Levant (CBRL). The team developed into an international collaboration with researchers from several countries[3]. We whish to thank the representatives for the Department of Antiquities (DoA), Manal Bisyouni (2000 and 2006), Sawsan al-Fakhri (2001, 2007 and 2008), Saté Massadeh (2003), Moussa Malkewi (2005) for their contribution to the excavations and, especially Sawsan al-Fakhri (‘Aqaba DoA office) for her continuous scientific and logistical support since the start of the project.

One must one recall that today the castle of ‘Aqaba gets its celebrity mainly from its capture by the Arab army under Laurence of Arabia on sixth of July 1917, probably the most significant military action of the Arab revolt against the Turks. Eight centuries earlier, in the winter of 1117, ‘Aqaba had been occupied by another armed expedition, led by the Crusader king of Jerusalem, Baldwin I. Permanent Frankish military presence at Ayla was probably not established until the 1160s, because in 1154 al-Idrisi referred to the small town of Ayla as being populated by Arabs and under their control.

However, analysis of historical documents by Denis Pringle (Pringle 2005) has clearly shown that the location of the Crusader castle that Saladin captured in 1170 was on the island of Jazīrat Far‘un, actually Egyptian territory, but controlling — at least in clear weather — the town of ‘Aqaba 15km to the north.

Despite excavations that were carried out on the island during the Israeli military occupation of Sinai, no definitive evidence has so far been exposed of the Frankish occupation. The earliest archaeological finds associated with the castle appear to date from the Ayyubid occupation in the late 12th and 13th centuries. The visible standing remains, despite being largely rebuilt today, also appear to date from after Saladin’s capture of Ayla in 1170 when it became the principal Ayyubid stronghold in the region.

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In 1181, Ayla had been briefly held by Reynald of Châtillon, lord of Karak. According to al-Maqrizi, Reynald arrived in Ayla in November 1181. A raid on Karak, however, led by Saladin's nephew forced Reynald to withdraw. He also adds that following Reynald's visit, the rain at Ayla was so heavy that its fortress collapsed. It is not clear whether the fortress that collapsed in 1181 was located on the shore or on Jazīrat Far'un. It seems more likely that de Châtillon stayed in a stronghold on the shore as it seems improbable that he would have captured the Jazīrat Far'un castle and immediately withdrawn, without the texts being more explicit about it, as there is detailed account of the events of the following year when Reynald raided Muslim shipping in the Red Sea, blocking the principal Ayyubid fortress on Jazīrat Far'un.

The most ambitious Frankish raid was aimed at attacking the Muslim Holy Places and took place towards the end of 1182 when Reynald took five prefabricated ships to Ayla. As it had been under Saladin's control since 1171, he must have taken Ayla. Saladin's troops still occupied the castle at JJazīrat Far'un so Reynald sent two ships to blockade the island. The other ships were send down the Red Sea and to 'Aydhab. Reynald did not join these ships and must have stayed at Ayla (Facey 2005: 93; Mallett 2008: 148, 151-152). Again, it seems unlikely that the Crusaders did not use a stronghold on the shore, at least in order to provide support for their expedition against the castle on Jazirat Fara'un and for their other ships in the Red Sea.

The battle at the Horns of Ḥiṭṭīn put an end to this southward expansion. With the end of Frankish control of Transjordan and southern Palestine in 1189, the need for an Islamic fort on the Gulf of 'Aqaba to protect overland traffic between Cairo and Damascus receded. In Sinai, Saladin constructed another fortress — the castle of Sadr or Qal'at al-Gindi — to protect communications between Egypt and Syria.

The Crusader attack and occupation of Ayla was probably the final straw for the early Islamic town (Witcomb 1997: 359). Subsequently, in Mamluk times, a settlement called al-'Aqaba (or 'Aqabat-Ayla) developed in the vicinity of the present castle, suggesting that an earlier fortification may have been located there.

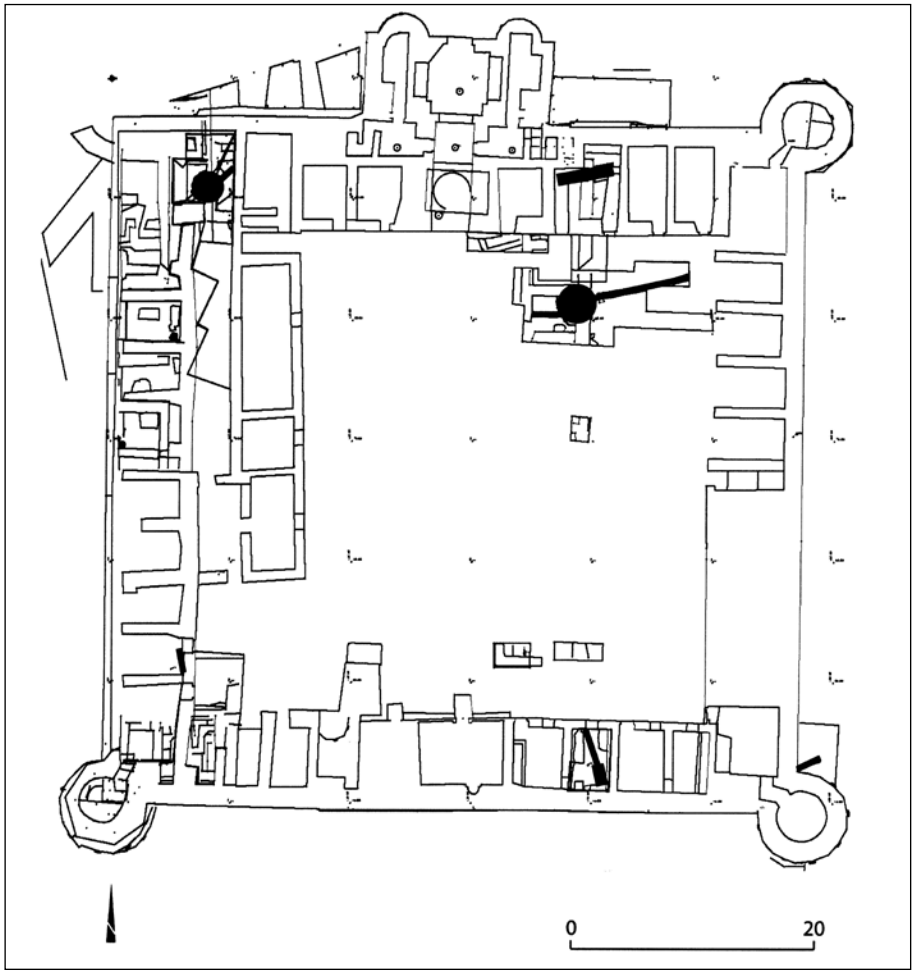
The aims of our research were, first, to define the Crusader presence in the area of the Gulf of 'Aqaba and, second, to establish when and possibly why the Islamic city of Ayla was shifted more than 1000m to the south, to the site of the current castle of 'Aqaba.

The present standing structure of 'Aqaba castle is of late Mamluk date, but excavations have demonstrated that earlier structures underlie the castle. This might, for example, have been the fortification to which — according to Abu al-Fida — the Mamluk governor of Ayla transferred his residence around 1320 when the castle at Jazīrat Far'un was finally abandoned, although documentary proof is lacking. As the written sources remain silent, only archaeology can shed light on this problem. One fact must, however, be taken into consideration: even if the main Crusader and Ayyubid / Mamluk stronghold was located on Jazīrat Far'un, effective control of the mainland routes and of 'Aqaba itself seems impossible without at least a bridgehead on the mainland.

After the 2008 season, the structural phasing of the site may could be summarised in seven principal phases:

*Phase 1: Pre-Khān Phase (eighth – 12th centuries) (*FIG. 1)

During the 2008 season, it became clear that the site was occupied, probably for more than agriculture and gardening, prior to the construction of the first fortification, regardless of whether this was a Khān or not. We had uncovered several features, including walls of buildings, terrace walls, other walls that may have been associated with irrigation canals, wells and floors, that indicate an occupation orientated NW-SE / SW-NE. This is different from the N-S / E-W orientation of the later khāns and is indicative of planned organisation of the area. The water wells, which range in size from small to huge, suggest agricultural activity. Gardening is still carried out behind the castle, sustained by irrigation with fresh water from nearby wells. The small wells have one or two stones built into the interior, probably to filter the water. One of the wells contained only Umayyad pottery FIG. 2. Another yielded charcoal that was C^{14} dated to 1075-1160 (3%) and 1160-1290 (95%). A well 2m wide was partially excavated under the west part of the north wing of the castle. It had a stone step that would have facilitated the drawing of water and a canal leads off it in a north-easterly direction. A similar well, almost 3m. wide, was excavated in the central courtyard. A thin wall leads off it in a north-easter-



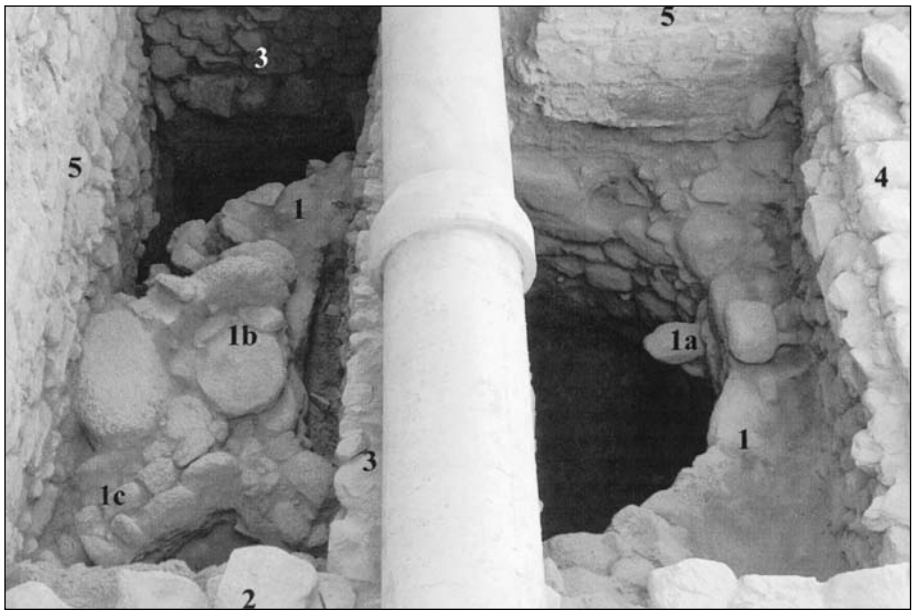
1. Pre-khān structures.

2. Small pre-khān well.

ly direction. After it was abandoned and covered with sand a new, similar wall was built on top of it, following the same axis and direction; the well shaft was raised at the same time. A similar wall led off towards the west. Although we do not have a definitive interpretation for these walls, it seems unlikely that they would represent anything other than an aqueduct bringing irrigation water from the well to fields located to the east and west (FIGS. 3, 4, 5, 6, 7).

Some layers related to the first occupation contained traces of hearths and even the remains of a

3. Well (1) and canal supporting walls (2a and 2b) from the pre- khān phase; east wall of the first khān (3); north and south walls (4) of the cells of the east wing of the first Khān.



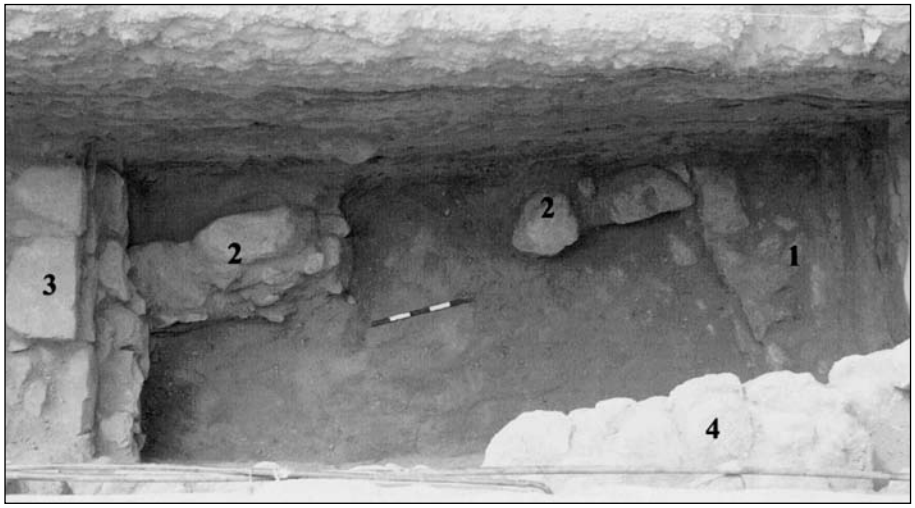
4. Pre- khān well (1) with step stones (1a/1b) and canal (1c); north wall of first Khān (2); rebuilt cell walls of the north wing (3); foundation of inner west wing wall (4) and other walls of the standing Mamluk castle (5).

ṭābūn or bread oven. One structure, defined by two circular column bases enclosing two tiles, is linked to a Fatimid glazed sherd recovered from directly underneath one of the tiles. A sherd from an Abbasid jar, which doubtless came from a nearby area, was built into one of the walls of the first Khān. We may therefore assume that the first occupation of the site started in the Umayyad period, but developed mostly from the Abbasid period onwards. The site was may have been associated in some way with the main site of early Islamic Ayla, ca. 1km. to the north. Probably the same type of activities continued on the site until the first constructions were built in the 12th / 13th centuries.

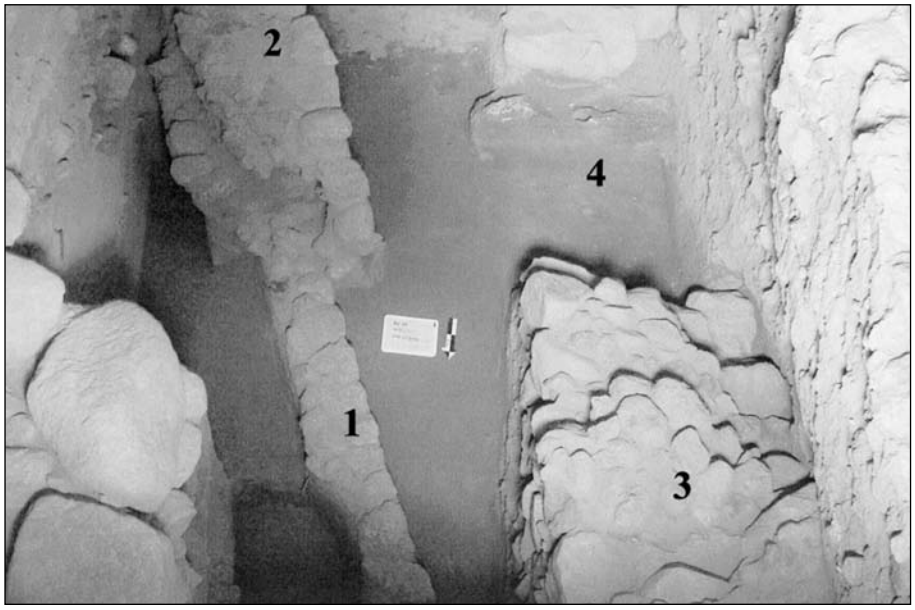
Phase 2: First 'Khān' (late 12th to early 13th century)

Phase 2a: The presumed presence of an Ayyubid or Crusader fortification as a bridgehead on the shore, with the main castle sited on Jazīrat Far'un, could not be confirmed archaeologically.

The first Khān constructed on the site consisted of a rectangular enclosure wall, measuring 56m. by 40m. Against the west wall, a series of rooms, approximately 2.8m. square, were constructed to form the west wing of the Khān. The corner rooms were rectangular and had a length of 4m. The west and south walls lay on the same line as the current castle. Its four corners have now been investigated



5. Pre-khān building (1 and 2) covered by the courtyard wall of the east wing of the first Khān (phase 2b); “en sous-oeuvre” repair of the south wall of the north wing of the standing castle (4).



6. Excavations in the south wing: canal supporting wall (?) (1); terrace wall (2); east wall of the first Khān interrupted by a tomb (4).

7. North part of the west wing: first Khān cell walls (2/2b); rebuilding of the west wing (phase 3a) and reconstruction of the east wall (phase 3b); late Mamluk castle (4/5); 19th century officers quarter wall (6); 20th century reconstructions (7).

and do not show any trace of corner towers (FIGS. 8, 9). Perhaps the larger corner rooms fulfilled that function.

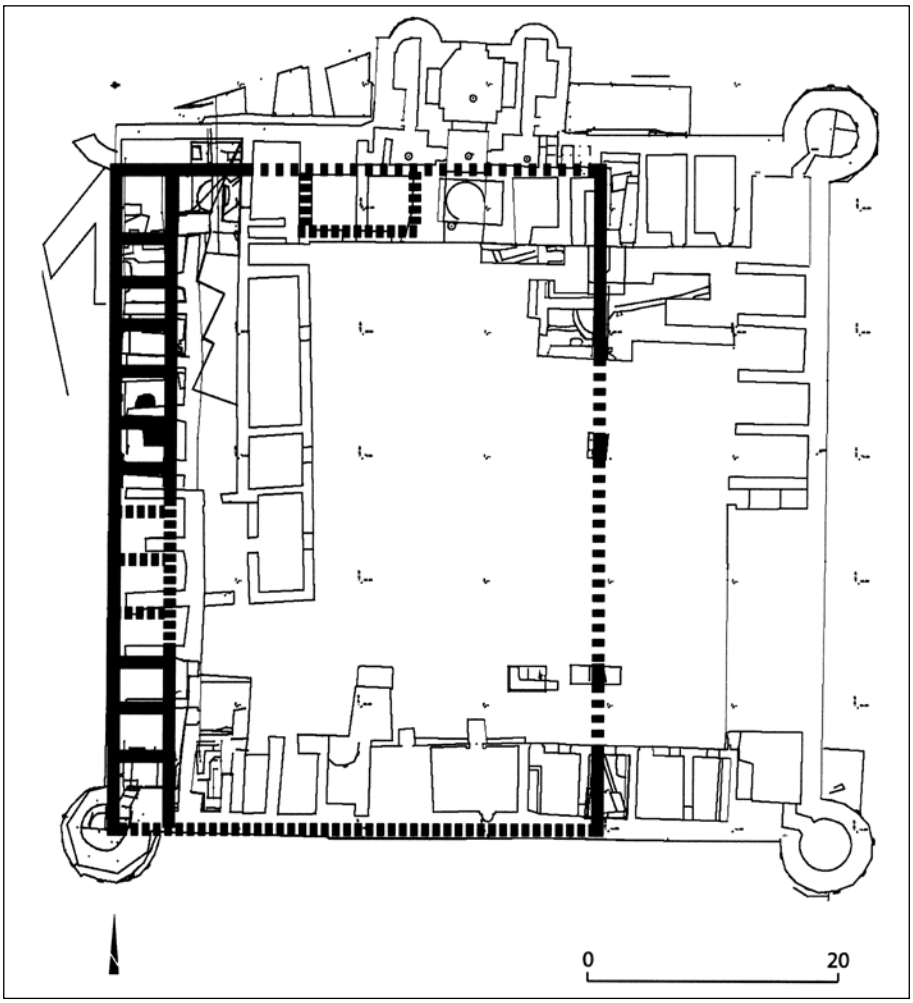
Although not yet excavated, it would be no surprise to find the entrance in the north wall projecting out into the courtyard, as the position of some later rooms in the central part of the north wing, which may use older walls as foundations, suggests.

For the moment we do not know if the first Khān had a mosque. However, it is not at all unlikely that the reorientation of the building was in some way linked to the position of the *qibla* (outer south) wall of any potential mosque [4], but excavations of that building have yet to confirm this theory.

Later destruction and rebuilding make it impossible to know if, in its earliest stage, the enclosure stood empty of any additional buildings and if the row of square cells against the western wall were built at a later stage.

Finds associated with these structures and associated C^{14} dates [5] are consistent with a date in the late 12th or early 13th century for the construction of the enclosure wall and the first cells of the west wing.

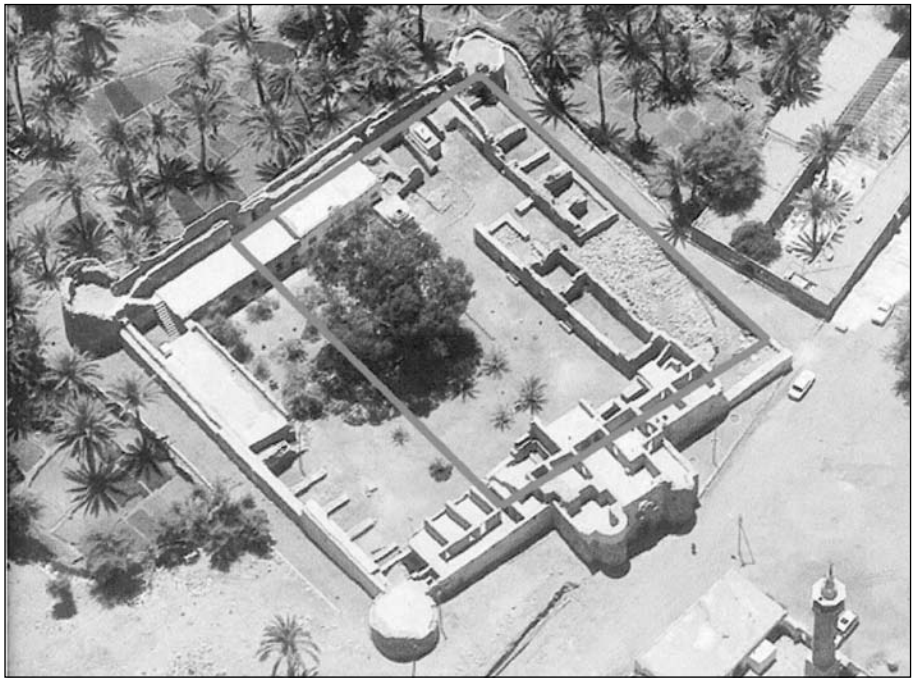
Phase 2b: In the north half of the west wing, we have clear indications that a number of rooms were reconstructed — perhaps after an earthquake — on more or less the same lines, as some of the preserved pavements and a latrine pit are overlain by the new cell walls. Possibly at the same time, cells were built against the east wall, by which stage the building would have started to look like and function as a Khān (FIG. 10).



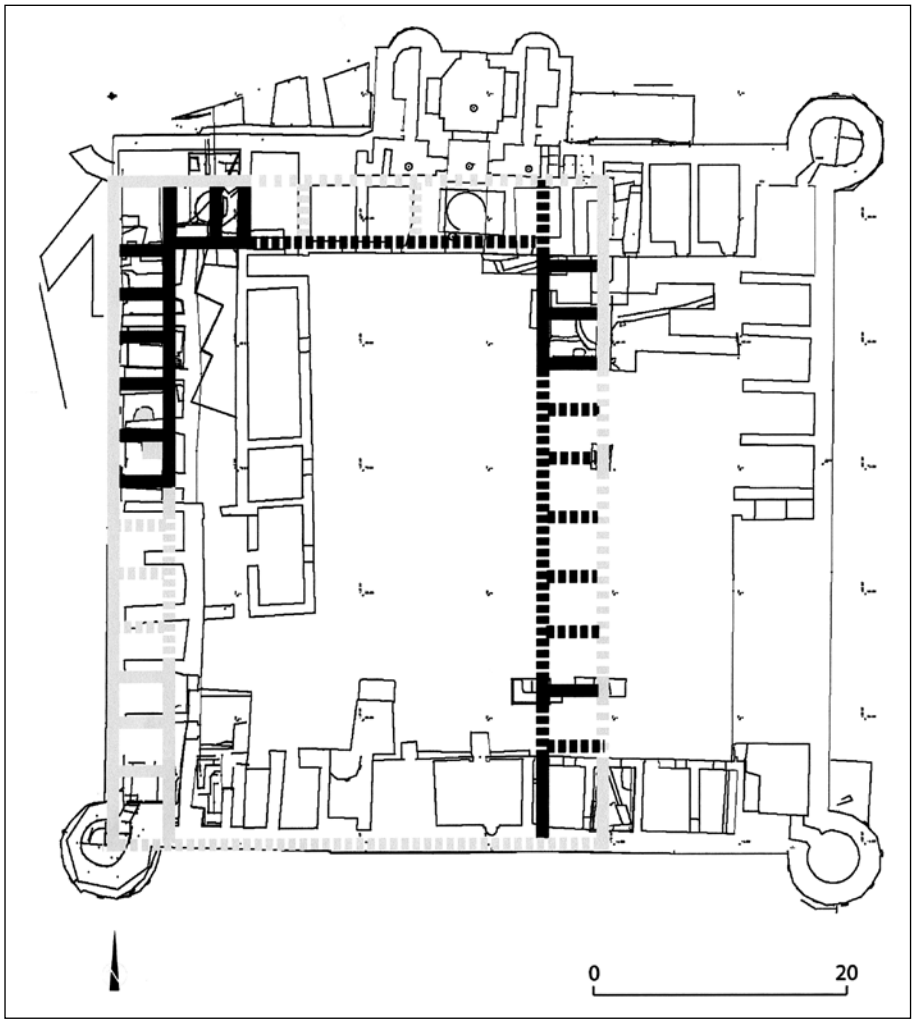
8. first Khān (dotted lines: supposed/ not excavated walls).

[4] The Mamluks were able to define the more or less exact direction of Mecca : excavations of a late Mamluk rural mosque in *Lahūn* showed that the *qibla*/*miḥrāb* orientation differed less than 4 degrees (De Meulemeester 2008); maybe their Ayyubid predecessors had already the necessary knowledge too.

[5] For the moment the results of a series of C14 analysis's on charcoal samples date the enclosure to the late 12th or early 13th century most probably between 1165 and 1220.

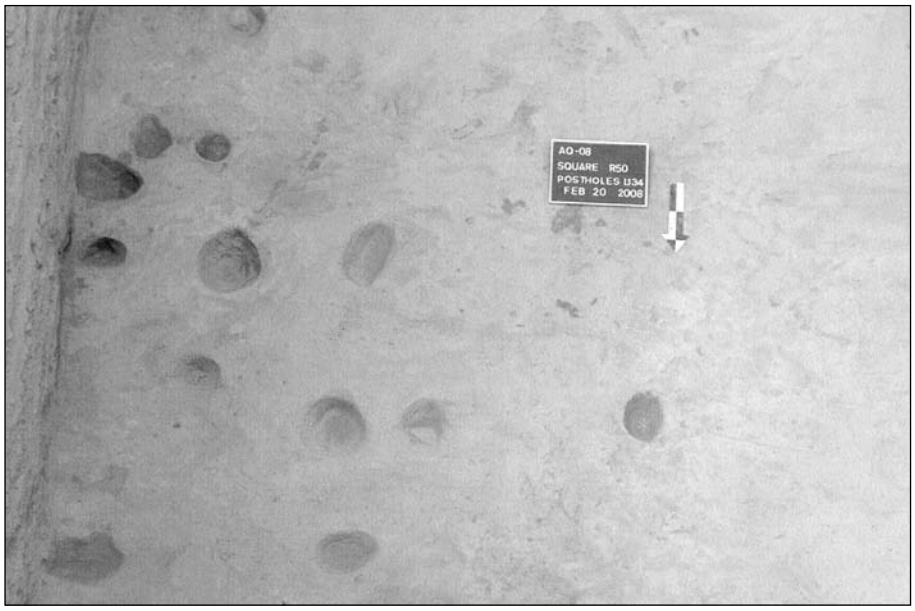


9. Location of the first Khān under the actual late Mamluk castle.

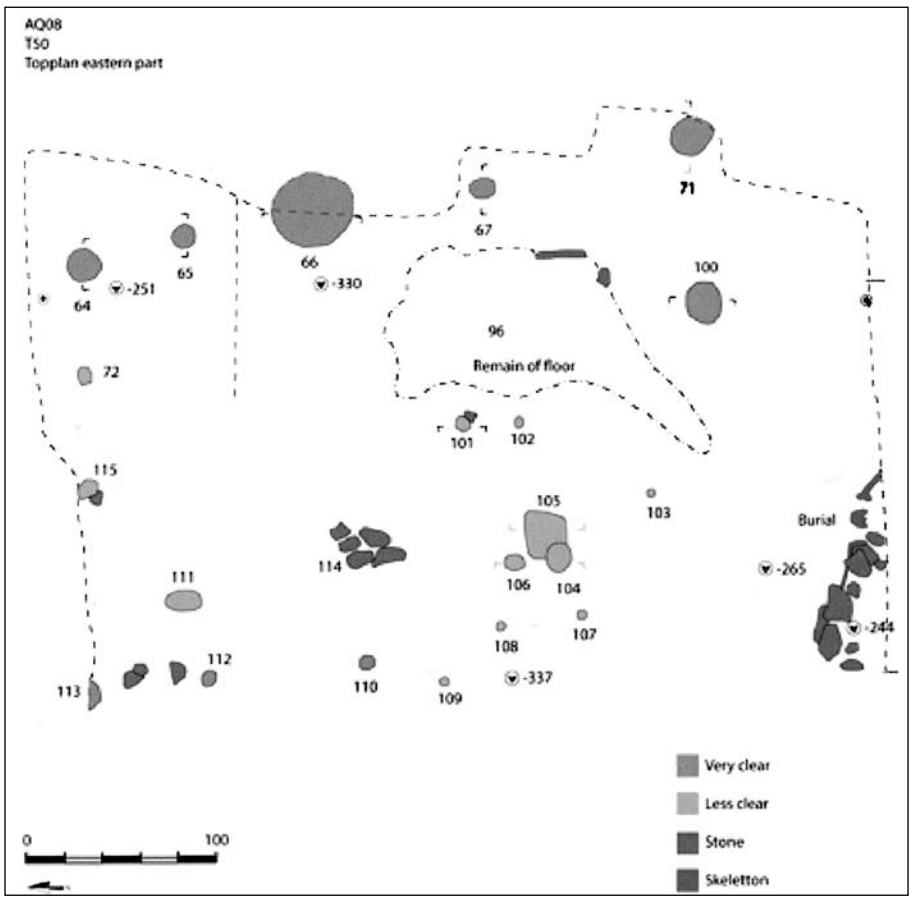


10. 13th century reorganisation of the first Khān.

Outside the extant castle wall and entrance, and inside the castle at the transition from the north to the west wing, a significant number of postholes were excavated (FIGS. 11, 12). For the time being, we can only interpret these as being for tent posts. On the de Laborde watercolour we can see how tents were put up in front of the castle as late as the 19th century. The deposits linked to the postholes all date to the Mamluk period. We therefore suspect that the tents stood in front of the first Khān. As for the postholes inside the Khān, they could have been associated with tents erected in the courtyard.



11. Postholes outside the castle wall (east of the entrance).



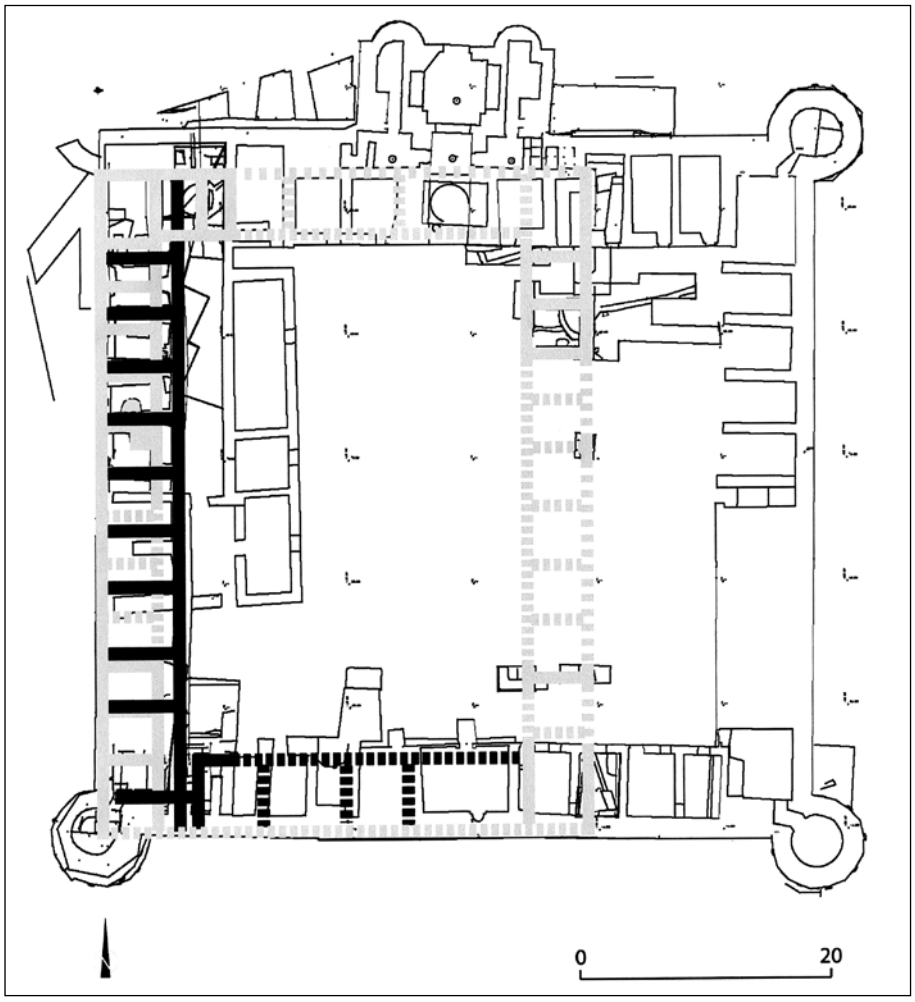
12. Postholes outside the castle wall (west of the entrance).

From a historical point of view, it is difficult to attribute the building of the enclosure / Khān to a specific person, but based on the C^{14} results this first Khān can be dated to the Ayyubid period. In that sense, it might initially have been a simple enclosure with the cells being built against the western outer wall as a later addition. Although the interior is different, this first enclosure / Khān can be compared with an other Ayyubid khāns: e.g. Khan al-‘Arūs situated north of Damascus, which is a rectangular construction measuring 41m. by 47m., without corner towers and with a gate house that does not protrude. According to an inscription that was originally placed above the entrance, it was built in 1181 / 82 by Saladin (Sauvaget 1939: 49-55, fig. 19). Reynald de Châtillon’s actions in the Red Sea may have somehow dishonoured Saladin in Muslim eyes, in the sense that he was not able to protect pilgrims to the Holy Cities. Could the construction of the enclosure be a manifestation of Saladin’s desire to protect the pilgrims and take control of the ‘Aqaba shore?

Within the C^{14} dating range, there is also the possibility that the Khān was built, or at least modified with the addition of new cells in the west wing and against the east wall — thereby giving the structure the function of a real Khān — by Al-Mu‘azzam ‘Isa in 1213 (Milwright 2008: 76). Alternatively, the construction of the new cells might be attributed to the Mamluk Sultan Baybars or his immediate successors. As a result of Mamluk involvement in providing protection and support to the annual Egyptian pilgrimage to the Holy Cities, ‘Aqaba may have needed a fortification to accommodate the pilgrims. From 1266 onwards, the Egyptian pilgrimage to Mecca and Medina came under official Mamluk sponsorship.

Phase 3: Reorganisation of the First ‘Khān’ (14th century)

Phase 3a: In the 14th century the interior of the Khān was reorganised (FIGS.13). The cells of the



13. 14th century reorganisation of the first Khān.

west wing disappeared and new rooms were built with a larger, more rectangular shape of ca. 3.5m. by 4.5m., with the whole having a similar general outline to the present castle. This time cells ware also built against the south wall; the inside of the north wall has not yet been excavated.

In the south-west corner, the castle's defences was strengthened with a tower that was circular inside; we have no idea about its outer shape as later tower building activities destroyed the structure[6].

At about this time, the castle at Jazirat Fara'un was destroyed by an earthquake. The suggestion that the governor may have abandoned the island after its castle had been damaged by the earthquakes of 1303 or 1312, especially the latter — which caused considerable destruction to St. Catherine's monastery — is plausible. The Mamluk governor abandoned the castle around 1320 in favour of a fortress on the shore, and it is probable that he occupied the existing Khān. Although the texts are not explicit, it is clear that a fortified Khān existed on the 'Aqaba shoreline during the early years of the 14th century and that no new construction work is mentioned or known to have been carried out. Some authors attribute the origins of 'Aqaba castle to Sultan Nasir Muhammad. We favour the idea that the existing Khān was reorganised during the first quarter of the 14th century with the arrival of the Mamluk garrison from Jazirat Fara'un around 1320, rather than the suggestion of a newly constructed building. It would not be surprising if destruction on the island coincided with destruction on the shore. This would explain the replacement of the cells of the first Khān and the completion of the other wings at this time. The construction of more spacious rooms and the increase in their number is suggestive of additional functions for the complex. Further research is required to determine whether the reorganisation was limited to the building of similar cells along the west wing, or whether more residential structures were constructed against the north and south wings. By this stage, the castle would have functioned as the governor's residence and a garrison fort, rather than as a real Khān, but for how long?

Phase 3b: Once more, at least some of the rooms — again in the west wing — were rebuilt after an earthquake; for example: a pavement belonging to a room of this period runs under new walls built with less care. Do these reconstructions in the aftermath of an earthquake mark another shift in the building's function, whereby it reverted to a real Khān again? (FIG.14)

Phase 4 : The Second Khān or 'Castle' (ca. 1515 – 17th / 18th century)

It is clear from the excavations that the Khān was abandoned, ruined and disappeared under the sand for a long period before it was rebuilt in the early 16th century. For example, tombs were dug into the east wall. It is probable that yet again an

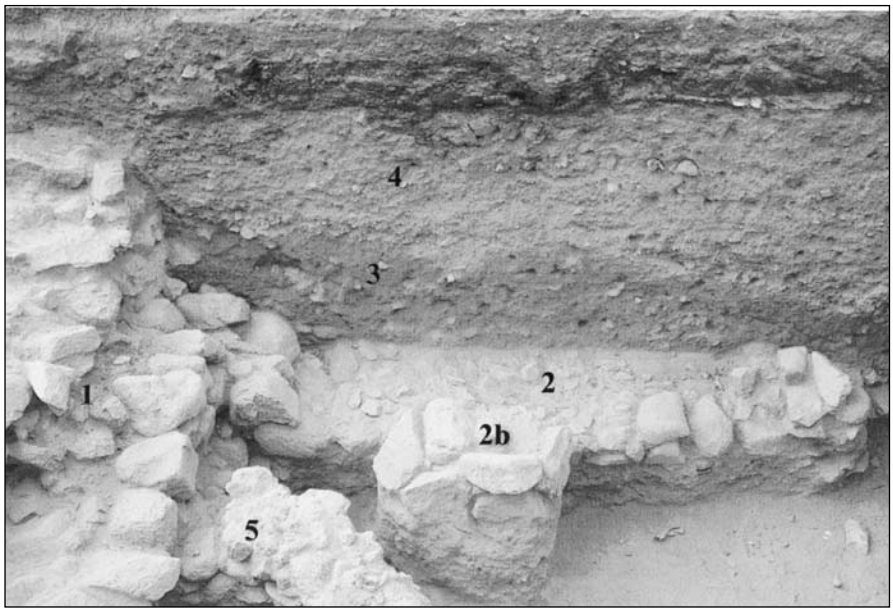
14. Kitchen cesspool (4) in a Phase 3b cell of the west wing; the cesspool consists of a Mamluk pot put upside down and contained a rich collection of small fish bones; reconstruction of first cell wall or phase 2b (1); phase 3a cell wall (2); phase 3b cell wall (3).

[6] As stratigraphy is not quite clear in this area, it is not impossible that this construction belongs to the next phase, the late Mamluk castle, and was replaced by the actual tower in the late 16th century (*cfr infra*).

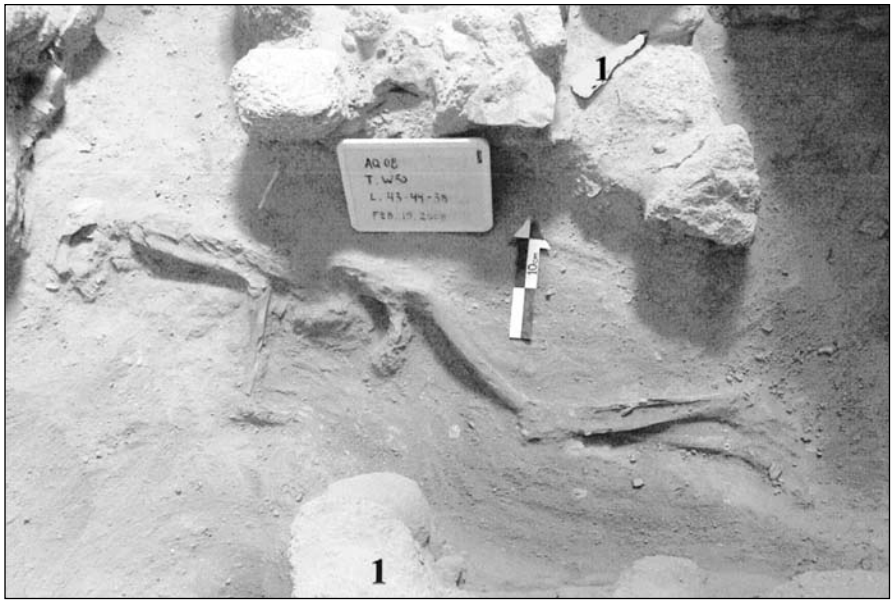
earthquake was the cause of the destruction and abandonment. In 1515, the last Mamluk sultan started to build a new Khān on the site. The site was levelled prior to the commencement of this Phase 4 building work. A second Khān, the present castle, was then constructed on a larger scale (FIGS.15,16).

In plan, the new Khān / castle takes the form of a rectangular enclosure, measuring 56.5m. by 58m., with corner towers. All of the corner towers seem, at least initially, to have been polygonal externally and rounded internally. Later, the north-east and south-east towers were partially reconstructed with a rounded external form, and later still the upper floors and vaults of the towers were rebuilt for the installation of cannon.

Excavations of the south-east corner, including the tower, suggest that the building of the Khān was interrupted. Perhaps the death of al-Gawhri and the take-over of the Mamluk Empire by the Ottomans was responsible for the interruption. It is probable that the Ottoman Sultan Murad III restarted / completed the work in the 1587 / 8. There seems to have been a lengthy period between the abandonment / destruction of the first Khān and the start of the work on the second Khān. For example, we know that there was a long period during which the pilgrims passing through ‘Aqaba lacked a func-



15. Excavation in courtyard: east wall of first Khān (1); cell wall of phase 2b (2) and fireplace (2b); sand blown against the ruined outer wall of the Khān; leveling of the site before the construction of the standing castle (4); pre- Khān well (5).



16. Tomb cutting trough the east wall of the first Khān.

tioning Khān. Later building work, including that of 1588 — also dated by inscriptions — which is associated with the Ottoman Sultan Murad III, was initially thought to represent little more than renovations. A careful excavation of the still polygonal south-west tower makes it clear that it must have been rebuilt after the construction of the early 16th century Khān, as its foundations cut through the wall built by the Mamluk sultan. Most likely this rebuilding was associated with the activities of Sultan Murad III.

The most impressive feature of the second, new Khān is the gatehouse, which projects from the middle of the north wall. Its design is curiously skewed towards the north-east, whilst the westernmost of the two rounded turrets that enclose the gate is larger than the other. The reason for this design feature appears to have been to create a false perspective, making the gatehouse appear symmetrical when seen from the principal direction of approach from the north-east.

Phase 5: Rebuilding (17th – 18th centuries)
Investigation of the internal parts of the standing structures suggests a complicated sequence of construction and reconstruction, extending over the centuries during which the building served both as a fortress and as a Khān used by Egyptian pilgrims travelling to and from Mecca. The rebuilding work not only included the ranges of cells for Muslim pilgrims and, at certain times, troops, which line the inside face of the walls, but also to the mosque in the south range which, although Mamluk in origin, appears to have undergone at least three phases of rebuilding during which its floor level was raised by more than a metre.

Various structural alterations were made to the castle in the 17th and 18th centuries. These included the rebuilding of the south face of the north range and alterations to the west range. Similarly, latrines were built, altered, repaired and rebuilt. The result was the castle as we see it in the illustrations of Léon de Laborde, who drew a plan and front view ca. 1827, and those of David Roberts made ca. 1843. The de Laborde plan shows a regular Khān with cells around a central courtyard. Thus, when de Laborde passed through ʻAqaba, the building might still have been fulfilling its original function as a Khān for pilgrims, although his watercolour does shows a cannon protruding from the north-east polygonal tower.

Phase 6: Rebuilding After ca. 1830
Between 1831 and 1840, Egypt occupied Palestine and Syria. In 1841 the borders of Mohammad Ali's Egypt were finally delineated at the Convention of London after what is known as 'The ʻAqaba Incident'. Egypt was left in possession of the Sinai peninsula and a number of Red Sea garrison towns, including ʻAqaba, in order to protect the Egyptian pilgrim route to Mecca. It seems that it was during this Egyptian occupation that the reconstruction of the stronghold in its present form was carried out, losing some of the cells of the Khān in favour of a place adapted to the needs of a military garrison. Some time after de Laborde's visit, a number of changes were made to the castle, including the partial rebuilding of the north-east and south-east towers, with rounded as opposed to polygonal exteriors, and the demolition of the northern part of the west range to create an enclosed yard with a gate on the east. This reorganisation left a very different west range, with buildings, as we know them today after the various reconstructions of the 20th century. Under the Egyptian occupation, the Khān became the military fort that would eventually be destroyed in the wars of the early 20th century.

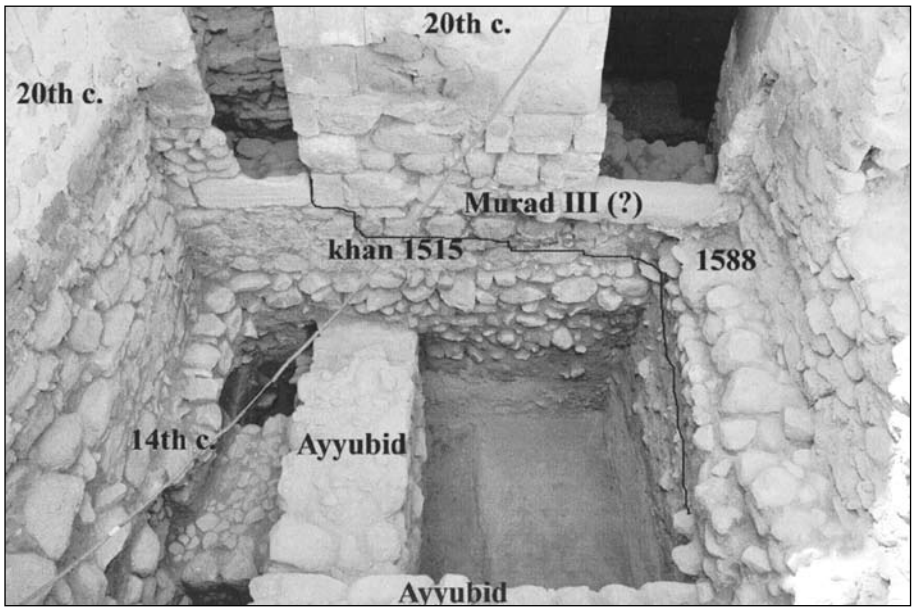
Phase 7: First World War Destruction and 20th-Century Use
During the Italo-Turkish war (1911-2) and the First World War (1915-17), the castle was bombarded from the sea. Much of the west wall and west range was destroyed and the remains of the latter were filled with earth and rubble to create an elevated platform, probably on which to mount artillery. After the conquest of the fort by the Arab army, the courtyard was cleared and a rectangular building, most likely a stable, was constructed in its eastern half (FIG.17). After the war, the castle was largely rebuilt. Since 1980, reconstruction of the castle has been undertaken by the Department of Antiquities.

Conclusion
For the time being, archaeological excavations at ʻAqaba Castle have yielded no evidence for a Crusader presence at the site. Activities that were most probably associated with the presence of the Islamic town ca. 1km. to the north mark the first occupation of the site. Possibly during the Ayyubid period, but certainly by the 13th century when the Mamluks became responsible for the safety of pilgrims

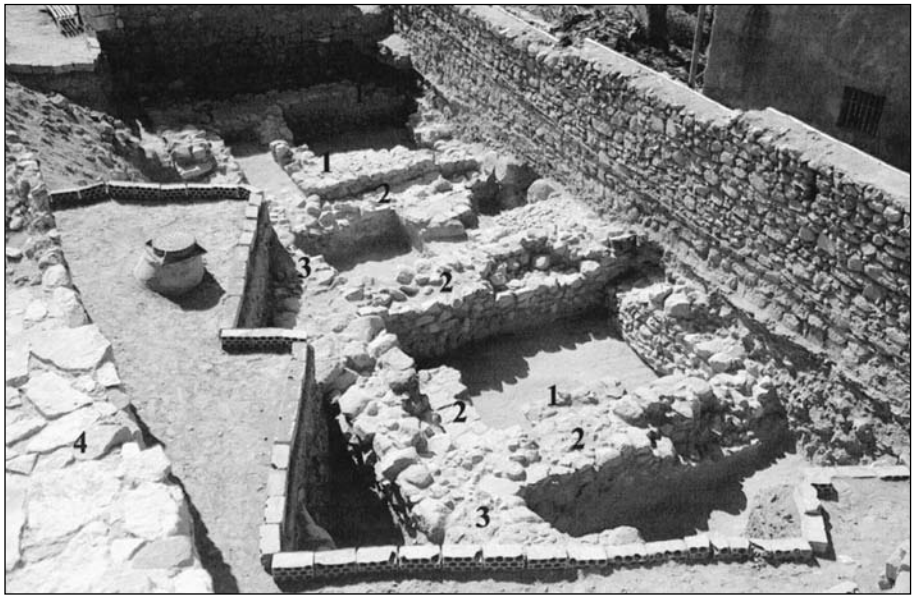
17. Northeast corner of 20th century barrack in the central courtyard known from post-WWI photographs.

travelling to Mecca, the first Khān was constructed. This was replaced by the current building, which was mainly constructed ca. 1515 (FIGS 18-21).

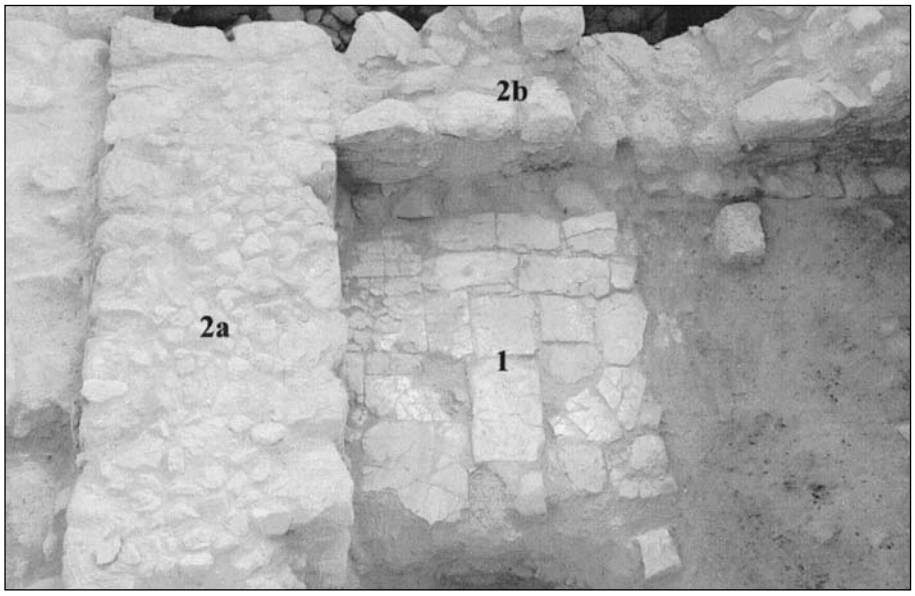
As for the Crusader presence in the area, analysis of historical records clearly demonstrates that the main castle to exert control over the Gulf of ‘Aqaba was sited on Jazirat Fara‘un. It is unclear whether the buildings there had predecessors of Byzantine origin or not, although that would certainly not be unfeasible. The island was certainly occupied during the Fatimid period, as demonstrated by the ruined walls of a 10th century mosque. Only new excavations can shed further light on the matter. If there was a Crusader garrison post on the shore at any time, it does not appear to have been at the site of the present Castle of ‘Aqaba, as building work there started only after the conquest of the area by Saladin. On the other hand, if we had to rely on archaeology alone, there would be no evidence for a Crusader presence on Jazirat Fara‘un either. As a working hypothesis we consider the possibility that the Crusaders used the walls of Islamic Ayla to give them some protection and defensive positions. In England, Wales and Flanders they used old Late Roman “Saxon shore” forts in this way during the same period, building their castles within the Roman fortifications.



18. Southwest corner of the Mamluk castle.



19. Middle part of the west wing: Phase 2/2a (1); Phase 3 (2); Phase 3b (3).



20. Excavations in the west wing: rebuilt cells cutting trough (2b) or covering (2a) floor (1) of the first cells.

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21 Excavations in the east wing revealed only structures from the standing castle: cell walls of the second Khān (1); 20th century reconstructions (2).

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Khirbat al-Batrāwī: a Case Study of third Millennium BC Early Urbanism in North-Central Jordan

Premise

The rise of urbanization in Transjordan during the third millennium BC, which was a development of the Early Bronze Age culture that emerged in the region during the last centuries of the fourth millennium BC (Kenyon 1957: 93-102; Esse 1989: 82-85; Nigro 2005: 1-6, 109-110, 197-202, 2007a: 36-38), is a distinct historic-archaeological phenomenon which has attracted the attention of scholars aiming to produce a reliable definition of early urbanism, if indeed it existed, in this fringe area of the Levant. After coping with terminological issues, derived mainly from the fact that 'urbanism' in this region of the ancient Near East was very much a local phenomenon with its own characteristics (Liverani 1999: 227-231; Rast 2001; Greenberg 2002)[1], scholars have attempted to elucidate the different implications of the rise of urbanism as reflected — if indeed it is reflected — in the archaeological record. These include:

1- The social organization of early communities, introducing concepts such as heterarchical society, or urbanism within a chiefdom model of social organization (Gophna 1995; Philip 2001: 166-168).
2- The economic basis of such groups (Esse 1989: 88-89) and their relationship with landscape, shifting from adaptation to territorial domination (Philip 2003).
3- The levels and trajectories of interaction and exchange between communities and regions, through the Jordan valley, Palestine, southern Syria and the coastal Levant (Esse 1991).
4- The physical remains of these early settlements, in which meaningful public architecture – namely, massive fortification works – first appear (Kempinski 1992; Herzog 1997: 42-97; Nigro 2006b). There is general consensus that these fortifications, often referred to in the context of "walled towns" or "fortified settlements" (Schaub 1982; Schaub and Chesson 2007), are the most meaningful witnesses of early southern Levantine urban culture.

Scientific debate has focused on paradigms, models and interpretations[2] because empirical data have been sparse, frequently only partially published and difficult to compare on both typological and stratigraphical / chronological grounds[3]. Theoretical studies have proliferated, alongside anthropological and sociological explanations, while the gap between hard evidence and more general historical reconstruction has become wider and wider.

Looking for an "Urban" Phenomenon: The Case Study of Khirbat al-Batrāwī

A preliminary step in conducting a regional study of human settlement and social organization, as reflected in the spatial distribution of communities

[1] The use of terms as 'urbanism', 'urbanisation' and 'city' to define the Palestinian and Transjordanian phenomenon is up to now a matter of discussion (firstly, Schaub 1982: 67; Seger 1989: note 1), because of its restricted and local character in comparison with the Mesopotamian and Egyptian urban experiences (Liverani 1986); on this issue see also: Philip 2001: 163-168; Chesson and Philip 2003; Rast and Schaub 2003: 17; Savage *et al*. 2007, suggesting caution in employing such a terminology in the Southern Levantine context.

[2] A turning point dealing with this issue was the Emmaus Colloquium organized in 1986 (de Miroschedji ed. 1989), followed by several dedicated studies (Joffe 1993; Gophna 1995; Finkelstein 1995; Philip 2001; 2003; Rast 2001; Chesson and Philip 2003; Harrison and Savage 2003).

[3] The major EB II-III settlements in Jordan were the following (from north to south): Tall al-Ḥuṣn/Irbid, Khirbat az-Zayraqūn, Tall al-Ḥuṣn/Pella, Tall Abū al-Kharaz, Tall al-Ḥandaqūq North, Tall as-Sa'īdiyah, Tall al-Ḥandaqūq South, Khirbat al-Batrāwī, Tall al-'Umayrī, Khirbat Iskandar, al-Lajjūn, Bāb adh-Dhrā', Numayra, but just a few of them have been thoroughly investigated and systematically published.

within a given area, is to establish a site hierarchy on the basis of settlement size and location (Finkelstein 1995: 55-64). It is an approximate process, however, as each cantonal area would have had its own territorial resources which would, in turn, have influenced settlement size and location (Liverani 1999: 227-231). Nonetheless, site size is generally accepted as being an approximate reflection of site rank. On this basis, a series of key sites can easily be identified in different parts of Early Bronze Age II - III Jordan, e.g. Khirbat az-Zayraqūn, Tall al-Ḥuṣn / Pella, Khirbat al-Batrāwī, Bāb adh-Dhrā‘ and possibly al-Lajjūn. These sites provide plentiful information on different aspects of early urbanization in Jordan. However, a coherent picture has yet to be sketched out, owing to differences between areas and incomplete archaeological data.

In this context, the archaeological survey carried out by Rome "La Sapienza" University in the Upper Wādī az-Zarqā'[4] and subsequent excavations at the Early Bronze Age II - III site of Khirbat al-Batrāwī (FIG. 1) — the main focus of the project[5]— have provided a unique opportunity to study urban origins and developments in north — central Jordan on the basis of a reliable set of fresh data. It has the potential to provide insights into the basic issues involved in any attempt to define this "urban" phenomenon, *viz*. relationships with landscape, the gradual shift from village-based subsistence to urban economies (involving accumulation, specialized food production and craftsmanship), exchange, long-distance trade, road networks and monumental architecture.

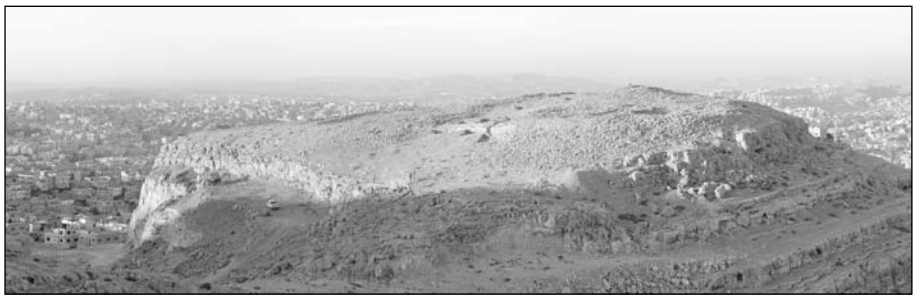
The Origins of the City: Urban Catalysts in the Upper Wādī az-Zarqā'

The development of a fortified settlement at Khirbat al-Batrāwī during Early Bronze Age II, or the first centuries of the third millennium BC, has been investigated as a case study in the upper Wādī az-Zarqā' area by the Rome "La Sapienza" University expedition to Palestine and Jordan.

The upper Wādī az-Zarqā', from the river's sources in ‘Ammān down to its confluence with Wādī aḍ-Ḍulayl (Nigro ed. 2006: 4-8), provides a series of geo-ecological niches that are extremely favourable for human occupation. The most famous of these, for the Pre-Pottery Neolithic period, is ‘Ayn Ghazāl (Rollefson and Kafafi 2007; Simmons 2007: 176-181), situated close to one of the sources of the river (Douglas 2006: 49). During the Chalcolithic period, the valley[6] seems to have been only sparsely occupied, but in the Early Bronze Age the area attracted semi-nomadic groups who gradually settled in encampments, hamlets and villages along the banks of the river and on the hills overlooking it (Kafafi in press: fig. 2).

From EB I Villages to Urban Formation: Synecism and Catalysts

EB I rural villages were distributed along the river's banks from its sources — one major site was

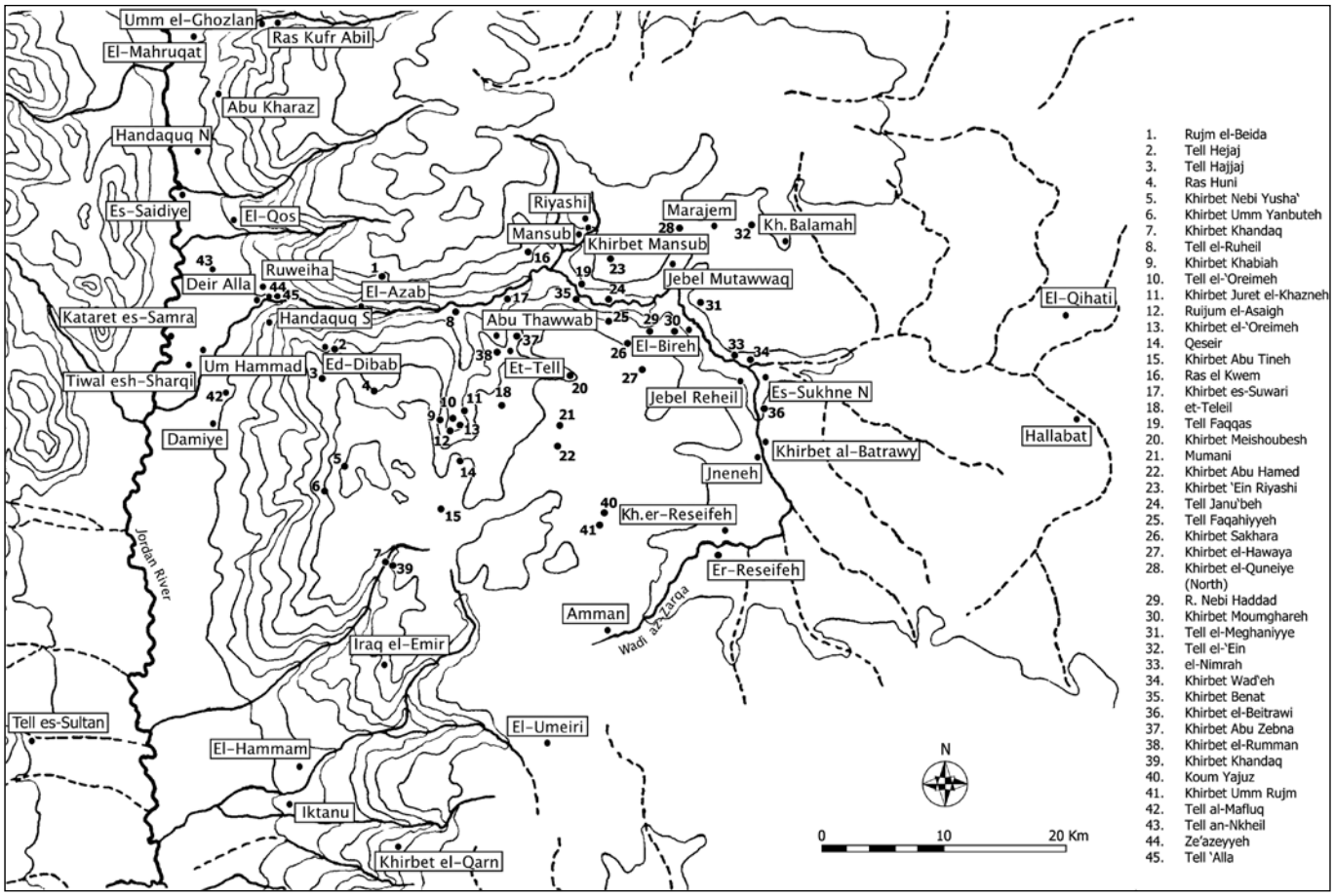


1. General view of the site of Khirbat al-Batrāwī from north, with the EB II city-wall and city-gate (2007).

[4] This regional study was started by G. Palumbo in 1993 and carried on systematically until 1999 (Palumbo, G. *et al*. 1996, 1997; Caneva *et al*. 2001). The survey was then resumed in 2004 under the direction of the writer, as a corollary research activity of the systematic excavations at Khirbat al-Batrāwī (Nigro 2006a: 229-230; Nigro ed. 2006: vii-viii, 1-8).

[5] The preliminary reports on the first season (2005) were published in 2006 (Nigro 2006a; Nigro ed. 2006; Nigro 2007b). I take the opportunity of this conference to thank deeply the General Director Dr. Fawwaz al-Khraysheh for the strong help given by the Department of Antiquities to the project of archaeological investigations in the Upper Wādī az-Zarqā‘ and, namely, to the excavations at Khirbat al-Batrāwī; to the Inspector Romil Ghrayib and to the colleagues of the Queen Rania's Institute of Tourism and Cultural Heritage of the Hashemite University of az-Zarqā‘. The Italian Ministry of Foreign Affairs has also given a basic financial support to the project, as well as Rome "La Sapienza" University; to all the Academic Authorities responsible of this contribution, the Rector, Prof. Renato Guarini, the Vice-Rector Prof. Paolo Matthiae, and the Dean of the Faculty of Humanistic Sciences, Prof. Roberto Antonelli, is addressed my deepest thank.

[6] No real Chalcolithic settlements but only two seasonal encampments were found during surveys carried out in the Upper Wādī az-Zarqā‘ (Palumbo *et al*. 1996: 385; Douglas 2006: 49).



2. Early Bronze Age sites in Wādī az-Zarqā'.

'Ammān Citadel itself (Douglas 2006: 50-51) — down to the point where the river swings round to the west, where a number of large sites were clustered around a major religious centre, Jabal al-Muṭawwaq — one of the largest EB I sites in Jordan (Hanbury-Tenison 1987: 132; Douglas 2006: 51-52; Fernández-Tresguerrez Velasco 2004, 2005; Polcaro and Polcaro 2006). These sites of the middle Wādī az-Zarqā' were concentrated on its north bank. This is in stark contrast to the upper reaches of the wadi, where hamlets and villages were more evenly distributed. The main site in this area was Junaynah (FIG. 3), a 3 ha. village located on a flat terrace overlooking the west bank of the river just 1.5km. south-west of Khirbat al-Batrāwī[7]. Junaynah and al-Batrāwī are in the central part of the upper Wādī az-Zarqā'[8], a strategic location which controlled a ford and relatively large area of cultivable land[9].

3. The site of al-Junaynah, on the western bank of the Wādī az-Zarqā', south of Khirbat al-Batrāwī.

[7] The site of al-Junaynah was identified by K. Douglas roughly 500m to the south-west of Khirbat al-Batrāwī on the other side of the Wādī az-Zarqā' (Douglas 2006: 50-51, figs. 1.4, 2.16, maps 4-5); Jneneh also had a major Iron Age II occupation (*JADIS* nr. 2516.016, p. 2.172).

[8] The possibility of a proto-urban frequentation of the hill of al-Batrāwī already in the Early Bronze I is suggested by some cup-marks (FIG. 4) on emerging bedrock on the Acropolis and by the funerary utilization of some caves in the surrounding cliffs during this period (Nigro ed. 2006: 38-39).

[9] Khirbat al-Batrāwī and al-Junaynah are in sight: it has been suggested that the population of al-Junaynah was one of the components settling at al-Batrāwī; a relationship comparable with that suggested for Tall al-Fukhār and Khirbat az-Zayraqūn (Douglas 2006: 51).

A comparison of EB I and EB II settlement patterns in the upper and middle Wādī az-Zarqā' is enlightening. In the upper Wādī az-Zarqā', one of the sites, Khirbat al-Batrāwī, arose as a major fortified centre. This suggests that a synecistic process occurred, with the inhabitants of surrounding villages moving in to al-Batrāwī[10]. The dimensions of al-Batrāwī suggest that more distant populations may also have been attracted to the emerging fortified centre. This can be partially explained by observations from the middle Wādī az-Zarqā', where a significant proportion of EB I villages were abandoned without a nearby EB II centre taking their place (Douglas 2006: 52-54). In Early Bronze Age IB, it seems that at least a proportion of the semi-nomadic population of Jabal al-Muṭawwaq and the surrounding villages moved down into the Jordan valley, where a number of settlements may have benefited from their arrival[11]. However, it is equally possible that another part of this population moved upstream, in the opposite direction, attracted by the process of urban formation which was taking place in the upper Wādī az-Zarqā'. The synecistic process may therefore have extended its reach beyond the territorial niche which hosted it, i.e. the upper Wādī az-Zarqā'.

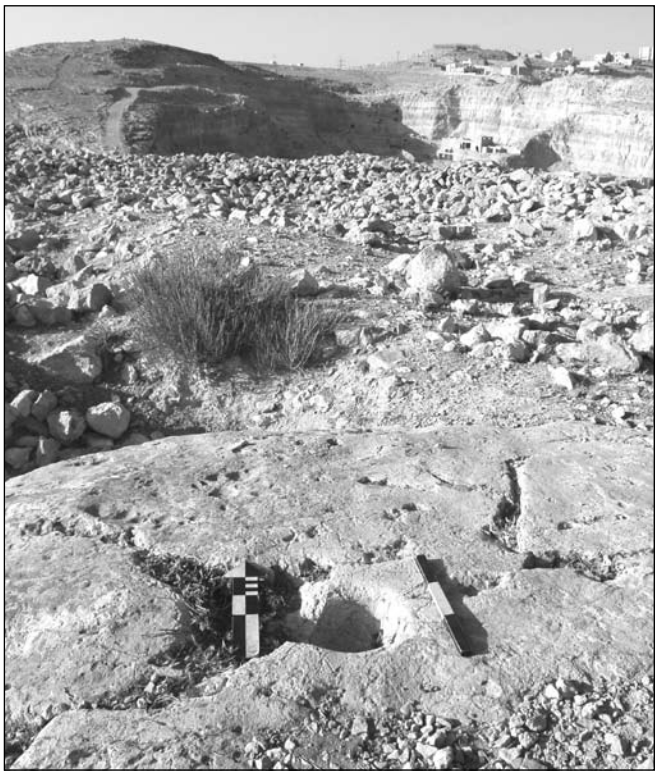
A related phenomenon can be surmised on the basis of analysis of settlement patterns. The sharp increase in the population of the upper Wādī az-Zarqā' and concentration of people in the new town may have induced other semi-nomadic groups to settle in the town itself or in the rural villages under its control, the latter including sites such as Khirbat ar-Ruṣayfah, Tall as-Sukhna North and Tall al-Bīra. This process can be referred to as an urban catalyst, i.e. the capability of the rising urban centre to attract other populations into a stable settlement and to generate changes in the social and economic functioning of nearby communities, as well as the integration of groups previously outwith the the village system within the urban socio-economic framework

Two processes — synecism and catalysis — were probably involved concurrently in the emergence of the fortified town of Khirbat al-Batrāwī, which went on to extend its territorial control over the entire upper Wādī az-Zarqā', from 'Ammān to Tall al-Bīra (FIG. 2).

Town Location: Landscape, Road Network and Territorial Control

As discussed above, there seems to have been a connection between the emergence of al-Batrāwī and the abandonment of EB I sites in the upper Wādī az-Zarqā' and, possibly, some of the larger sites in the middle Wādī az-Zarqā'. The community originally responsible for the foundation of the fortified centre may have been the EB I inhabitants of Junaynah, who seem to have moved to the rocky hill on the opposite bank of the river. Elucidating the reasons for this shift is an important objective of the current research, but in the meantime a tentativ suggestion may be put forward, i.e. a cult place already existed on the hill of al-Batrāwī during EB I (FIG. 4).

In any event, the location of al-Batrāwī was a strategic one, both from the point of view of its relationship with the surrounding landscape, and for the control over territory and road networks its occupation would have assured.



4. Cup-marks on the bedrock on the Acropolis of Khirbat al-Batrāwī.

[10] The shrinking and abandonment of many EB IB sites all over Palestine and Transjordan is actually a general trend registered in the transition from Early Bronze I to Early Bronze II (Esse 1991: 146-152; Finkelstein 1995: 50).

[11] Tall as-Sa'īdiyah, Dayr 'Allā, Tall al-Ḥandaqūq South, Tall Umm Ḥammād.

A Hill Dominating the Upper Wādī az-Zarqā'

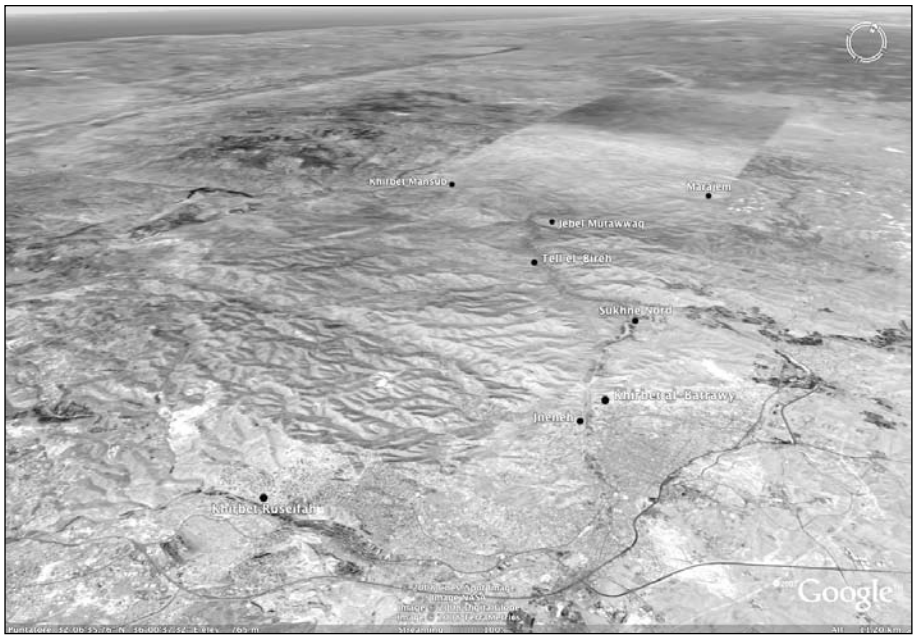
The EB II - III town of Khirbat al-Batrāwī was constructed on the southern summit of a range of limestone hills delineating the upper reaches of Wādī az-Zarqā' to the west (Khrisat 2006). To the south, the hill overlooks the whole valley as far as Khirbat ar-Ruṣayfah, while to the west and north it controls both the ford across the az-Zarqā' river and the narrow stretch of wadi leading down to Tall as-Sukhna North and Tall al-Bīra. To the east, the site overlooks the tracks coming in from al-Qihati and Azraq.

A 'Gateway' into the Wādī az-Zarqā' and Down into the Jordan Valley

The location of the site seems especially relevant with regard to the ancient routes through the Jordanian highlands, which led north from the source of the az-Zarqā' river at 'Ammān and east, towards the Syro — Arabian desert (FIG. 5). The identification of Early Bronze Age settlements and small outposts in the latter region hint at the existence of commuities that were unknown when Jāwā was discovered three decades ago[12] and which should be investigated further[13]. From this perspective, Khirbat al-Batrāwī on the one hand represents the western end of a route coming in from the east, and on the other a "gate" controlling access into the Wādī az-Zarqā' at the point where it becomes narrower and gradually descends, in a long turn to the west, into the Jordan valley[14]. This strategic location hints at the existence of relations with semi-nomadic communities living between the desert and the steppe, which has also been suggested by finds from the site itself and the survey area to its east, and of long-distance trade, as evidenced by the presence of seashells and carnelian at the site.

In the 'Throat of a Funnel': Territorial Control Through Control of Communications

If we examine the location of al-Batrāwī with re-



5. Satellite view of the bight of Upper Wādī az-Zarqā', including the territory and road network under the direct control of Khirbat al-Batrāwī.

[12] A survey was carried out in years 1984-1993 in the Hauran and Jabal Druz regions (Braemer 1993), and in the 1990ies other surveys were carried out also along the Wādī Rājil and Wādī al-'Ajīb (Betts *et al*. 1995, 1996). Thus, a substantial Early Bronze Age occupation has been identified at some sites in between the al-Mafraq district and the EB I site of Jāwā, along the Wādī al-'Ajīb, as well as further to the north in southern Syria, as the significant cases of Khirbat al-Umbāshī and Labwe testify to (Braemer *et al*. 2004; al-Maqdissi and Braemer 2006). Some of these Early Bronze Age Jordanian sites in the western fringes of the Syro-Arabic Desert are, from west to east, Tall al-Qihati, Qaṣr al-Ḥallābāt, Rukays, Salāṭin, Qaryat Khisha al-Sletin, Tall Umm al-Quṭayn, Hawshiyan (Betts *et al*. 1995, 1996). Investigations in the al-Mafraq province has been recently and more systematically resumed (Bartl *et al*. 2001); this northern district is still partially known as it concerns its Early Bronze Age occupation.

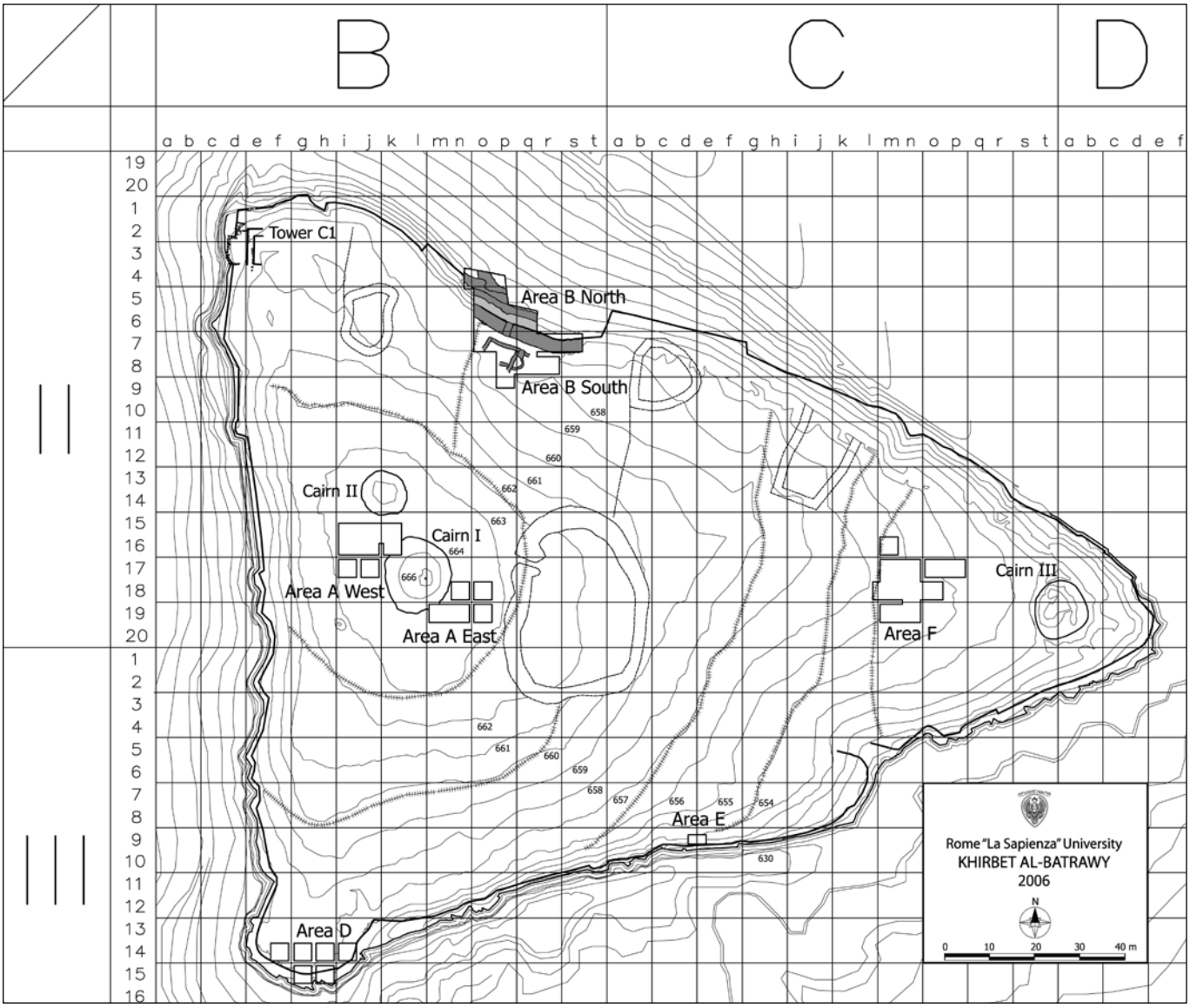
[13] A preliminary survey from the eastern edges of the az-Zarqā' and al-Mafraq districts towards the Syro-Arabic Desert (in the so-called al-Ḥarra region) was carried out in 2004 under the direction of the writer and with the cooperation of the DoA Inspector of the al-Mafraq district, Mr. Nasser K. al-Khasawneh, thanks to the support of the General Director of the Department of Antiquities of Jordan, Dr. Fawwaz al-Khraysheh. A provisional account of these results is offered by Sala 2006.

[14] The Wādī az-Zarqā' is the easternmost permanent river at western border of the Syro-Arabic Desert, in direct connection with the major wadis of the Black Basalt Desert of Southern Syria and Northern Jordan. Al-Batrāwī controlled the upper entrances to the wadi.

spect to the ancient road network in the upper Wādī az-Zarqā', it becomes evident that the site is located at the 'throat of a funnel', with the largest part of the valley to its south, including a series of lateral wadis leading from 'Ammān to al-Batrāwī, and a constriction between al-Batrāwī and the confluence with Wādī aḍ-Ḍulayl, in which sites were restricted to the river banks. This location assured effective control over the cultivable part of the valley on the one hand, and the road which ran alongside the river and down into the Jordan valley on the other.

Site Topography and Defence

The topography of Khirbat al-Batrāwī was particularly suitable for defence as well as for territorial control (Nigro 2006a: 233-235; Nigro ed. 2006: 16-23). This appears to have been a major reason for establishing the town at this particular location. The site covers 4 ha. and has an approximately triangular shape, with a 'base' along its west side where it faces Wādī az-Zarqā'. Steep rocky cliffs protected the entire perimeter of the site, except for a short stretch in the middle of the north side, where a shallow saddle linked it to a nearby hill. These natural defences were reinforced and completed by a massive system of fortifications, which transformed al-Batrāwī in an almost unassailable citadel. The top of the site sloped gradually down from west to east and was sub-divided into five terraces, delimited by scarp-walls, which regularized the natural contours of the hill. The acropolis was on the summit of the western terrace (FIG. 6).



6. Topographic plan of Khirbat al-Batrāwī.

The Erection of Fortifications in Early Bronze Age II

The defensive system at al-Batrāwī was constructed around the edge of the rocky hill during EB II by exploiting any cliff or spur. The main fortification work was a solid stone wall from which, at irregular intervals which depended on the natural morphology of the edge of the *khirba*, bastions and towers projected. This wall was repaired and reconstructed many times during the life of the city, growing progressively thicker and more complex during EB III. There were at least two major episodes of reconstruction in EB IIIA and EB IIIB, which involved the addition of an outer wall and a series of towers and bastion which were often rebuilt. More detailed archaeological investigation is needed to clarify the history of each point in the defences.

The earliest city wall has so far been systematically investigated in just two areas, one on the north (Area B; Nigro in press a: § 5.4) and one on the south (Area E; Nigro in press a: § 8.2) sides of the site. These areas will be discussed below, stressing their historical significance in the context of urban development. In addition, the general layout of the fortifications has been surveyed around the entire site (Nigro 2006a: 235-236; Nigro ed. 2006: 25-37).

The EB II - III Fortifications Around al-Batrāwī

Owing to the triangular shape of the mound, the strongpoints of the defensive system were at the corners, where huge tower-fortresses were located, many of which were added to the main wall or reconstructed with it during Early Bronze Age II - III.

The north-west corner (Area C) had a rectangular tower (Tower C1), built directly on a rock terrace with big limestone boulders (Nigro ed. 2006: 26-27, figs. 1.29-1.33). This tower protected a strategic point, namely a postern gate (identified but not yet excavated). Approximately 20m. to the east, two major parallel walls (W.305 and W.307) projected from the line of fortifications as far as the edge of the spur in order to protect this point. Continuing anti-clockwise, the west side of al-Batrāwī was the best protected one, owing to the steep cliff. At least two projecting terraces had offsets or protruding towers, constructed of large boulders set on bedrock, built upon them, which allowed for observation of the edge of the hill. In the south-west corner, a huge tower (Tower D1) controlled the az-Zarqā' valley and provided a panoramic overview (Nigro ed. 2006: 32-33, figs. 1.39-1.42).

The city wall, though badly eroded, was preserved along the whole southern side of the site. A probe excavated the approximate centre of the southern fortification line (Area E) demonstrated that the city wall that is preserved here dates to EB II, since the later EB III reconstructions collapsed and have been almost completely obliterated by erosion (Nigro in press a: § 8). A typical feature of this phase is the presence of crushed light-grey mud-bricks, which apparently belonged to the superstructure of the EB II city wall.

Roughly 45m. west of the east corner, a ravine in the edge of the hill indicates the position of a gate, which was approached up a ramp turning left from the foot of the cliff and into the city. This entrance was flanked by large piers and was further protected by structures built on the higher spur to its west (Nigro ed. 2006: 32, figs. 1.37-1.38). A third massive tower defended the eastern corner of the city, but is partially buried under a cairn (Nigro ed. 2006: 31). The north side of the town was investigated in Area B (see below), where the main entrance to the city was located at the point of easiest access.

The Earliest (EB II) City Wall and Main Gate in Area B

Excavations in Area B North reached the earliest occupation layers, which lay directly over bedrock and consisted of the earliest fortification wall, which dates to Early Bronze Age II (2900-2700BC). The city wall was constructed of huge limestone blocks and boulders (some more than 1.5m. in length), set carefully into the rock with battering foot for stability and strength (FIG. 7; Nigro ed. 2006: 175-176, fig. 4.32). It was built in separate stretches 6 to 8m. in length, a technique used at many fortified Early Bronze Age sites in Palestine and Jordan in order to provide a degree of protection from the effects of earthquake (Nigro ed. 2006: 176-177). Examples include Tall al-Mutasallim (Loud 1948: 66, figs. 152-154, 391), Tall Ta'annak (Lapp 1969: 9, fig. 2), Khirbat al-Karak (Maisler, Stekelis and Avi-Yonah 1952: 170-172, Pl. 9), at-Tall (Callaway 1980: 113-114, figs. 75, 85), Tall as-Sulṭān (Kenyon 1957: 174-175, Pl. 36, 1981: 100, 213, 262, 374, Pls. 83a, 201; Nigro 2006b: 370-371), Bāb adh-Dhrā' (Rast and Schaub 2003: 280-283) and Numayra (Rast

7. EB II city-wall W.103 made of huge limestone blocks and boulders, carefully set into the bed-rock with a battering foot, from north.

8. EB II city-gate L.160 of Khirbat al-Batrāwī, from north.

and Schaub 1980: 42, fig. 15). The inner fill of the wall was of medium-sized undressed limestone stones, placed in layers with pebbles, limestone chips and mud mortar. This construction extended up as far as the level of the gate lintel (*ca*. 2.3m. above ground surface), above which mud-brick was used. Several fragments of mud brick were found inside the city wall, despite the fact that the terminal EB II collapse deposits were removed during subsequent reconstructions of the city.

In spite of the monumentality of the city wall, the gate itself was a simple opening, 1.6m. wide (FIG. 8). This may have been because the town could only be approached by pedestrians and possibly donkeys along a street which flanked the wall. The outer jambs of the gate were reinforced with big blocks, with a step marking the entrance itself. The gate lintel was a monolith on the outer face and a wooden beam on the inner face of the passage. There is no evidence that towers ever adjoined this early gate, notwithstanding the fact that the area was completely reconstructed when the gate was blocked at the beginning of Early Bronze Age IIIA. Two earthquake cracks on both jambs may indicate that the gate lintel collapsed, which presumably caused the abandonment of the gate itself. The simple layout of the gate has parallels in the contemporary EB II defensive architecture of the region, such as at Khirbat al-Karak[15],'Ayy[16], 'Arād[17] and, subsequently, at Bāb adh-Dhrā'[18].

The Socio-Economic Significance of the Earliest City Wall

The overall length of the city wall (FIG. 9), in combination with its width and elevation, has allowed us to calculate the approximate volume of stones and mud brick required to construct it and to infer the approximate number of worker involved in its construction, assuming it would have been constructed over the course of one season of four months. If this was the case, more than 400 workers would have been involved in the construction of the earliest al-Batrāwī defences (sub-divided into 80 juxtaposed wall stretches), which would have in-

9. General view of the main EB II-III city-wall (W.103) of Khirbat al-Batrāwī, from east; in the foreground, the restored stretch of city-wall W.103; in the right background, the EB III outer wall (W.155) and scarp-wall (W.165); in the left background, Building B1 with installation T.413 erected inside the main city-wall in the Early Bronze IIIB.

[15] The south-east gate in Wall A, possibly also blocked at the beginning of the Early Bronze III (Greenberg and Paz 2005: 84, 86-89, fig. 8, 10-14).

[16] The Citadel Gate at Site A (Callaway 1980: 63-65, figs. 38, 41); the Postern Gate (Callaway 1980: 72-73, figs. 48-49, 51) and the Lower City Gate (Callaway 1980: 114-115, figs. 74-75) at Site L.

[17] Amiran - Ilan 1996: 20-22.

[18] The EB III West Gate in Fields IV and XIII, also blocked during the Early Bronze III (Rast and Schaub 2003: 272-280).

volved the quarrying of and transportation of more than 11,000 tons of limestone and the production of around one million mud-bricks, along the use of an enormous quantity of water for mud-mortar. This task would have been a tremendous enterprise for a community of no more than 2000 people and one in which non-urban communities would also presumably have been involved, perhaps by supplying skilled labour and animals. The organization of the work and food supplies for the workers, as well as the procurement of raw materials (straw, wood, clay and ḥuwwar), implies the existence of a centralised ruling administration which planned and executed the construction of the city wall. Some structural details, such as the partition between the various stretches of wall, the regular placement of blocks of similar size at the same elevation and the cutting of regular, squared blocks, testify that a strong central authority was responsible for the work, and thereby constitute indirect evidence for the existence of an established social hierarchy.

This does not, however, necessarily mean that the city walls were erected primarily as a demonstration of the power of of this ruling institution over the surrounding landscape and road networks, thereby identifying the city as an emerging social institution that ruled over the whole valley. This was of course one of the results of their constuction, but their major social impact was probably not ideological but economic, as a large proportion of the population of the district is likely to have been involved in the building work. Moreover, the walls testify to a perceived urgency for protection of the material and symbolic values incorporated into the new town by the agricultural communities of the upper Wādī az-Zarqā'.

The Broad-Room Temple and Origins of the City

Why did the people of Junaynah and some other villages in Wādī az-Zarqā' move to the hill-top site of al-Batrāwī at the beginning of EB II? One reason was apparently defensive, as the city walls themselves testify. A second reason for the choice of Khirbat al-Batrāwī is suggested by the cup-marks still visible on the bedrock surface of the acropolis (FIG. 4). It is possible that there may have been a cult-site on this hill-top during Early Bronze Age I. When the town was established, it would have included any early religious compound that may have existed there.

In 2006, excavations on the easternmost terrace of al-Batrāwī (Area F) led to the discovery of a major building, aligned east-west and covering an area of approximately 400sq.m. The building, which included a forecourt (L.504) and some cult installations (FIG. 10; Nigro in press a: § 9.3), consisted of a broaroom (L.500) delimited by a solid wall 1-1.2m. wide, with a protruding pilaster on both sides of the entrance, which was located two-thirds of the way along the room's length. The inner dimensions of the broad-room were 2.7 by 11m., giving it a width to length ratio of 1:4. Inside the broad-room, a slab embedded in the floor on its western side suggested that, at least in one phase of its use, the roof of the *cella* may have been supported by a central row of wooden pillars. The entrance was 1.36m. wide and opened southwards onto a forecourt paved with crushed limestone. Abutting the southern façade was a bench or base for a protruding pillar (S.536). In the courtyard, a stone-lined round platform (S.510), 0.35m. high and with a diameter of 2.5m., was built around a bedrock protrusion and faced the entrance. In the centre of the platform, there was a slab with a circular hollow in its middle. Just to the west of the entrance, a circle of stones in the courtyard floor may have been another cult installation, perhaps the base for a betyl.

The overall plan of the building and the circular platform in its forecourt lead us to interpret it as a broad-room temple, of a type well-attested to in the southern Levant during the Early Bronze Age, similar to the renowned EB II - III sanctuary at Bāb adh-Dhrā'[19].

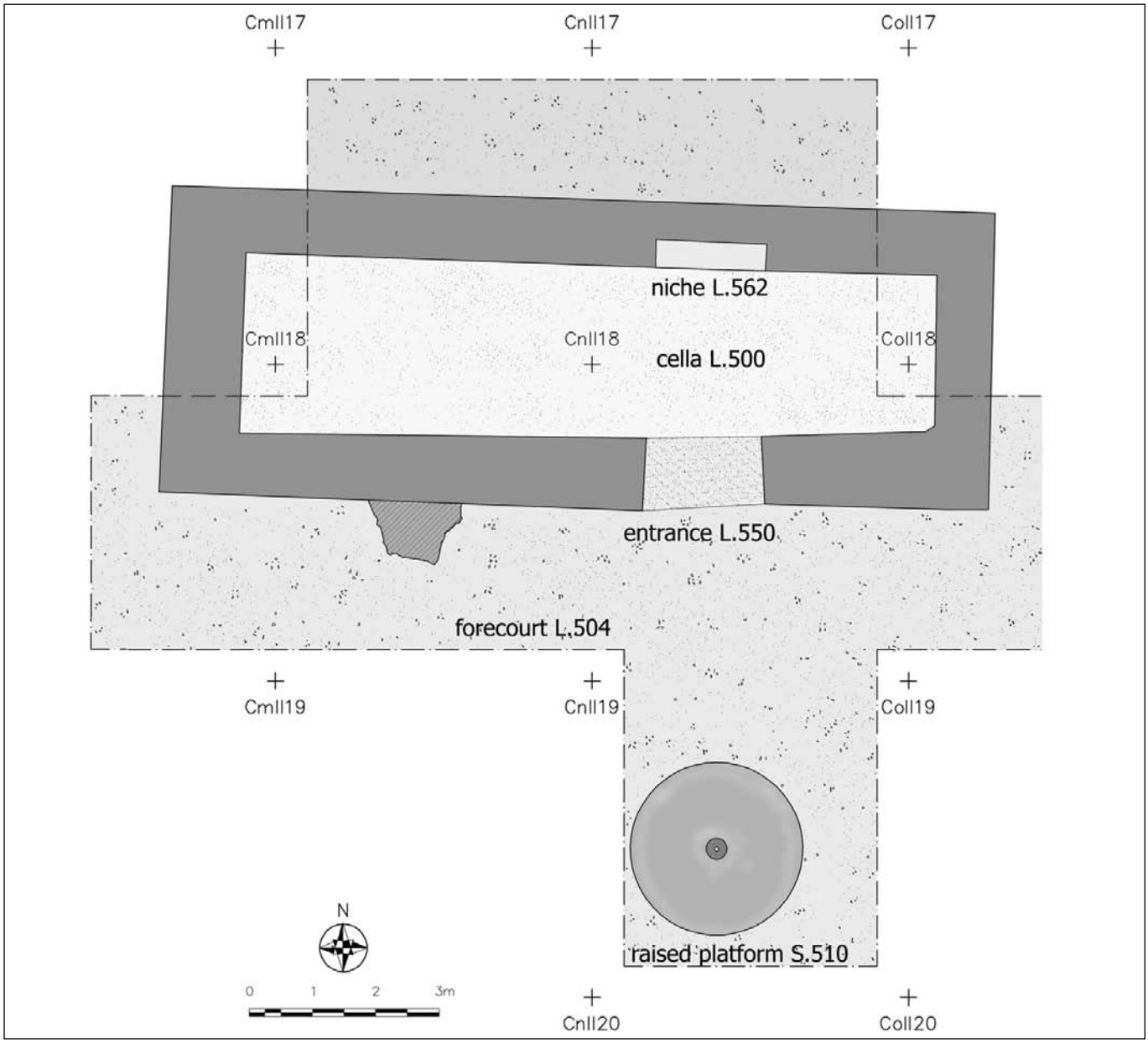
The presence of this religious building, of a type in which the earlier religious architectural traditions of the Chalcolithic period (e.g. the sacred precincts of 'Ayn Gidī and Tulaylāt al-Ghassūl; Sala 2007: 3-30, 291-294) were preserved, at such a panoramic location suggests that the broad-room temple was a major focal point in the town and the valley below when the city of al-Batrāwī was emerging. The sacred building was founded in Early Bronze Age II at the same time as the town itself and may, therefore, indicate another function of the fortified town, i.e. to host the religious centre of the district

[19] Rast and Schaub 2003: 157-166, 321-335. For a general appraisal on the Early Bronze Age sacred architecture in the Southern Levant see Sala 2007.

after the sanctuary of Jabal al-Muṭawwaq had been abandoned (see above § 2.1).

The Sudden end of the EB II Town

A violent earthquake brought the earliest EB II city (Batrawy II) to a sudden end, as was probably also the case at other north and central Transjordanian sites. In the Jordan valley, Pella / Tall al-Ḥuṣn, Tall Abū al-Kharaz and Tall as-Sa'idiyah were all apparently destroyed at the same time and in the same way (Bourke 2000: 233-235)[20]. Traces of this dramatic event have been detected in both Area B, along the northern and southern city walls (Nigro in press a: § 5.4), and Area E (Nigro in press a: § 8). It caused the near-complete collapse of the mud-brick superstructure of the city wall and se-



10. Schematic plan of the EB II-III broad-room temple and circular platform in Area F.

[20] A large amount of Early Bronze Age Palestinian and Transjordanian sites underwent a violent destruction at the end of the Early Bronze II, some of them being definitively abandoned (as Tall al-Fār'ah North, Tall Abū Kharaz and Tall as-Sa'īdiyah, Arad). It seems that such conflagrations were caused for the most part by an earthquake, as attested to at Megiddo (Finkelstein *et al.* 2006: 49-50), Pella/Tall al-Ḥuṣn, Tall Abū al-Kharaz and Tall as-Sa'idiyah (Bourke 2000: 233-235), 'Ayy (Callaway 1980: 147, 1993: 42), Jericho/Tall as-Sulṭān (Kenyon 1957: 175-176, pl. 37A 1981: 373; pls. 200-201, 343a; Nigro 2006b: 359-361, 372-373).

riously damaged the 2m. high stone foundations, which still exhibit cracks and evidence for internal collapse. Additionally, the main town gate was destroyed (both jambs show vertical cracks corresponding to the position of the lintel) and subsequently abandoned and blocked by a secondary wall (see below). The grey mud-bricks of the city wall superstructure spilled over the stone foundations and left a thick layer of crushed material all around the defences. The main façade-wall of the temple and its entrance were also damaged.

Landscape Exploitation and the Flourishing EB III City of al-Batrāwī

The intrinsic nature of the "fortified town culture" of Early Bronze Age Jordan lies, as stated above, in the role performed by the fortifications (Schaub and Chesson 2007: 251-252) which, in the case of al-Batrāwī, were subjected to a continuous process of reconstruction and structural improvement. These fortifications had an internal role, in terms of the economic impact of such building enterprises on the local community, and an external role, concerning the control exercised by the fortified city over the surrounding landscape. The latter points to some sort of military role for the newly-established town, perhaps as a major centre of power at the end of the tracks crossing the Syro-Arabian desert. Nonetheless, such impressive fortifications suggest that some centralization of agricultural production and trade was pursued in order to collect and protect economic surpluses. Both of these two roles — territorial control and centralization of goods and population — would have been linked to the "fortified town culture".

In the case of al-Batrāwī, the city walls clearly show the progressive grow of the urban centre, which apparently allocated a large proportion of its resources to the construction and maintenance of its defences. Early Bronze Age III is the period when the city's growth and the strengthening of its defences becomes more evident. Archaeological finds, especially paleaobotanical and zooarchaeological data from EB III contexts inside the city attest to an extraordinarily richness of food and other agricultural products, which went well beyond the requirements of basic subsistence. Moreover, surface survey across the site has revealed the presence of nuclear concetrations of finds, such as pottery or flint débitage, which hint at the existence of productive units within the town, at a specialized and extra-household level [21].

The EB IIIA Growth of the City and Reconfiguration of the Fortifications

The earthquake which interrupted the life of the town of al-Batrāwī at the end of Early Bronze Age II was followed by a total reconstruction of its defences, which stratigraphically and architecturally marks the transition to Early Bronze Age III, the period which witnessed the major flourishing of the town (Nigro in press a: § 5.3). The EB II gate was blocked and a new one opened, presumably somewhat further to the west, which was still approached by a street[22] running between the inner and outer walls (FIG. 11)[23]. The main wall (W.103) was reconstructed using stones instead of mud-bricks; previously separate wall sectors were joined at elevations varying from 1 to 2m[24]. A curvilinear outwork (W.185) was added to the defences just in front of the blocked gate (FIG. 12), similar to those known from EB IIIA Khirbat Karak (Greenberg and Paz 2005: figs 84, 94-96).

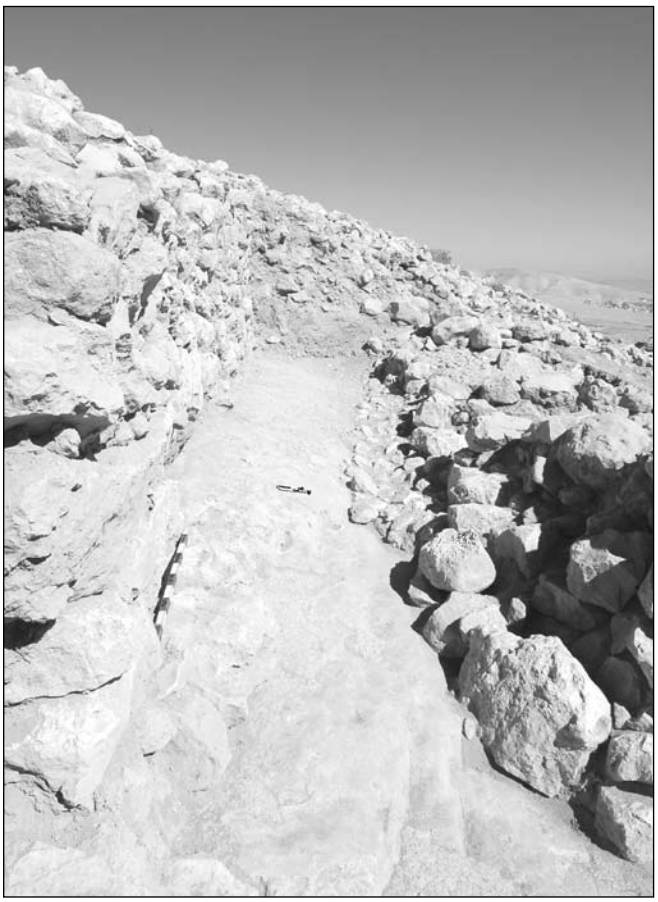
In the meantime, some apparently public buildings, unfortunately very badly preserved, were constructed on the acropolis, thereby testifying to internal sub-divisions within the town — one of the main features of the emerging Early Bronze urban centres. They have been excavated in Area A, respectively to the east (Nigro ed. 2006: 109-114) and west of Cairn I (Nigro in press a: § 4.3). The temple in Area F was also kept in use, with some major repairs following damage by the earthquake.

[21] For a methodological approach on this topic see the recent survey and analyses carried out at al-Lajjūn; Jones 2007: 280-283.

[22] The street running along the city-wall became a corridor in between the outer (W.155) and the main city-wall (W.103) leading to a new gate located further west; its floor (L.144; Nigro ed. 2006: 191, figs. 4.53-4.54) was re-plastered and was in use until a new violent destruction.

[23] The outer wall W.155 had an outer battering face made up of polygonal boulders and an inner face made of medium size stones regularly displaced; in between there was a filling of stones and limestone chops.

[24] The original stretches in which the wall was subdivided (Nigro ed. 2006: 176-177) were linked one to the other (and this indicates in several spots the height upon which the wall was reconstructed), and a 1.6 m wide massive outer wall (W.155) was erected around 1.5m off of the main wall, thus doubling the line of fortification.



11. Plastered floor L.144 in the corridor in between the main city-wall (W.103) and the outer wall (W.155) during the Early Bronze IIIA, from east.

The EB IIIA Destruction: Structural Crisis and the Relationship Between Urbanism and War

The EB IIIA town was also dramatically destroyed, which testifies to structural crises within the southern Levantine Early Bronze Age "urban culture". A certain degree of political turbulence would have been provoked by the centralization of goods, especially in centres like al-Batrāwī which were located at the boundary between different (sometimes antagonistic) social groups / landscapes. The widespread occurrence of violent destruction (Seger 1989: 117-119; Nigro in press b) during Early Bronze Age III [25], as well as the progressive enlargement of EB III defensive systems[26], which is repeated at contemporary urban sites elsewhere, suggests that urbanism was in some way linked to war, perhaps as a more direct means of securing territorial control and the goods which had been concentrated within the walls of a town.

The EB IIIB Reconstruction: Multiple Fortifications and Building B1

After the violent destruction, which marked the end of the EB IIIA town, the fortifications of al-Batrāwī were rebuilt and strengthened with the addition of a scarp-wall (W.165) to the outer wall, which brought the overall thickness of the defensive works in Area B up to 15m (FIG. 12) [27]. A new street was paved by levelling the collapse layer between the main and outer walls. The upper section of the main wall was also reconstructed. A staircase (W.181) of wooden posts and stone steps was uncovered in Square BoII6; it was fixed into the inner face of the wall and protruded 0.3 to 0.5m. from it. This staircase suggests that the overall height of the city wall was approximately 8m. The outer gate seems to have remained in use and was protected by a rectangular bastion protruding from the line of the fortifications (Nigro ed. 2006: 26-30, fig. 1.34).

A huge building (Building B1) was constructed just inside the blocked city gate during Early Bronze Age IIIB (FIG. 13). It had a rectangular plan and a staircase (W.421) to an upper floor. Against the eastern, outer, side of the building, a semi-circular oven (T.413) was built with a corbelled vault and flooring of basalt paving stones. Its dimensions suggest that it was used for food production on a communal scale. Building B1 had solid stone foun-

[25] At the end of EB IIIA may be attributed a series of destructions: a 3.5m deep layer of ash marks the end of the EB II-IIIA occupation at Tall al-Khuwaylfah (stratum XV; Seger 1989: 125); similarly, at Tall al-Hisī the end of EB IIIA occupation (phase 4b) was marked by heavy deposits of ash and mixed debris (Seger 1989: 127-129); at 'Ayy signs of destruction were detected in the EB IIIA fortification walls (Callaway 1993: 43); and at Jericho/Tall as-Sulṭān the EB IIIA city came at a sudden end, being drastically destroyed around 2500BC (it is not clear if again an earthquake was the cause of such destruction, or it was due to a military attack, since at some spots fierce fire is documented; Nigro 2000: 16-17; 2006c: 18, fig. 24). Also the end of Early Bronze IIIB has appeared distinguished by destruction layers in many sites (Lapp 1970: 114-115): Beth Shan (Mazar 1997: 65-66) and Khirbat Karak (Greenberg - Paz 2005: 102) apparently succumbed being fired at the end of the Early Bronze III; around 2350 BC a definitive conflagration destroyed the city of 'Ayy (Callaway 1993: 44) and Jericho (Kenyon 1981: 212, pl. 124b; Nigro 2006b: 374, 2006c: 18-22, figs. 26, 28, 30-32); and at Tall al-Khuwaylfah stratum XII of the EB IIIB settlement ended with a violent destruction (Seger 1989: 126), just to mention a few instances.

[26] We can quote the emblematic cases of 'Ayy (Callaway 1980: 147-158, 185-189), Tall Ta'annak (Lapp 1969: 9-14) and Khirbat al-Yarmūk (de Miroschedji 1990).

[27] Such a battering wall (W.165) was constructed with irregular boulders leaning on a rubble filling lying against the face of the outer wall W.155.

12. General view of the EB IIIB triple line of fortifications in Area B, from west, with main city-wall W.103 in the background, outer wall W.155 in the middle, and reinforcing scarp-wall W.165 in the foreground. To the left, EB IIIA curvilinear defensive outwork W.185, and the to right the EB IV supporting embankment.

13. General view of Building B1 and attached semicircular installation T.413, erected inside the blocked city-gate in the Early Bronze IIIB, from south.

dations and remained in use for a relatively long period of time before being destroyed by fire. Ceramic finds from the building include jars and painted jugs/bowls, as well as the so-called 'stoppers' which may have been used as units in a proto-bureaucratic, illiterate system of counting.

The EB III Economic Floruit

The massive fortification works, as well as the public buildings and finds from various areas of the site, all testify to an extraordinary flourishing of the economy at al-Batrāwī during Early Bronze Age III. A preliminary study of the material culture has yielded some interesting insights into the organization of that economy.

The EB III material culture horizon shows a strong standardization of ceramic production, in terms of shape, fabric and function, as well as a major increase in the number and variety of pattern-combed and other metallic wares. This points to an increase in the production of agricultural and animal products (mainly olive oil, goat fat, lentils, beans etc.). Specialized wares, such as painted, red-burnished and polished wares, also became more widespread, indicating a horizontal diffusion of items which had initially had a more limited, socially symbolic distribution.

With regard to the internal organization of the al-Batrāwī subsistence system, an exemplary case study is that of pattern-combed ware storage vessels. These can be divided into two broad morphological groups: (1) jars with flared neck and averted rim and (2) hole-mouth jars with flattened or slightly recessed rims; both have a flat base [28]. A few

[28] Pattern-combed storage vessels include both medium size jars for temporary storage and transportation, and big storage jars. The combing is mainly horizontally applied, alternated with perpendicular crossing. These vessels employed medium coarse yellowish red, reddish-yellow and light brown fabrics, or grey and light grey ones, with white and grey limestone grits and volcanic sand tempers of medium or medium-high frequency. Vessels were usually medium-high fired, and mainly handmade.

of these pattern-combed storage jars can be attributed to metallic ware production with high-fired, depurated fabrics. A comparison of pattern-combed fragments from the site with those from the upper Wādī az-Zarqā' survey area demonstrated that the vast majority of metallic and pattern-combed jars found at al-Batrāwī came from the surrounding countryside, particularly the hilly areas west of the az-Zarqā' river. Here olive trees were widely cultivated, suggesting that these storage vessels may have contained olive oil and were sent to al-Batrāwī from farms in the surrounding area, which may have been subjected to a degree of centralized administration. Moreover, the high frequency of pattern-combed jars, suggest that olive oil, stored and transported in this type of container, was not locally produced but was brought in from districts to the north and west.

Faunal remains provide evidence for a balanced diet, with a variety of domestic animals represented in the assemblage, as well as a high frequency of donkey[29], surely the main means of transport at the time.

Foreign imports recovered from the site, such as sea-shells, mother of pearl, carnelian, obsidian and copper fragments, as well as stone weights for metals, shed light on economic links and exchange; an extended network of tracks crossing the desert and steppe converged on the site.

The Final Destruction of al-Batrāwī

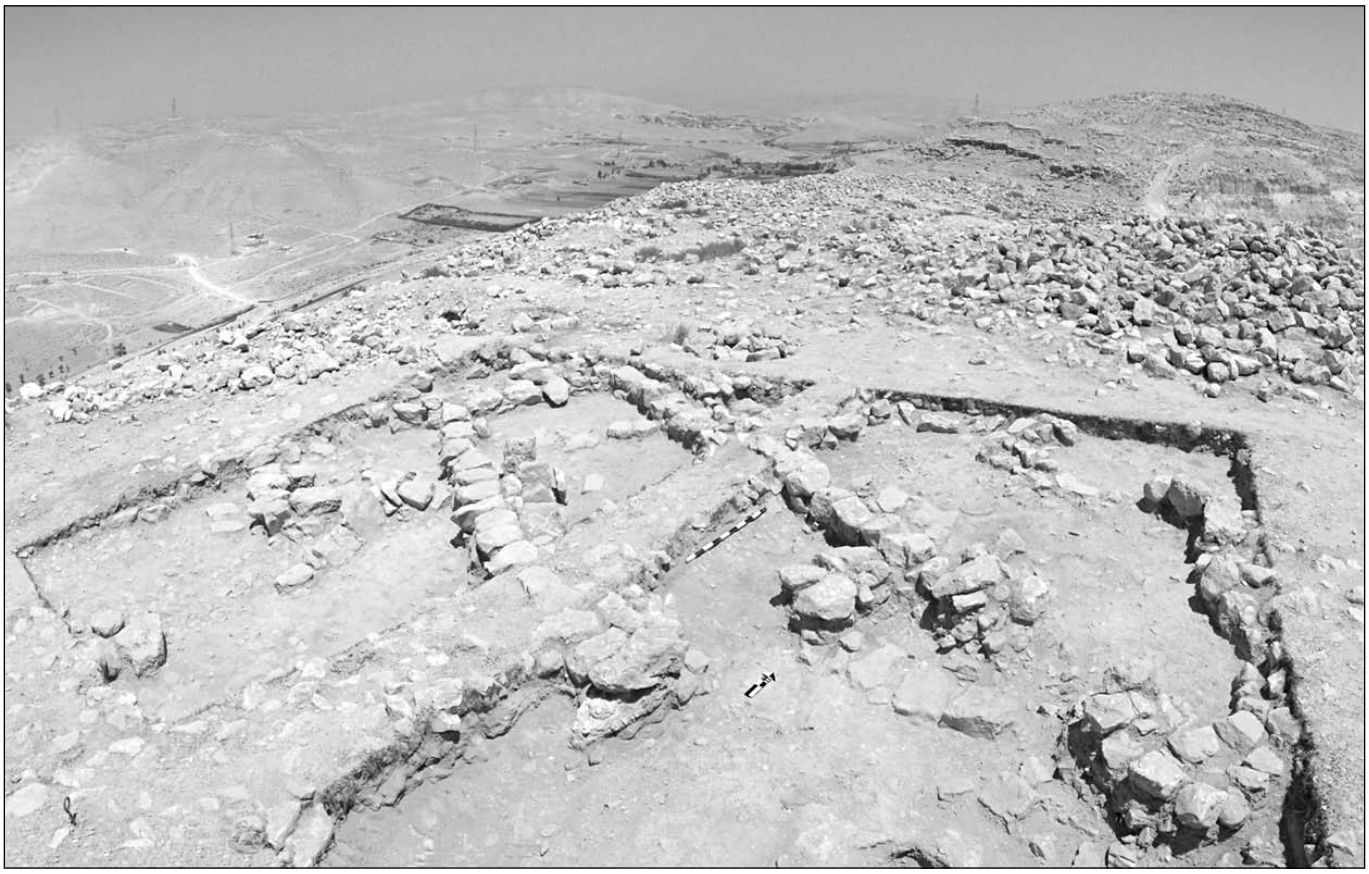
The renovation and expansion of the fortifications and the construction of Building B1 during Early Bronze Age IIIB did not save Khirbat al-Batrāwī from another, this time definitive, destruction some time at the end of the 24th century BC (see Note 25). The town was set alight, with traces of this dramatic event clearly visible on structures and in the stratigraphy (preserving a huge quantity of material culture for archaeologists). There is no evidence to suggest who may have been responsible for this destruction. As natural calamity can probably be ruled out, an attack by a foreign enemy seems the most likely explanation, with a subsequent deportation of the population since the site was temporarily abandoned. After a hiatus, the *khirba* was re-occupied in EB IV, but only with a few sparse structures.

A New Rural Landscape: The Early Bronze IV Village on the Acropolis

Excavations at Khirbat al-Batrāwī have yielded some interesting information about settlement dynamics in the upper Wādī az-Zarqā' during the Early Bronze Age. In the last century of the third millennium BC, the ruins of the EB II-III town were re-settled by a rural community, which erected dwellings over the site. The evidence from al-Batrāwī suggests that this EB IV occupation occurred towards the end of the third millennium, but that it only lasted for a relatively short period of time span — perhaps a century or slightly longer — and therefore illustrates the final phase of this period: EB IVB.

On the summit of the acropolis (Area A), two separate sectors of this rural village were exposed (Nigro ed. 2006: Plan II). In Area A East, a boundary wall delimited a group of houses (Nigro 2006a: 237-238; Nigro ed. 2006: 77-88); each rectangular domestic unit had several structures adjoining it, as well as food-producing and storage installations, e.g. silos, working platforms etc. Distinctive features of these structures include their irregular arrangement around courtyards and lanes, their curvilinear layout and the use of walls constructed of a single line of irregular fieldstones. In Area A West, a rectangular (5.8 by 2.7m.) house (L.20) with walls made of a single line of large fieldstones opened out on to a central courtyard (FIG. 14). Another feature of this house was a triple installation with two square cists made of vertical stone slabs (Nigro 2006a: 238-240; Nigro ed. 2006: 89-100). Similar food-producing installations were found in other domestic units at the site (see below). A second house (L.240), excavated in 2006, had a flagstone-paved installation with a fireplace and basin. Another group of houses was exposed in Area F (Nigro in press (a): § 9.2). These seem to have been built in a single phase of construction and therefore presumably represents a short-lived occupation of the site towards the end of Early Bronze IV. Another major house included a large unit (L.530) with a raised platform and cist in the middle, a round bin in the south-eastern corner and a separate rectangular room (L.560) in the south-western corner, along with a series of curvilinear structures and storage

[29] The high percentage of donkeys among domestic species present in the inventory of animal remains, moreover, seems to confirm that the town played the role of caravans station (Alhaique in press).

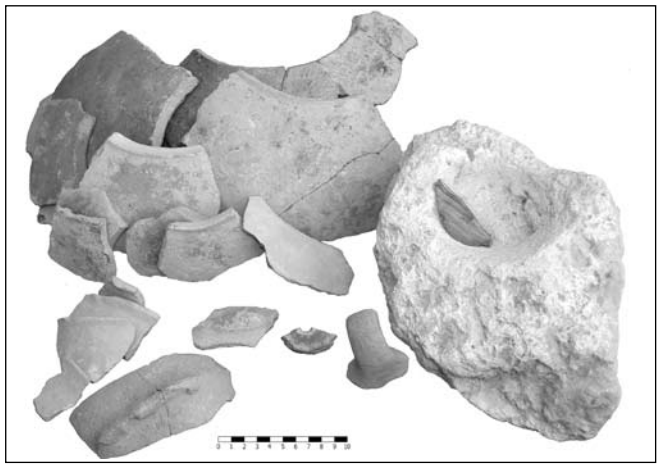


14. General view of EB IV House L.20 with courtyard L.30 in the western sector of the Acropolis, from south-east.

installations nearby[30].

These simple structures nevertheless yielded quite a rich assemblage of material belonging to the last phase of EB IV (FIG. 15). At this time, the major site in the upper Wādī az-Zarqā' area was Jabal Ruḥayl (JADIS nr. 2417.022; Palumbo *et al.* 1996: 393-401). The pottery, chipped stone and ground stone from these dwellings are all indicative of a reversion back to rural economy in which there was scarce specialization and limited typological variety.

The area of the northern fortifications was favoured by the EB IV occupants of al-Batrāwī (Nigro in press a: § 6.2). In Area B, the the most recent occupational phase included several houses built inside the collapsed EB III city wall. A rectangular struc-



15. EB IV pottery sherds and domestic tools retrieved in the houses excavated in Area F, on the easternmost terrace of Khirbat al-Batrāwī.

[30] A semi-circular storeroom (W.515) was adjoined to the western side of the unit. West of the house, the area of the earlier public building was left open, even though another circular device (S.511) leaned on its southern wall, while to the north of it another unit was erected with a main wall (W.519) and a mortar embedded into the floor west of it. Further to the north-west, in square CnII16, a rectangular unit (L.540) was partly preserved, apparently joined with other subsidiary curvilinear structures, one of which (S.538) cut into the western wall of the house. The entrance to this unit was through the short side, marked by a flat stone (L.558), as also noticed in Area A West (House L.20: Nigro 2006a: 238, figs. 17-18; Nigro ed. 2006: 89, figs. 3.31-3.33). A third domestic unit (L.520) was unearthed in square CpII18, delimited by wall W.559. It was added to the southern wall of House L.530, possibly as a successive enlargement of the latter.

ture (L.450), which directly abutted the inner edge of the collapsed EB II-III city wall, was characterized by a twin stone-paved installation, presumably used in the processing of liquids, perhaps wine. This suggests that structured agricultural activities had undergone some degree of reappraisal, perhaps reverting back to the house-hold level (FIG. 16). A more substantial house (L.122), excavated in 2005 (Nigro 2006a: 242-243, fig. 21; Nigro ed. 2006: 170-174, figs. 4.19, 4.24-4.26), also hints that locations inside the previous city walls were preferred. In the central sector of Area B South, two constructional phases were identified. The more recent phase included a wide, square house (L.354), with a semi-circular central installation (L.370) devoted to food production and storage, a bin and a bench / platform. This house was apparently abandoned, as demonstrated by a flint blade found on the working platform (B.374) that abutted the inner side of the western wall (W.353). A child burial (D.350) was found underneath the north wall (W.359) of the house [31] (FIG. 17).

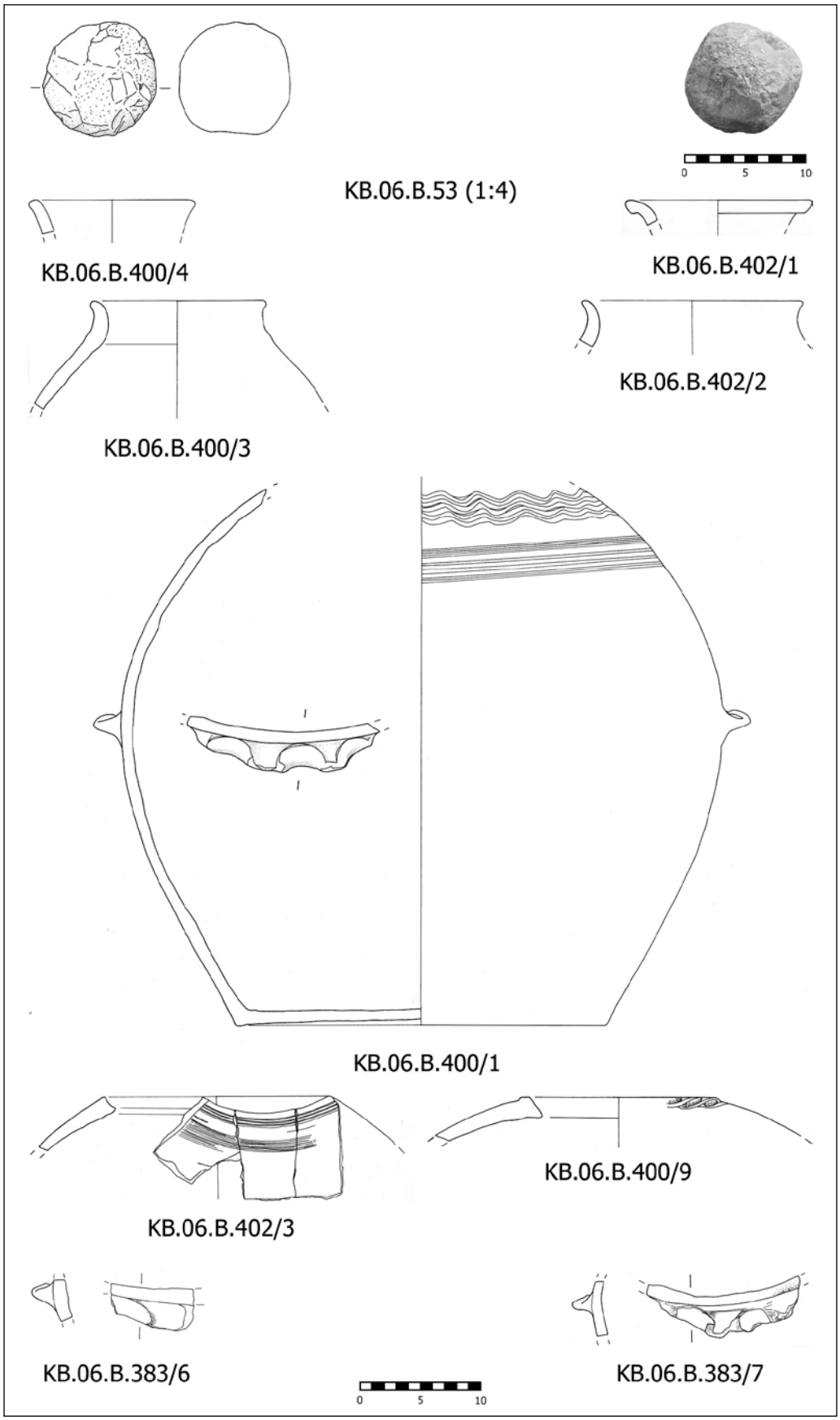
16. The EB IV stone-paved double installation erected directly over the inner edge of the collapsed EB II-III city-wall, from south.

Conclusions

Three seasons (2005-2007) of archaeological investigation at Khirbat al-Batrāwī have confirmed that it was the major Early Bronze Age centre in the upper Wādī az-Zarqā'. It consisted of a fortified town in the Early Bronze Age II-III (2900-2300BC; Stager 1992: 35-39) and was re-occupied by a rural village in Early Bronze Age IVB (2200-2000BC), with almost no subsequent superimpositions (Nigro 2006a: 229-233, 246-248; in press (a): § 3; Nigro ed. 2006: 37-40). The archaeological investigation is still in its early stages, so it is not possible to come to any firm conclusions at the current time. However, even this preliminary investigation has provided evidence for public architecture and material culture (especially pottery and flint tools) that are typical of a flourishing urban centre of the period. The faunal remains indicate that the inhabitants of al-Batrāwī had a rich and diverse diet, which included the wild animals of the steppe, the fish of the az-Zarqā' river and domestic sheep, goats and cattle (Alhaique in press). Also, intensive agriculture was possible owing to the proximity of the az-Zarqā' river. Some olive oil was apparently imported from the north and west, since the area around al-Batrāwī was not suitable for olive cultivation. All data therefore point to a successful and established relationship between the site and its rural hinterland, which could be easily controlled owing to the geomorphology of the upper Wādī az-Zarqā'.

As the regional survey has demonstrated, at the beginning of EB II the Wādī az-Zarqā' area witnessed a synecistic process which led to al-Batrāwī becoming a major fortified town at a crossroads on some of the main Early Bronze Age tracks of the southern Levant. The most important feature of the site was its ability to control (1) the tracks coming in from the steppe and desert to the south and east and (2) access down into the Jordan valley to the west. Territorial control of a crucial crossroads

[31] This is the second burial of this kind found on the mound; the first one (D.200) was discovered in 2005 in Area D, on the south-western spur of the hill (Nigro ed. 2006: 11, figs. 1.11-1.12).



17. Jars and hole-mouth jars retrieved in the ephemeral initial EB IV occupation detected in Area B, inside the collapsed EB II-III city-wall.

in the Early Bronze Age trade network, as demonstrated by several finds (see § 7.4), was therefore a key characteristic of the al-Batrāwī early urban experience.

Further and more detailed investigations are however required to clarify the city plan and its history, as well as to evaluate the socio-economic role of the site in the wider historical context of the southern Levant, the latter being a specific perspective of the Rome "La Sapienza" School of Near Eastern Archaeology.

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How and Where did the Inhabitants of Shawbak Castle live? The Faunal Remains*

Abstract
We present the results of a preliminary zooarchaeological analysis of the Crusader period faunal remains from Shawbak Castle. The investigation revealed a clear dominance of Caprinae. Worth noting, because of its cultural implications, is the presence of Sus scrofa / Sus domesticus. A wealth of skeletal elements of a king-size Parrotfish, Scarus sp., as well as rarer remains of other sea creatures raises the question of how such rapidly decaying food items could be transported long distances inland from the Red Sea coast. Analysis of the fauna of such a historically and strategically significant site is expected not only to generate important information on the subsistence strategies of the castle's inhabitants, but also to provide information on **climatic conditions** at the time.

Introduction

Since 1987 an archaeological team from the University of Florence, under the supervision of Prof. Guido Vannini, has been conducting a stratigraphic survey aimed at studying the 12th century Crusader fortifications located in the territories of the former **Seigniory** of Trans-Jordan. Researchers also intend to compare Crusader and Ayyubid constructions (see the project website: www.shawbak.net). The authors are responsible for palaeoenvironmental and zooarchaeological research at Shawbak and in the Petra valley.

Mons Regalis / Shawbak is located some 2km north of Petra, between the Dead Sea, Red Sea and Arabian Peninsula. The castle lies on a hilltop whose strategic position attracted the Byzantines and perhaps also earlier populations. By the time of Crusader rule and of the creation of the **Seigniory** of Trans-Jordan, the site had attained the monumental appearance it has today.

The following occupations and structural modifications have complicated our reconstructions. Shawbak was in fact inhabited until about fifty years ago. The animal bones analysed here were recovered during the 2005 and 2006 excavation seasons (FIG. 1). The bones have yielded a UtC 776 two sigma radiocarbon date of 1075-1150 AD (one sigma ranges 1086-1122 AD) which falls within the period of Crusader rule. Samples were also collected to be sieved for small mammal remains and for future palynological analyses.

This is the zooarchaeological component of a much larger project aimed at improving our knowledge of the Shawbak area and gaining a better understanding of the impact of the castle's inhabitants on local environments. The results of our study feed into the rich database already established by the ongoing "Mediaeval Petra: Archaeology of Crusader and Ayyubid settlements in Trans-Jordan" project (Vannini 2007).

Methods

The faunal remains were identified according to published criteria (Barone 1976; Boessneck, Müller and Teichert 1964; Cohen and Serjeantson 1986; Halstead, Collins and Isaakidou 2002; Prummel and Frisch 1986; Schmid 1972; Tomek and Bocheński 2000) and photographs of specimens in the Borzatti Collection of the University of Florence.

NISP (Number of Identified SPecimens) counts were used to assess the relative proportions of taxa and skeletal elements. All bone-surface alteration

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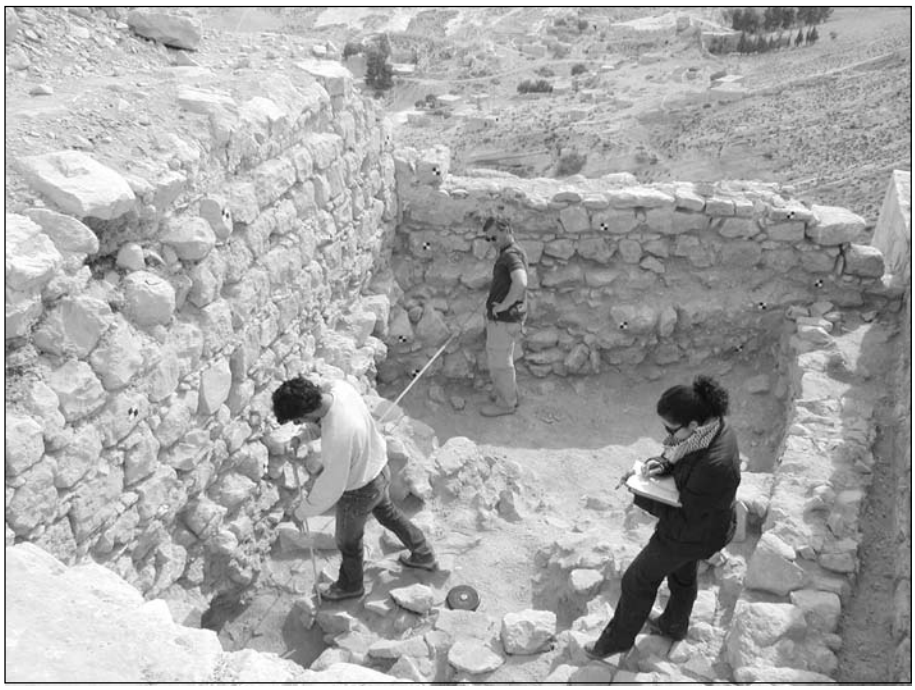


1. 2005 excavation area.

was recorded, including weathering (Behrensmeyer 1978), trampling, root and humic-acid etching, abrasion / polishing, carnivore activity (bites, gnawing, gastric corrosion), pathological alteration and anthropogenic modification. The latter includes evidence for carcass processing, such as intentional fracturing, skinning, defleshing or butchery, as well as thermal modification

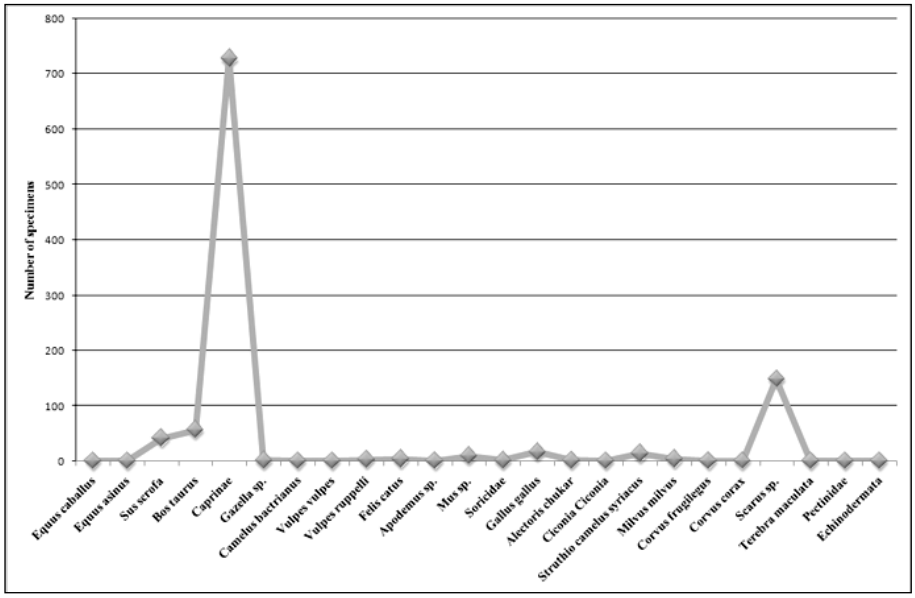
The ontogenetic age of several specimens were assessed on the basis of long bone epiphyseal fusion, degree of ossification (Reitz and Wing 1999; Speth 2000) and Hillson's (1986) tooth eruption and wear criteria.

Analysis and Results

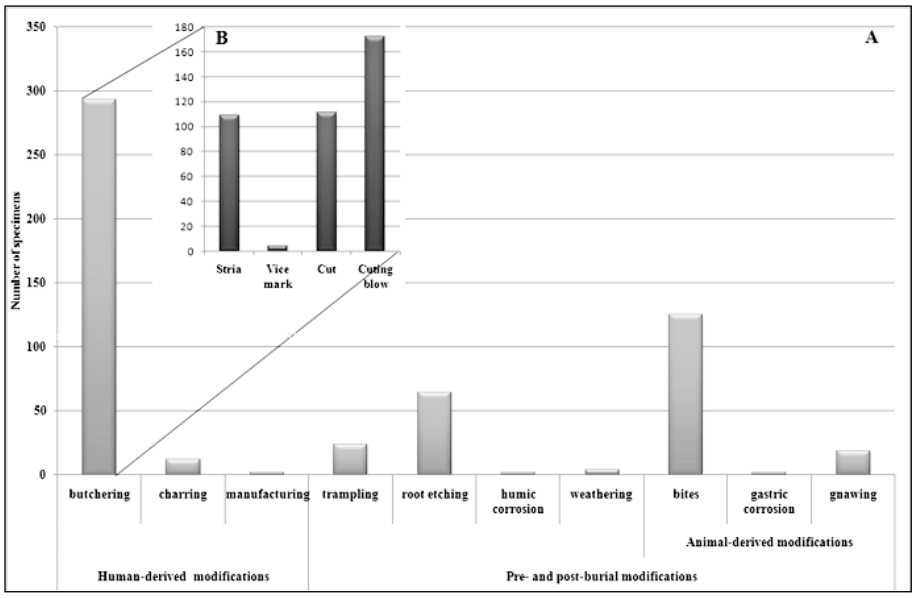
The range of taxa represented is relatively diverse. The assemblage includes horse (Equus caballus) and ass (E. asinus), swine (Sus scrofa / Sus domesticus), ox (Bos taurus), sheep and goat (Caprinae: Ovis and Capra), gazelle (Gazella sp.), camel (Camelus bactrianus), fox (Vulpes vulpes) and **sand** fox (Vulpes ruppelii), cat (Felis catus), rodents (Apodemus sp., Mus sp.), shrew (Sorex sp.), domesticated chicken (Gallus gallus), stork (Ciconia ciconia), ostrich (Struthio camelus syriacus), chukar (Alectoris chukar), red kite (Milvus milvus), rook (Corvus frugilegus), common raven (Corvus corax), parrotfish (Scarus sp.), Terebra maculata (a Red Sea gastropod), a scallop bivalve (Pectinidae) and a few fragments of sea urchin (Echinodermata).

Figure 2 shows the relative proportions of taxa in the assemblage (FIG. 2), which is dominated by Caprinae. The second most abundant taxon is Parrotfish. The presence of Sus scrofa / Sus domesticus is worth noting for the subsequent historical and ecological implications of the presence of this animal in the area. The small mammals include two rodents, Apodemus sp. and Mus sp., and a shrew, Sorex sp., but of these only one Mus sp. specimen was patinated, suggesting that the other small mammal remains are modern intrusions.

Bones modification consists primarily of root etching and trampling. Very few specimens show evidence for humic corrosion and exposure to **weathering** (FIG. 3A). Numerous specimens show evidence for animal activity, e.g. bites and gnaw marks, the later most frequently by rodents. Gastric corrosion is very rare. The great majority of the bones from Shawbak have been butchered, but very few are charred. A sharpened bone point and as a pierced Terebra **sp.** shell represent the only manufactured artefacts in the assemblage. The carcasses appear to have been processed by skilled butchers who used a variety of knives, particular a heavy blade, possibly an axe (FIG. 3B). The vertebrae are largely cut in half sagittaly, but there are also vertebrae and ribs cut transversly. There is also occasional evidence to suggest that some skeletal elements were held tight in some sort of vice. Frequent striations are suggestive of defleshing before cook-



2. Relative **taxonomic abundance** based on NISP counts.



3A. Frequency of bone modification: overall.
3B. Frequency of bone modification: butchery only.

ing. We are still unable to comment on the cooking methods used at the castle.

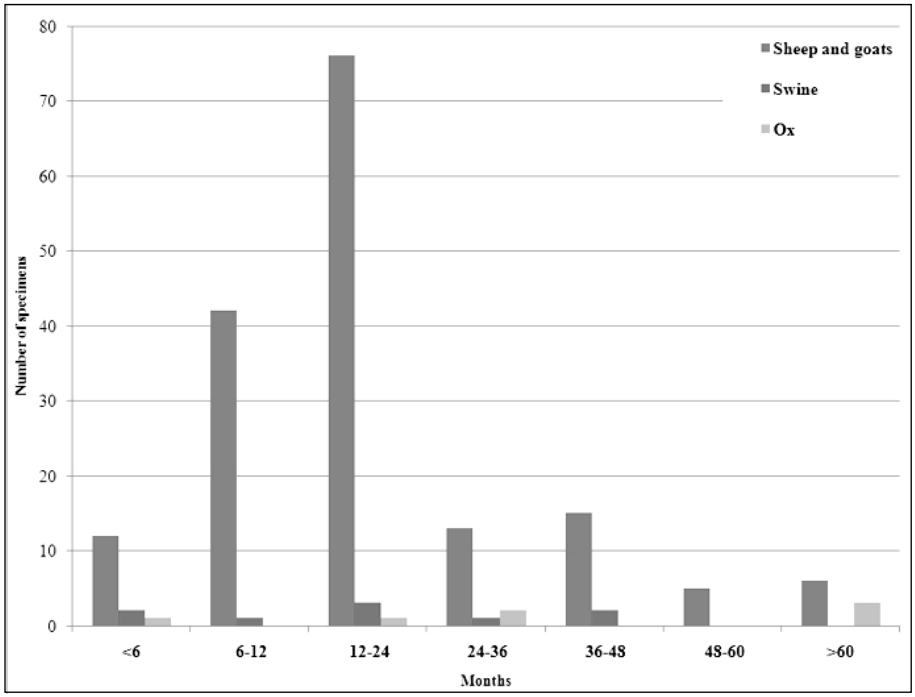
The mortality profile in Figure 4 reveals high proportions of juvenile Caprinae, with a peak in the 12-24 month age class and an extended right 'tail', and swine (FIG. 4). The opposite occurs in ox, but this taxon is too rare to give reliable results.

Discussion and Conclusions

Because of the castle's importance and the control it exerted over the surrounding region, the data obtained from the Shawbak animal bones not only improves **our knowledge of subsistence strategies and climatic and environmental change during the period of the castle's occupation**, it also adds significantly to our knowledge of commerce and trade routes in this part of the Near East.

Subsistence Strategies

The mortality profiles have been our primary source of information on the subsistence strategies of the castle's inhabitants. These seem to have been based principally on the exploitation of domestic animals, in particular sheep / goat, swine and ox — in order of decreasing importance. Our results suggest that the Caprinae were exploited for primarily for **meat**, as **most** were slaughtered just after puberty which typically occurs between 10 and 25 months of age.



4. Mortality profiles for sheep / goat, swine and ox.

However, the extended right 'tail' of the mortality profile suggests that **at least some animals survived for long enough to provide other products, such as milk and / or wool**. **Swine would also most likely have exploited for meat.** However, because the Sus sp. skeletal elements recovered from Shawbak cannot reliably be attributed to either wild boar or pig, it has not been ascertained whether or not these animals were hunted, bred in the castle or brought in from some nearby village. Yearlings are quite rare, perhaps reflecting the relative fragility of deciduous cheek teeth and immature bones, or perhaps the fact that juveniles of this age can be completely consumed by man or scavengers. Bites and gnawing marks by dogs / pigs and rodents have been observed, as have bones showing evidence of digestive corrosion.

The recovery of numerous Scaridae remains, sea urchin shell fragments and mollusc shells such a long distance from the sea is indicative of the existence of trade routes with the Red Sea. The presence of such rapidly-decaying food items at Shawbak raises the question of how they were transported. Parrotfish could have been dried and salted or smoked, however these methods do not seem to be the most appropriate way of preserving this fish and were certainly not applicable to sea urchins and molluscs. Parrotfish may not have been the only sea fish traded throughout Jordan, but since Byzantine times it had certainly been the most popular (Brown and Rielly, submitted).

Not all sea creatures represented at Shawbak were eaten. A Terebra **sp.** shell found at the castle shows the typical polishing of shells cast upon the seashore and had therefore probably been collected from a Red Sea beach. Moreover, this specimen has a worn piercing which indicates that it had been used as an ornament, most probably a pendant.

The provision of food may not only have yielded sustenance; it might also have been a means of amusement. The remains of red kite suggest that falconry might have been practiced by the higher-ranked inhabitants of the castle, as indeed it was throughout the Arab world. Birds of prey were first used for hunting in Asia. Falconry was unknown to the Greek and Romans. It was introduced to Europe by Germanic tribes who most likely learned of it from Turkish and Mongolian nomads (Galloni 2000). Ostrich hunting may have been another means of entertainment; the long tradition of ostrich hunting in Jordan is attested to by rock engravings of the 4th millennium BC in the deserts of Wādī Rum.

Environment

Over the past few decades, analyses of climatic data such as tree rings, **pollen cores**, marine and fluvial sediments, coral, ice cores and glacial deposits, have provided evidence for two climatic

events within the past 1,000 years. One is the so-called Medieval Warm Epoch (ca. 800-1200AD) during which the temperature was warmer than that of the 20th century in many regions of the world. The other is the so-called Little Ice Age (ca. 1300-1900 AD). At the beginning of the Medieval Warm Epoch, southern Jordan enjoyed relatively moist conditions which encouraged the growth of relatively widespread deciduous and evergreen woodland (Brown and Rielly, submitted), the remnants of which still persist along some wadis. In fact, Mediaeval Arab chroniclers describe not only the presence of a second fortified settlement, larger than the castle itself, on the eastern slope of the hill of Shawbak, but also luxuriant gardens that rivalled those of Damascus (Faucherre 2004). Unlike today, in Mediaeval times Shawbak abounded in water and rich vegetation.

In their study of the nearby Wādī Faynān area, McLaren et al. (2004) found that the youngest fluvial deposits in this area are the Faynān and Upper and Lower Ḍanā wadi members, **which formed between 15,800 and 100 years ago under similar or slightly wetter conditions than today's**. On the basis of data from Tall Ḥisbān, a citadel-town located in the al-Balqā' region, Driesch and Boessneck (1995) reconstruct Ayyubid and Mamluk woodlands inhabited by a wide range of animals, including deer, wild boar, wolf, fox, and leopard.

Conditions then grew gradually drier towards the end of the Medieval Warm Epoch. **The sediments that had accumulated at the foot of the hill and in the surrounding wadis during this relatively moist period therefore started to be eroded, as were the palaeosols that had formed at the same time.** According to McLaren *et al*. (2004), the **presence of** aeolian deposits of mid-Holocene date could reflect either increasing aridity at this time and / or an increasing impact of humans on the landscape. The Shawbak sample analysed here encompasses this transitional phase. **The majority of faunal remains recovered during the 2005 and 2006 excavations are derived from taxa that typically prefer relatively dry and open environments**. These include horse, ass, goat, gazelle, camel, **sand** fox, ostrich, chukar, rook and common raven. Woodland or more water-dependent taxa include swine, sheep, fox and stork. Others, such as ox, cat and shrew, are ubiquitous. Today, the Trans-Jordan highlands are located in a semi-arid Mediterranean environmental zone in which precipitation decreases markedly from north to south and from west to east.

These preliminary zooarchaeological analyses from Shawbak have been **informative**. We plan to extend our research and methodologies both vertically, throughout the castle's different phases of occupation, and horizontally, by conducting comparative analyses of faunal assemblages from other castles in the region, in order to reconstruct the economies and environments of this important part of the Near East.

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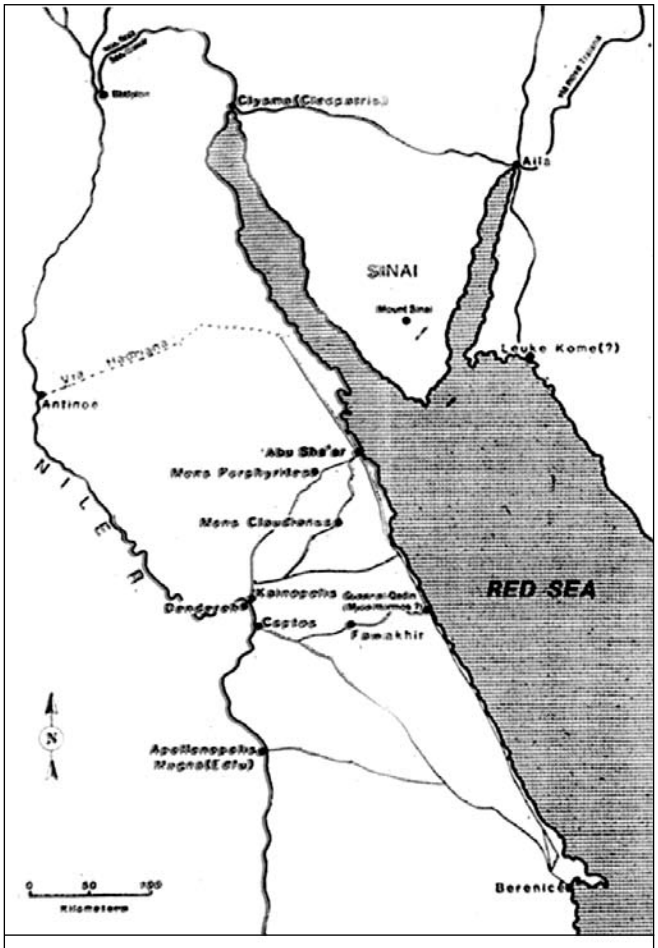
The Foundation of Ayla: A Nabataean Port on the Red Sea

Why did the Nabataeans establish Ayla (modern ‘Aqaba) as a port on the Red Sea? This paper will put forward a historical scenario that might explain Aila’s foundation, i.e. that the Nabataean King Obodas III founded Ayla early in his reign (30-9BC). This action was a direct response to the threat posed to Nabataean commerce by the Roman annexation of Egypt in 30BC and their subsequent development of ports on the Egyptian Red Sea coast, such as Myos Hormos and Berenike (FIG. 1).



1. Map of northern Red Sea.

Human settlement at the northern end of the Gulf of ‘Aqaba is well documented from at least late prehistoric times (Parker 1997), but the immediate predecessor to Ayla appears to have been Tall al-Khalīfah, a site now on the modern Israeli - Jordanian border and now *ca*. 500m. from the modern shoreline. The excavator suggested that the Iron Age II settlement continued well into the Persian period, i.e. into the fifth or even fourth century BC (Glueck 1965; Pratico 1993). Small-scale soundings by the late Mary-Louise Mussell unfortunately remain unpublished, but a recent intensive surface survey by the Roman ‘Aqaba Project also yielded some Persian period pottery. Both our survey and Pratico each recovered a single Rhodian stamped amphora handle, dated to *ca*. 200BC (Pratico 1993: 62; Parker 1998: 376), but these appear to reflect little more than transient use of the site in the Hellenistic period. The complete absence of Nabataean pottery suggests that Tall al-Khalīfah was abandoned before the appearance of Nabataean pottery by the late second century BC.

A *terminus ante quem* for the foundation of Ayla is provided by Strabo (*Geography* 16.2.30, 16.4.4) who mentions a *polis* called Ayla no later than early in the reign of Tiberius (AD 14 - 37). It is notable that earlier writers, such as Diodorus Siculus (late first century BC), who in turn relied on earlier (primarily second century BC) Hellenistic sources, describe the “many inhabited villages of Arabs who are known as Nabataeans” (3.43.4) around the Gulf of ‘Aqaba but fail to mention any city in this region. Therefore, documentary sources suggest that Ayla was founded sometime between the late second century BC and early first century AD.

Recent excavations by the Roman ‘Aqaba Proj-

ect (1994 - 2003) have yielded more precise chronological evidence for Aila's foundation (Parker 2003, with earlier references). Although the excavations revealed no *stratified* evidence earlier than the mid-first century AD, significant quantities of residual artifacts point to a foundation in the late first century BC.

We begin with the numismatic evidence. It is notable that there are no Hellenistic coins among more than the 1,000 identified coins from the site. This is in sharp contrast to Petra and Nabataean sites along the Petra - Gaza road, where Hellenistic (especially Ptolemaic) coins are well attested. The excavation did recover 264 Nabataean coins, but of these only 46 were closely datable. Table 1 illustrates the breakdown of these coins by ruler (TABLE 1). Although the earliest coins are three issues of Aretas III (85 - 62BC), obviously these are not necessarily contemporary with the earliest occupation of the site. It is well known that Nabataean coins often remained in circulation well after their initial minting. Nevertheless, the coins could support an occupation beginning in the first century BC.

The ceramic evidence is more compelling[1]. Again, there was no Hellenistic pottery among the more than 600,000 sherds recovered from the excavation. A similar picture emerges from the imported fine wares, specifically Eastern Sigillata A (ESA). Among the *ca*. 2,000 sherds of ESA from the excavation, some 332 could be assigned to the Hayes typology (Hayes 1985). Table 2 illustrates the breakdown of the ESA by form and period (TABLE 2). The earliest ESA vessel commonly imported to Ayla is Hayes Form 4B, dated to the Augustan era (30BC-14 AD). There are admittedly a few examples — five, to be precise — of Hayes Form 22, more broadly dated from the late second century BC to *ca*. AD 10. All the remaining early examples of ESA recovered at Ayla (Hayes Forms 23, 26, 28 and 29) date to the Augustan era. Earlier ESA forms, dated to the Hellenistic period, which

Nabatean King	No. of Coins	% of Coins
ARETAS III [85-62 BC]	3	6.5%
MALICHUS I [62-30 BC]	3	6.5%
OBODAS III [30-9 BC]	7	15.2%
ARETAS IV [9 BC-AD 40]	24	52.2%
MALICHUS II [AD 40-70]	4	8.7%
RABBEL II [AD 70-106]	5	10.9%

TABLE 1. Closely dated Nabataean coins from the excavation at Aila.

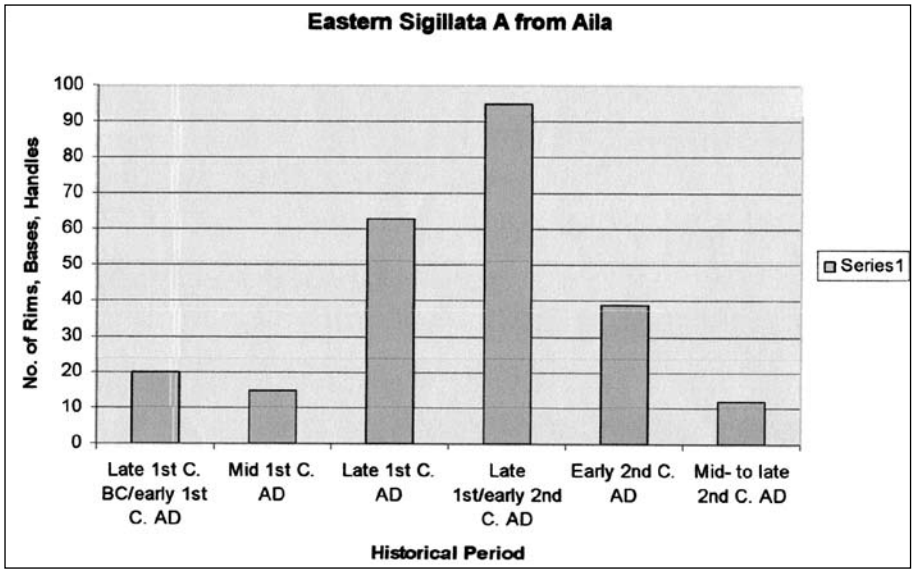


TABLE 2. Closely dated Eastern Sigillata A from the excavation at Aila.

[1] The following analysis of the ceramics from the Roman 'Aqaba Project derives from the project database. This material is still undergoing analysis, although a preliminary report on the Early Roman/Nabataean pottery from the site has already appeared (Dolinka 2003).

are common at other sites in the Levant are noticeably absent at Aila. In short, the Eastern Sigillata A suggests a foundation date in the late first century BC.

Finally, we must consider the most abundant type of tightly dated ceramic evidence: Nabataean painted fine ware. Thanks to the Swiss excavations at az-Zanṭūr in Petra, we have a workable typology of these fine wares that permit close dating (Schmid 1996). Analysis of the pottery from stratified sequences at ʻAqaba strongly suggests that the Swiss typology works well at sites far from Petra. The excavations at ʻAqaba yielded thousands of sherds of Nabataean painted fine ware, but not a single piece of Schmid's Dekorphase 1, dated to *ca*. 150-50BC. There were a mere handful of Dekorphase 2a sherds, dated to *ca*. 50 - 30/20BC. The first significant number of Nabataean painted fine ware sherds at Ayla were Dekorphase 2b, dated *ca*. 30 / 20 - 1BC.

To sum up the archaeological evidence, the earliest coins, imported terra sigillata and Nabataean painted fine ware all support a foundation in the first century BC. Both types of imported fine wares suggest a foundation late in that century, most likely in its last third. In the absence of explicit documentary evidence, it seems doubtful that material culture alone can take us any further. But now that we have narrowed the chronological parameters, let us turn to the broader historical context to construct the scenario that may explain the foundation of Ayla as a coastal urban center.

For the purposes of this paper, we must avoid the vexed question of Nabataean origins. Suffice it to say that by the late fourth century BC the Nabataeans had already grown sufficiently wealthy and prominent to attract the attention of Hellenistic generals. As we learn more about Hellenistic Petra, it seems clear that the lucrative caravan traffic in luxury goods was already well established, utilizing overland routes from southern Arabia. The main threat to Nabataean control of this trade during the Hellenistic period was the Ptolemies, who established ports such as Berenike on the Egyptian Red Sea coast in the third century BC. This offered an alternative sea route with which to compete with the established overland caravan route up the Arabian peninsula. This competition to Nabataean commercial interests was further threatened by the discovery that the monsoon winds permitted direct navigation from the Red Sea coast directly to southern Arabia and thence to India.

The initial Nabataean response to the development of sea transport seems to have been piracy, but an effective Ptolemaic naval response seems to have ended this threat (Diodorus 3.43.5; Strabo 16.4.8). The Nabataeans next founded the port of Leuke Kome somewhere on the Arabian side of the Red Sea. The location of Leuke Kome remains a mystery. The suggestion of the modern site of Aynuna in Saudi Arabia, just east of the southern outlet of the Gulf of ʻAqaba, remains attractive but unproven (Kirwan 1984). Wherever its exact location along the northern coast of the Arabian peninsula, Leuke Kome was already well established by the late first century BC, when the army of Aelius Gallus used it as a transit base for the invasion of southern Arabia in 26 BC. Strabo, in this context, calls it a "large emporium" and notes that from here camel caravans headed north to Petra (*Geography* 16.4.23). But in the same passage he also claims that the bulk of the traffic had already been diverted to Egypt via the port of Myos Hormos on the Red Sea, thence overland to the Nile at Coptos (the shortest route between the Red Sea and the Nile Valley) and finally down the Nile to Alexandria.

Although there are some scraps of evidence to suggest occupation at Myos Hormos in the Ptolemaic period, recent excavations by both American and British teams have shown that the port only really developed after the Roman annexation of Egypt in 30BC (Johnson and Whitcomb 1979, 1982; Peacock *et al*. 1999, 2000, 2001, 2002, 2003). The late first century BC and early first century AD seem to have been a period of particular prosperity, confirming the assertion of Strabo. Yet, it must also be stressed that Myos Hormos was an artificial creation by an imperial power. All water, for example, had to be transported to the site from some distance away. Its sole *raison d'etre* was to serve as a transfer point between ships and caravans in order to exploit the shortest distance between the Red Sea and the Nile. A similar picture is emerging from recent excavations at the port of Berenike, where the original Ptolemaic port experienced a great intensification of activity in the Augustan era (Sidebotham and Wendrich 2007, with earlier bibliography).

In short, it would seem that after the Roman failure to gain direct control of southern Arabia and its lucrative commerce by direct conquest in 26 / 25BC, Augustus fell back on the next viable option. He planned to seize control of the trade from

south Arabia by developing Red Sea ports on the Egyptian coast to divert the traffic from the Nabataeans and their overland route through Arabia. The explosive growth of Myos Hormos and Berenike, and the extraordinary quantities of imported goods dating to this period at both sites, along with the testimony of Strabo, would seem to suggest that this policy enjoyed some success.

What was the Nabataean response? Malichus II died in 30BC, the very year of the Roman conquest of Egypt, and was succeeded by Obodas III who ruled for over twenty years, until 9BC. The Nabataeans, of course, already had an established port on their side of the Red Sea, at Leuke Kome. A passage in the *Periplus of the Red Sea*, usually dated to the mid-first century AD, clearly shows that this port, which included a fort, garrison, and customs officials, continued to serve as a transfer point between ships from Arabia and caravans traveling north to Petra (*Periplus* 19). But the mere foundation of Ayla in the late first century BC, most likely in the reign of Obodas III, suggests that Leuke Kome alone was deemed insufficient by the Nabataeans. Just as the Romans decided that they needed several ports on the Egyptian side of the Red Sea (Berenike, Myos Hormos and Clysma / Arsinoe [near modern Suez]), so too did the Nabataeans.

The obvious advantage of Ayla over Leuke Kome was that its location at the north end of the Gulf of ʻAqaba offered a much shorter overland passage to Petra and the Mediterranean. Assuming that the identification of Leuke Kome with modern Aynuna is correct, the distance between the Red Sea and Petra was shortened by over 200 kilometres as the crow flies, and much more by the actual route via the wadis east of the Gulf of ʻAqaba. If, in fact, Leuke Kome lay farther south along the Arabian Red Sea coast, i.e. south of Aynuna, then the advantage of Ayla would correspondingly have been much greater. As a coastal oasis, Ayla also offered abundant potable water and a relatively easy route north to Petra via Wādī ʻAraba.

On the other hand, the disadvantages of Ayla should also be emphasized, *viz.* the prevailing northerly winds in the narrow Gulf of ʻAqaba and the treacherous, narrow opening — the Strait of Tiran — that connects the gulf with the Red Sea. The latter appears in Diodorus as a navigational hazard (3.44.1-2) as early as the first century BC. The prevailing northerly winds in the gulf remained a sufficient navigational hazard to merit mention in British naval handbooks of the 20th century.

Yet, whatever the disadvantages of this site at the head of the narrow gulf, Ayla was indeed founded by the Nabataeans in the late first century BC. Leuke Kome alone was judged insufficient to compete against the revitalized Egyptian ports under direct Roman control across the Red Sea. Some suggest that Ayla was not really a seaport under Nabataean rule, but a mere caravan station for the overland traffic between Leuke Kome and Petra (Young 2001). However, the fact that Strabo had already refered to Ayla as a "*polis*" by the early first century AD suggests that Ayla was already a settlement of some size, and not merely a caravan station. In fact, the recent excavations suggest a sprawling site of considerable size (FIG. 2) by the first century AD (Dolinka 2003; Parker 2003, with earlier references; Retzleff 2003).

If the above scenario for the foundation of Ayla is correct, how successful was the Nabataean response to this Roman threat to their vital commercial interests? Although this is a separate question that would require another paper, I would venture to suggest that the judgment of Obodas III proved sound. Ayla went on to prosper and soon became the key port on the Arabian side of the northern Red Sea, whereas Leuke Kome eventually sunk into obscurity. Surely, much of the prosperity enjoyed by the Nabataean kingdom in the first century AD resulted, in part, from their retention of a significant portion of the luxury traffic from south Arabia. Much of this traffic undoubtedly passed through the new Nabataean port of Aila.

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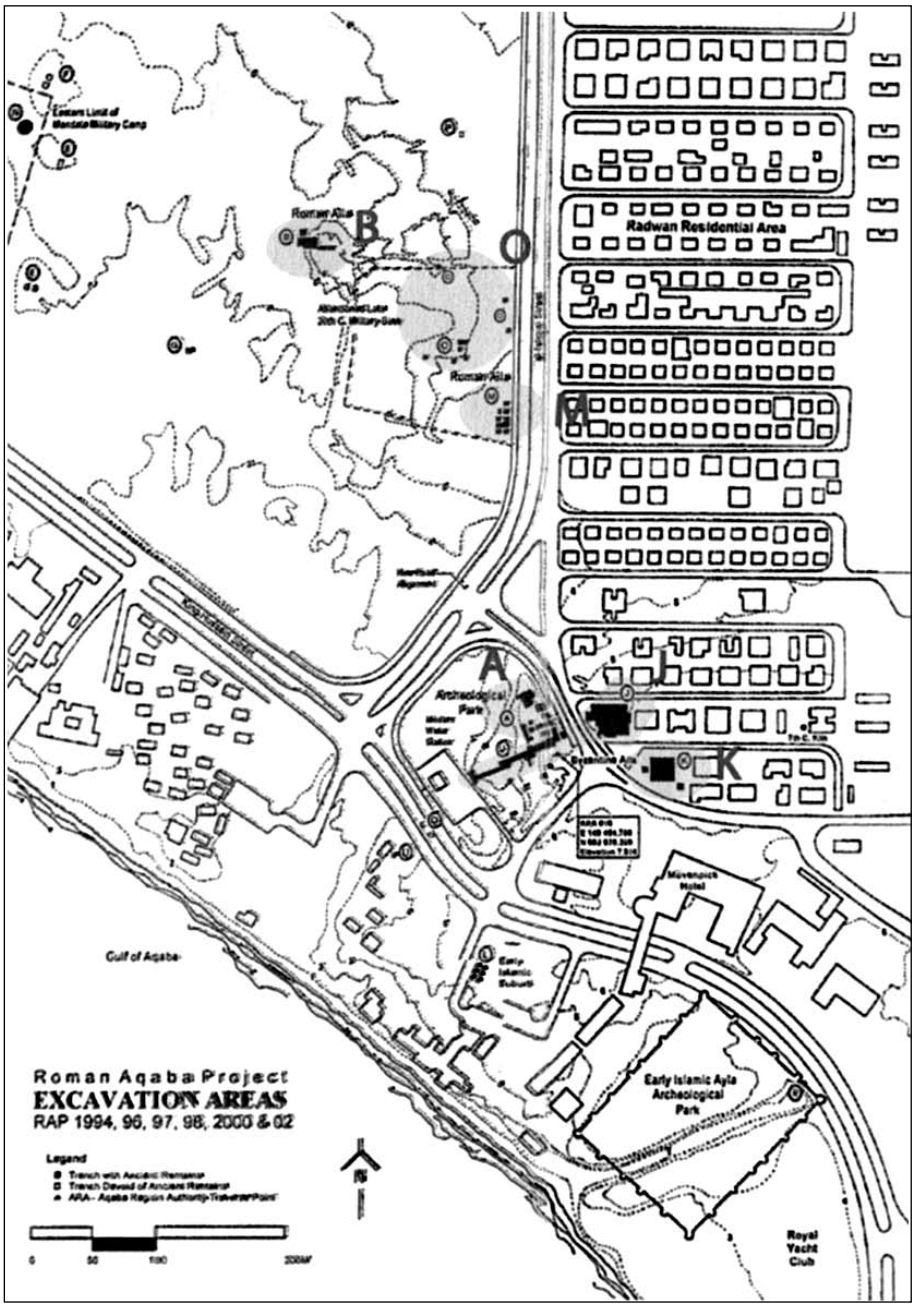

2. Site plan of the excavation areas of the Roman 'Aqaba Project; highlighted areas have yielded stratified evidence of the early Roman / Nabataean period.

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Early Bronze IV Peoples: Connections Between the Living and the Dead at Khirbat Iskandar

Introduction

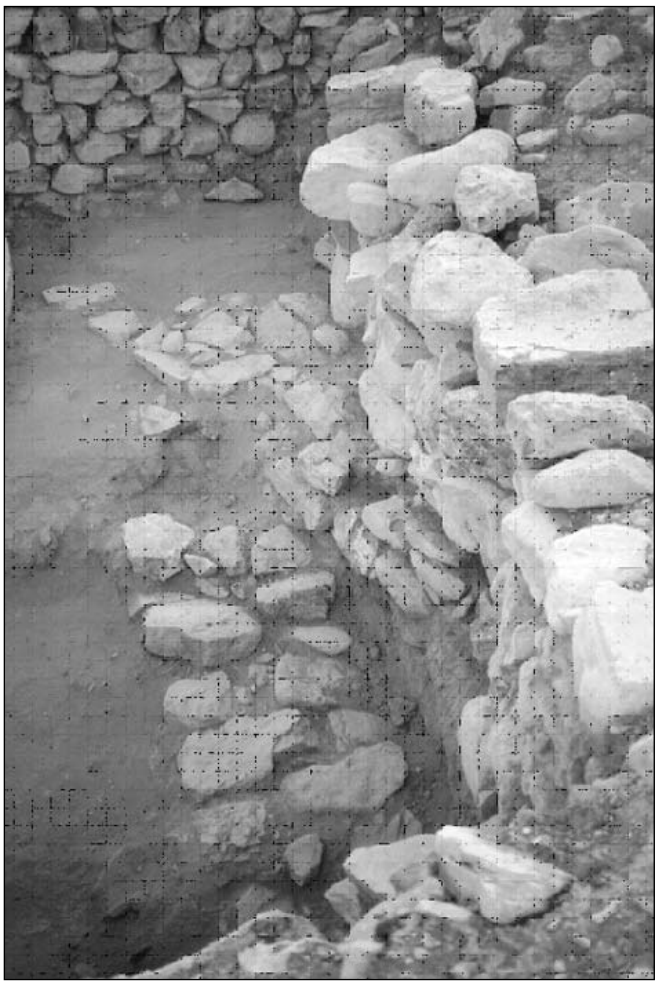
This essay presents a summary of the completed study of the Khirbat Iskandar Area C gateway, the EB IV cemeteries in the immediate vicinity, and the quantitative study of the corpus of EB IV ceramics from both the cemeteries and from Area C. First, what the final excavation report will show is that there are three stratified phases in Area C: an early EB IV (possibly transitional EB III/IV) domestic phase (Phase 1); an EB IV domestic phase centering around a well constructed broadroom house and a work area (Phase 2); and, an EB IV gateway complex in the latest (Phase 3) phase. Second, what the final report on the cemeteries will show is that important distinctions exist between Cemeteries D and E in terms of location of graves, tomb type, and ceramic assemblage. And, third, what the quantitative ceramic study will show is that: 1) there are three typo-chronological ceramic phases correlating with the three-phased stratigraphic profile in Area C; 2) that comparative analysis between the assemblages of Area C and the cemeteries shows a close correspondence; and 3) that comparison with the Bāb adh-Dhrā‘ corpus allows for a correlation of phases with Khirbat Iskandar.

This essay hopes to offer some insight into EB IV society on the basis of the above combined studies, viewed in the larger context of work across the mound, as well as ongoing survey and excavation of the megalithic features in the vicinity of the site. Previous work has revealed tantalizing evidence for differentiated social identities in residence at the site, i.e., unequal access to precious materials, unusual structures and stores of vessels, the continued use of the earlier fortifications, and excellent construction of well-preserved houses, etc (Richard 2006; Richard and Long 2006, 2007). With burial remains, we have an additional lens through which to view the EB IV population at Khirbat Iskandar. As is well known from a myriad of studies on the archaeology of death, burial traditions are as much a window onto the world and the social structures of the living, as a lens into the religious ideology associated with death (Keswani 2004; Boyd 1995; Baxevani 1995; Parker Pearson 1999; Chesson 1999). The latter is elusive, unfortunately, except for general inferences. The former is more tangible and observable, especially in this instance, given the wealth of data at Khirbat Iskandar and its unique landscape setting. A comparative analysis of tall and tomb assemblages provides a new view of the connection between the living and the dead in EB IV — from the viewpoint of sedentists, not pastoral nomads.

Area C: The EB IV Settlements

The site of Khirbat Iskander, well known as one of the best exemplars of a permanent agricultural settlement in the EB IV period (ca. 2300-2000BC), sits astride the ancient “King’s Highway”, on the north bank of the Wādī al-Wāla, just north of Dhībān. Current excavations now focus on the earlier, urban (EB II-III) settlement at the site and the nature of the transition to the non-urban EB IV period. For a survey of the excavations, see Richard and Long (2006) and Richard, Long, and Libby (2007).

First, regarding Area C, the superposition of architecture, realignment of structures, the associated surfaces, and quantitative ceramic study all contribute to the conclusion that there were three EB IV occupational phases in that area (see FIG. 1). The stratigraphic profile and the quantitative ceramic study both indicate continuous development through three phases, the major distinction in occupation occurring between Phases 1-2. Although the central area suffered some sort of destruction at the



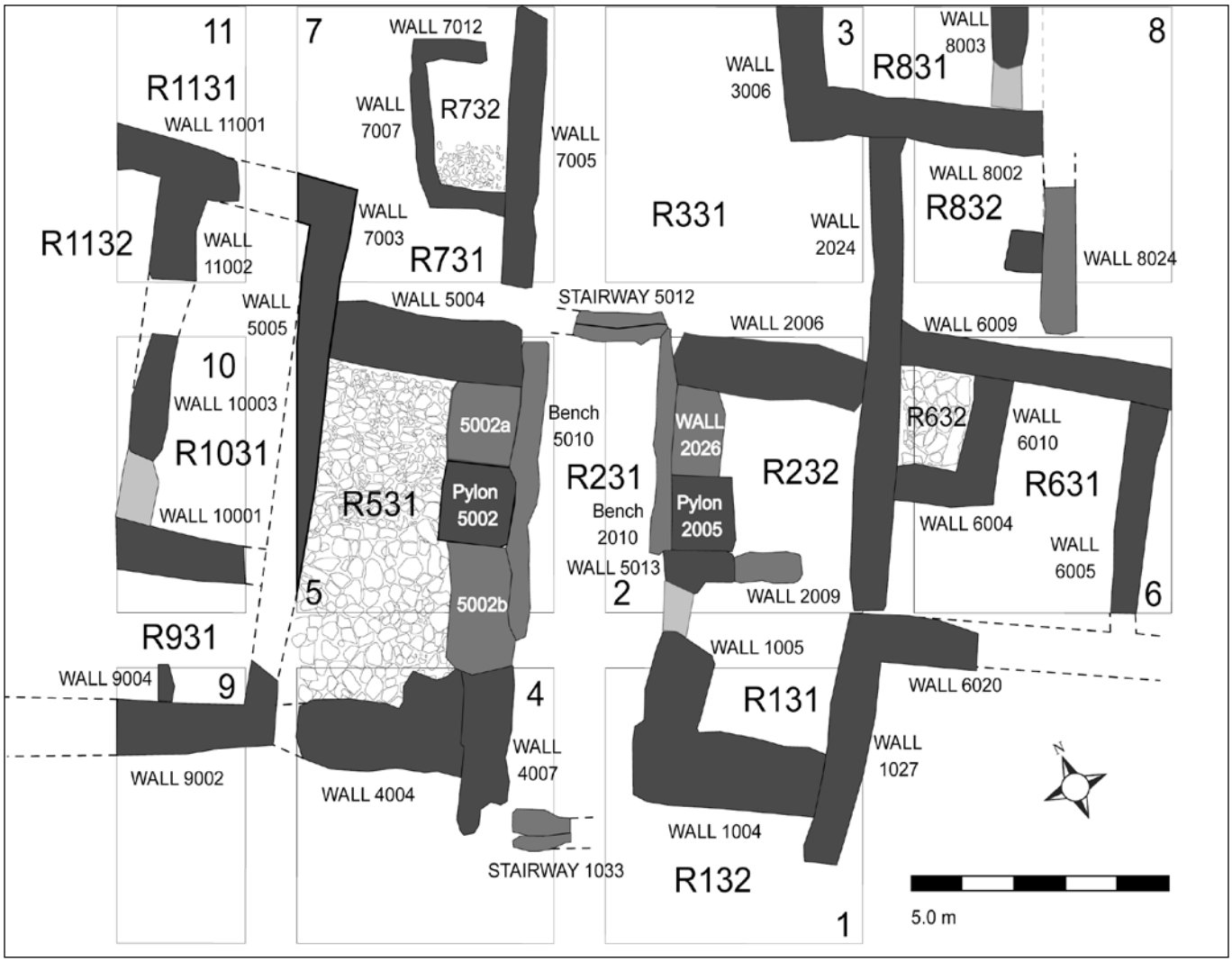
1. Khirbat Iskandar Area C6: three superimposed architectural phases.

end of Phase 2, immediate rebuilding in Phase 3 is indicated by reuse of structures. A brief summary of each phase follows.

Phase 1
In order to preserve the Phase 3 gate, the architectural remains in Phase 1 are somewhat limited. Nevertheless, what appear to be two typical Early Bronze Age (probably broadroom) domestic structures came to light in Area C, one of which a well-constructed 3m wide building. On present evidence, the structures appear to be freestanding, not interconnected as typical in upper phases; yet, continuity is apparent not only in the superposition of Phases 1-2 architecture, but also in the orientation of the buildings. In light of changes in the ceramics between Phases 1-2 (below), a major inference drawn about the Phase 1 settlement is that it appears to be a very early, possibly transitional EB III/EB IV occupational phase. Adding support to this view is the evidence for reuse of a pre-EB IV wall.

Phase 2
More is known about the Phase 2 settlement, although, again, to preserve the Phase 3 gate, excavation was somewhat limited. From a sampling of the architectural remains across the area, it appears that there were a series of interconnected structures running north south. However, the best evidence came from the central broadroom structure and an apparent workshop at the east end. In the destruction level of the multi-room central structure, there were remains of beams along with evidence for domestic activities, such as spinning, storage (short and long-term), food preparation and serving, as well as special usage vessels (basins). At the east end, within a curvilinear wall, an apparent courtyard work area contained two rounded stone/mudbrick worktables, whose associated living surface included quantities of flint debitage, 2 handstones, 1 hammerstone, and a pierced stone.

Phase 3
The preserved and restored Phase 3 settlement (Long and Libby 1999) provides the greatest lateral exposure in Area C, and a view of EB IV lifeways not encountered elsewhere in the southern Levant, as yet. The plan (see FIG. 2) of the Area C gateway is fairly well known. What the final study has concluded is that there were two sub-phases in the construction of this complex. The upper plan (Phase 3b) shows a blockage of the walls lining the plastered passageway, and the erection of a stairway at both ends, as well as stone benches against the blocked walls. Previously, a simple single entryway existed juxtaposed by rooms with a central pylon (Phase 3a). The plan and monumentality (for the EB IV period) of the Area C complex suggests a public function for the area. The 9m long and 2.5m wide passageway was clearly the focus of the complex, enabling traffic to and from the upper site. The erection of benches suggests some modification in function in Phase 3b to include a communal gathering place, apparently. A great deal of evidence for processing of agricultural product (numerous basins), found in the outer area of a specialized room/bin/storeroom (Room 732) likewise points to a work rather than a residential area. To the east, there was a similar pattern of workshop activities with associated features and quantities of



2. Khirbat Iskandar Phase 3b Gateway (drawing: J.C. Long, Jr.).

lithic debitage.

Although the Area C direct access, single entryway gate bears a resemblance to more monumental gate structures in the Early and Middle Bronze Ages (see McLaren 2003), the obvious disparity is that there are no towers flanking the entryway and no monumental curtain wall. However, McLaren's view that the sites of Rukays and Khirbat Iskandar represent transitional gate types is apropos (43). We interpret this complex as the only ingress in an otherwise unbroken east-west boundary wall that joins and reuses the earlier outer fortification line. This interpretation hinges, to a certain extent, on the expedition's work elsewhere on the mound, where EB IV architectural links to the outer fortifications are definite (Richard, Long, and Libby 2007), along with a tower in Area A with links to the east-west wall. The important observations made by Nelson Glueck concerning defenses at the site are also relevant in this regard (1939). All of these data suggest a type of gateway context for the Area C structure, and may represent additional evidence for continuity between the two urban periods.

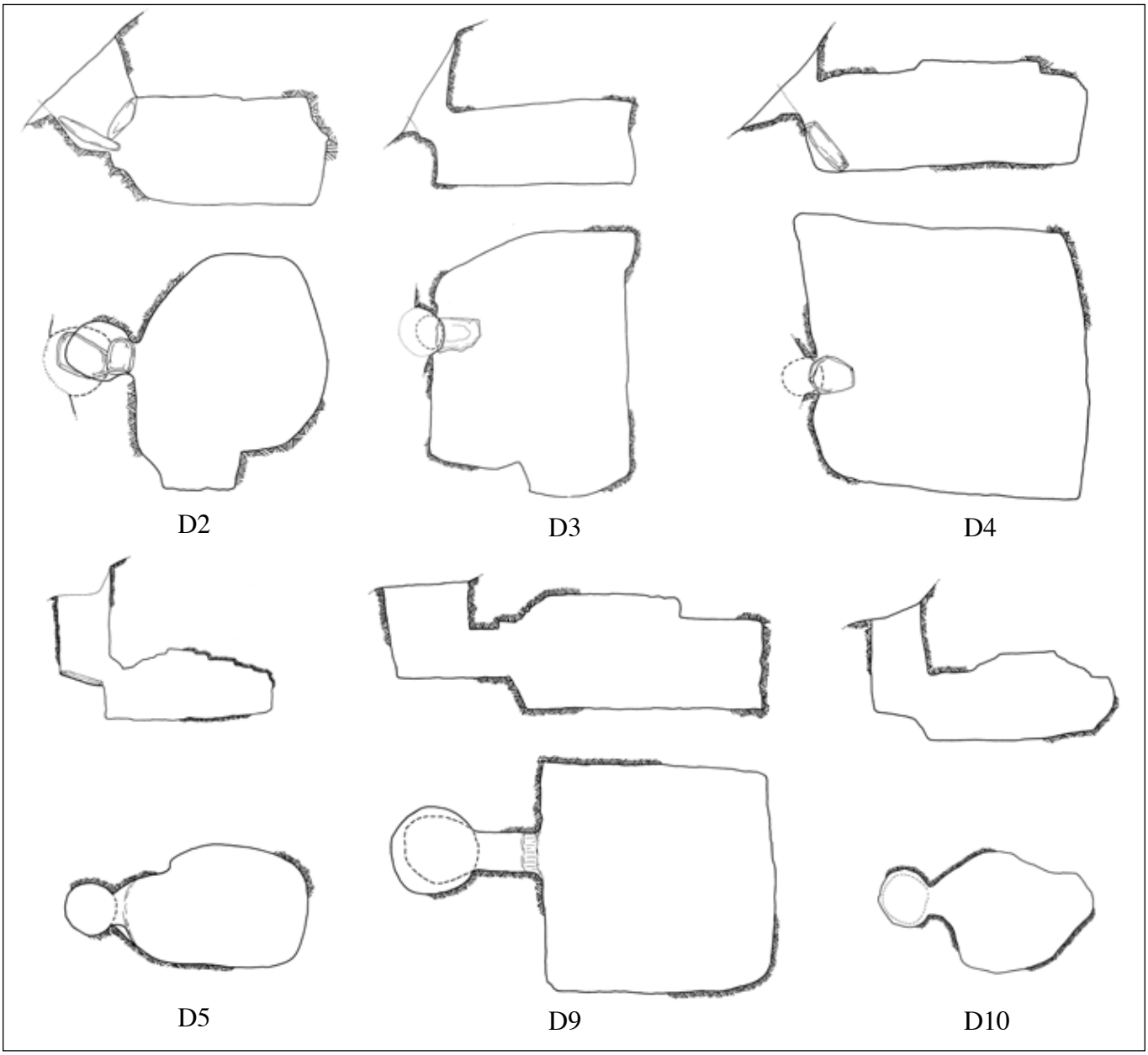
The Cemeteries

Regarding the cemeteries at Khirbat Iskandar, excavation revealed the EB IV tradition of shaft chamber tombs with multiple, secondary burials, rather than primary burials as found, for example, at Bāb adh-Dhrā' (Schaub and Rast 1989: 473-82). Although there was disturbance/roof collapse/robbing in virtually every tomb excavated, a variety of studies offer an interesting view of the burial traditions of EB IV sedentary peoples. On the basis of tomb types and a quantitative ceramic study comparing tall and tomb, and comparing tombs within

separate cemeteries, there were two major discoveries: 1) patterning and variations in the cemeteries indicated distinctions between Cemeteries D and E; and, 2) ceramic traditions of the "living" were remarkably similar to those of the "dead" at Khirbat Iskandar. There are cemeteries to the east (Area E), west (Area J), and south (Areas D and H) of the site. In Area J, bulldozing activities uncovered several tombs, one dating to the EB I, the other to the EB IV period. The latter included the remains of a chamber in which there were two lovely whole vessels along with one stone bead in association with two juvenile interments (Richard 1990: Fig. 28).

Cemetery D

Across the wadi to the south, on Jabal as-Sulṭāniyya, survey and excavation indicate a fairly extensive area of tombs. A robbed shaft tomb at the east end, caves and modified shaft tomb/caves in Area H, and a series of excavated shaft tombs in Area D at the west. Exploration beyond the road to Dhībān (Area F) suggested an area of probable tombs as well. Concerning Area D, two rows of tombs indicate that shaft tombs were dug every 5-6m. All had a round shaft and single chamber, the chambers being generally square or squarish, except for two that were slightly irregular (for the types, see FIG. 3).



3. Khirbat Iskandar shaft tomb types in Cemetery D.

Two tombs, D2 and D3, contained an alcove, one with bench. Tomb D2 had two blocking stones, one pushed aside; Tomb D3 had a pushed-aside blocking stone and the entrance blocked with stones. Thus, evidence for reuse of the tombs is clear. Both tombs yielded quantities of ceramics, in relation to the number of interments: e.g., 93 restorable vessels in Tomb D2 with an MNI of three adults and one juvenile, roughly 23 vessels per person (or more per adult), and metal objects. In Tomb D3, with an MNI of two adults, there were 56 vessels (five whole lamps and several other whole vessels), roughly 28 vessels per person, and metal and lithic objects.

Unfortunately, due to the considerable disturbance/robbing in Cemetery D, we cannot speak of "rich" or outstanding burial depositions, despite tomb morphology suggesting clear elements of distinction. For example, Tomb D4 stands out among the tombs due to its size and well cut, almost perfectly square (ca. 4 x 4m) chamber, flat roof, and unusually small round shaft. The huge chamber contained a scatter of bones with an MNI of two adults, 18 vessels, and several metal fragments. Similarly distinctive, Tomb D9 was almost perfectly square, though smaller (ca. 3 x 3m) with flat roof, had a wide round shaft (1.45m in diameter) and what could be called a dromos. In the form of teeth of a child and an adult, the MNI was two; there were 30 restorable vessels and two lithic objects. Tomb D5 had been cleared out perhaps in antiquity, except for a few bone remains and four EB IV vessels. The two irregular chambers were both in the upper row, Tomb D5 being slightly oblong and Tomb D10 being the smallest and most irregular of all the tombs. Interestingly, Tomb D10 showed distinctiveness in its grave goods, nine beads only, including carnelian. Despite the disturbance in the tombs, the tomb types and the array of ceramics, metal, jewelry, and lithics hint at variability in the burials in Cemetery D. As recovered, the skeletal remains appeared to be secondary disarticulated burials in all the tombs in this cemetery.

Cemetery E

There is also variability between the tombs of Cemeteries D and E, hinting at possible distinctions in burial location of the interred as well. Part of the difference is geological. The peculiar formation on the eastern ridge, a type of breccia conglomerate, appears underground to be a honeycomb of partially natural, partially cut chambers of some irregularity. It is clear that tomb cutters opportunistically utilized these cavities (Tomb E3) or modified them into shaft tombs (Tombs E9, E12, E14). This is in sharp contrast to the stratified layers of marl, chert, limestone, chalk on Jabal as-Sulṭāniyya, which are much more conducive to cutting a classic shaft and chamber. However, even given these geological differences, Cemetery E provides a contrast to Cemetery D in a number of ways. It is in Cemetery E, where the only example of a double-chambered tomb came to light (E9/E14).

Tomb E3 was a modified natural cavity in the rock 0.50m wide x 1m deep x 0.70m in height. Unlike the Cemetery D remains, this burial appeared to be an undisturbed context, yet it was a secondary disarticulated burial as well. The cave held two juvenile skulls, carefully placed on either side of a bone pile with the remaining bones between and over them (see Richard and Boraas 1988: Fig. 17), all lying on a prepared surface of small stones. The skulls faced east. The deposit included six small vessels and three flint blade fragments.

The double-chambered tomb (E9/E14) was a modified cave/shaft tomb. Despite disturbance in these tombs, both originally had several architectural elements at the entrance: lintel stones, blocking stones, stone wall. Tomb E9 provided the best example of all excavated tombs at Khirbat Iskandar of a nicely shaped round chamber It also had the best evidence to suggest the possibility of primary burial originally: three fairly discrete interments, with long bones, skulls, and vertebral elements (Richard and Boraas 1988: Fig. 18). There were 13 vessels, lithic, bone, and metal objects. Tombs E10 and E14 were less well preserved, but were similarly irregular cave/chamber shaft tombs.

What of the distinctions between D and E? Some of these include architectural elements in Cemetery E, a double chambered tomb, and reduced number of vessels per interment. The location of this cemetery just east of the site and in the area of the aboveground megalithic features are also a consideration. The quantitative ceramic study also noted distinctions between the cemeteries.

The Quantitative Ceramic Study

As for the third part of the study, the major conclusions drawn from the quantitative ceramic study were that: 1) there were three typo-chronological phases at Khirbat Iskandar in EB IV; 2) that the assemblages of Cemeteries D and E were contem-

porary with and comparable to the Area C corpus (Phases 1-3); and, 3) that correlation with Bāb adh-Dhrā‘ provides quantitative ceramic links between the central and southern plateau areas in EB IV.

The quantitative study showed that the best evidence for typo-chronological phasing at both sites is clearest in the platter bowl category. The sequence is that Phase 1 flat rim and rolled rim platters are superseded in Phase 2 by the EB IV “fossil-type” platter bowl with turned down rim. In Phase 3 earlier platter bowl types are virtually non-existent and varieties of the turned down rim dominate the repertoire. This sequence matches that at Bāb adh-Dhrā‘ (Schaub 2000; Rast and Schaub 2003; Richard and Holdorf 2000). Further, at Khirbat Iskandar, there is the appearance in Phase 3 of the straight-sided cooking pot with steam holes, as well as a typologically new variant, the beveled-rim bowl/platter bowl (FIGS. 4:22-23, 5:14). The cooking pot is a well-known MB IIA type; the beveled-rim bowl likewise foreshadows an MB IIA bowl with shelf rim as seen, for example, at Geshur (Cohen and Bonfil 2007: Fig. 5.5). There were numerous statistically significant diagnostics supporting this typo-chronology. Other factors include size increases and changes in richness of types in each of the three phases.

A major contribution of the quantified comparative study of ceramic assemblages at Khirbat Iskandar and Bāb adh-Dhrā‘ is that it is a first step toward developing interregional ceramic cross phasing in a period where one-period sites, isolated cemeteries, and regionalization are the norm. It is hoped that this EB IV ceramic study will offer some chronological pegs for other sites. A seriation of tombs, based on quantified comparative analysis with the Area C stratified assemblage, revealed that the tombs were in use contemporaneously through three phases. Quantified study also revealed the close correspondence of the cemetery repertoire to the site, thus strengthening the inference that those buried in the cemeteries were the sedentists from the site, rather than outside populations. Obviously, the possibility exists that others using the cemeteries purchased vessels made from the site.

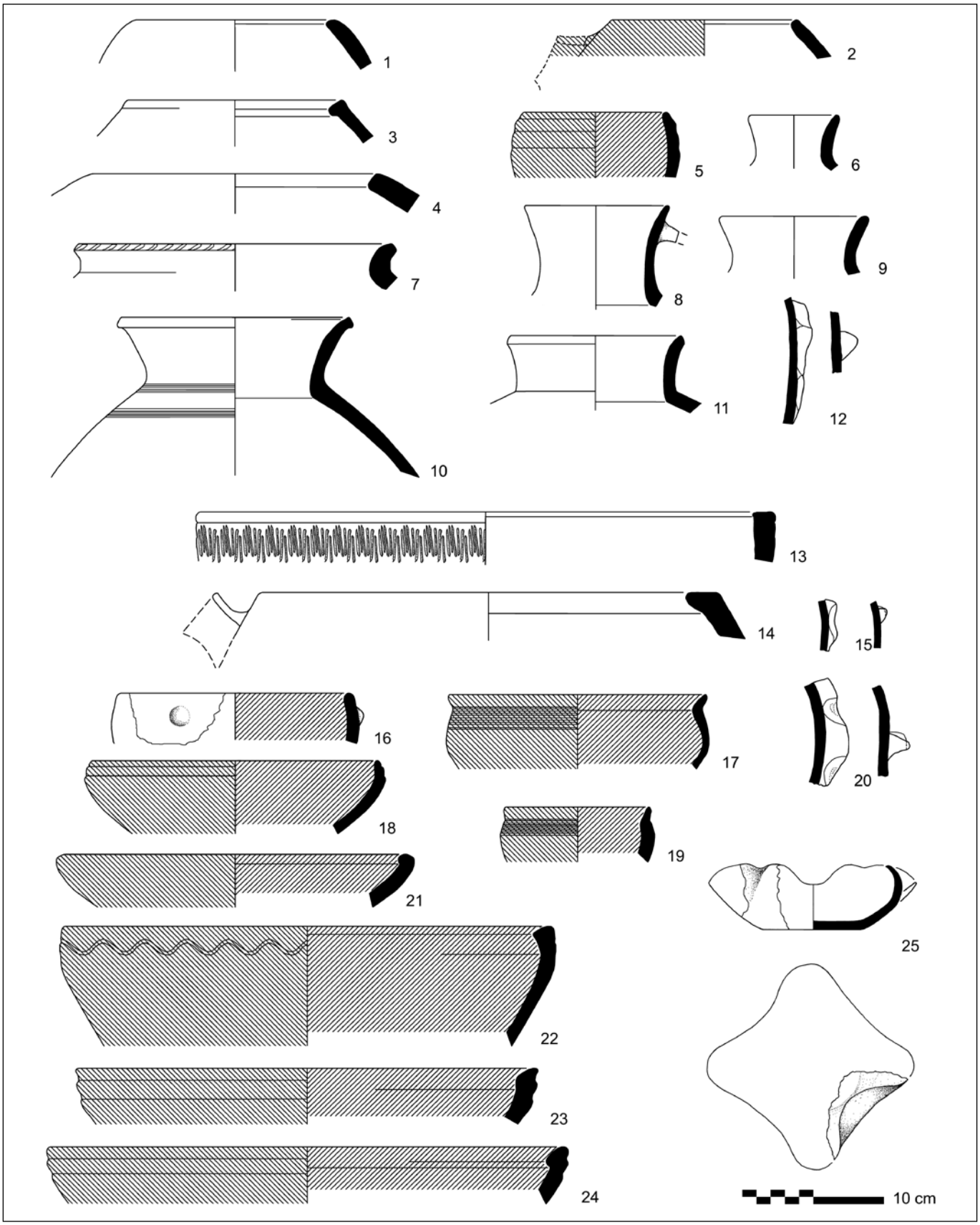
The similarities between tall and tomb ceramic corpora are immediately apparent (FIGS. 4-5), shown graphically in the histogram in figure 6. Even with the rare cooking pot and holemouth storejar (FIG. 5:1, 3) removed from the tombs, the profiles of tall and tombs are similar. Yet there are distinctions to note. The tombs (FIG. 5) lack holemouth bowls (including basins) and pithoi, both of which are found in Area C (FIG. 4:10-11, 13-14). Also, the platter bowls have a smaller size range, the large - medium deep bowls are fewer, and there were no envelope handles in the tombs, as found in Area C (FIG. 4:12, 15, 20). However, there are more medium-to-small to miniature necked jars, pitcher/juglets, and lamps in the tombs. The lack of long-term storage and/or food preparation/or processing/industrial (i.e., olive oil manufacturing) equipment in the tombs, as well as the general lack of large sizes, probably relates to the constrained space within the tomb. Alternatively, those items were not considered appropriate grave goods. It is interesting that there is nothing in the tombs that is not found on the tall, even though it might be the rare lamp or miniature vessel (FIG. 4:6, 25).

As for distinctions between Cemeteries E and D, the quantitative study showed the former to include proportionately many more medium-small bowls, fewer (and smaller) platter bowls, and well-fired pottery. These and other characteristics are comparable to the assemblage in Field XVI (the cultic area) at Bāb adh-Dhrā‘. There are numerous statistical details for each cemetery, of which these are just a few examples. In summary, what we may glean from the quantified ceramic study is that differentiation between Cemeteries D and E is apparent.

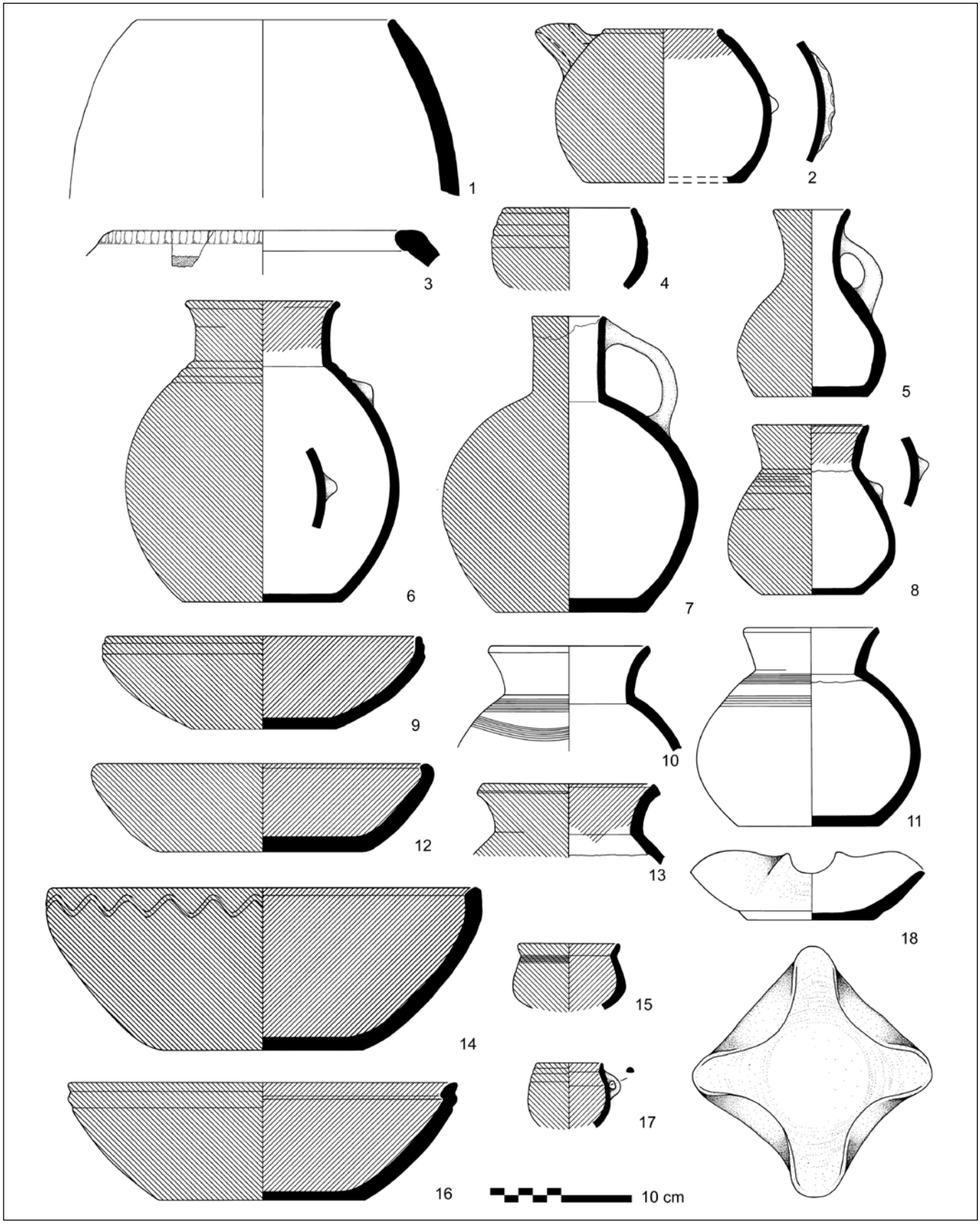
Conclusions

The Cultic Landscape of Khirbat Iskandar

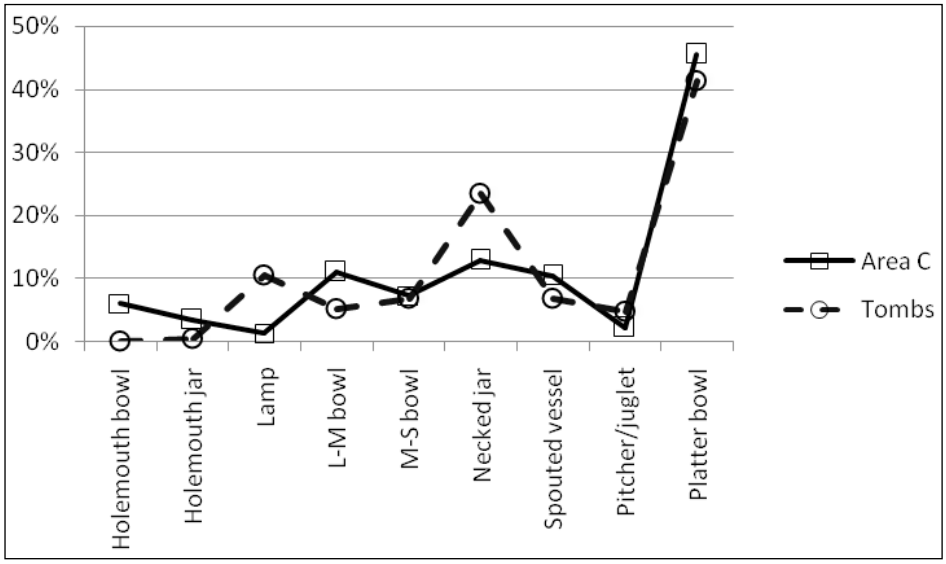
The stratified profile at Khirbat Iskandar, like the evidence for multi-phase occupation at other sites in Jordan, affirms a significant permanently settled population in the EB IV period. Excavated sites, such as, Tall Umm Ḥammād (Helms 1986), Tall Iktānū and Tall al-Ḥammād (Prag 1991), Abū an-Ni‘āj and Dhahrat Umm al-Marār (Falconer, Fall and Jones 2007) Tall al-Ḥayyāt (Falconer, Fall, Berelov and Metzger 2006), Bāb adh-Dhrā‘ (Rast and Schaub 2003), Aro‘er (Olavarri 1969), Adir (Cleveland 1960), al-Batrāwī (Nigro 2005), Khirbat Ḥamrat Ifdān (Adams 2000), document the settled element in what was, undoubtedly, some variant of a dimorphic society, where there was a symbiotic relationship with the pastoral nomads. What the data from Khirbat Iskandar show, further, is that strong continuities with Early Bronze tradition characterized the EB IV period in Transjordan, including,



4. Khirbat Iskandar Area C EB IV pottery.



5. Khirbat Iskandar EB IV pottery from the Cemeteries.



6. Histogram comparing the ceramic assemblages of Area C and the cemeteries at Khirbat Iskandar.

some evidences for social stratification.

The sum of the characteristics of Cemetery E noted above, along with the aboveground megalithic markers and proximity to the tall, combine to suggest some social distinctiveness to those interred there in contradistinction to those interred in the large cemetery of reused shaft tombs in Area D. If this is a correct inference, then the Jabal as-Sulṭāniyya hillside was the major burial ground for the population. Even so, the variability in Cemetery D itself is suggestive of social distinctions. For a discussion of social stratification in EB IV tombs, see Palumbo (1987) and Baxevani (1995).

A major question posed in this study was: Why is there such a close correspondence between the living and the dead at Khirbat Iskandar; further, why is the burial repertoire more limited and specialized elsewhere, such as, Dhahr Mirzbānah (Lapp 1966: Figs. 1-40: *passim*) and Gibeon (Prichard 1963: Fig. 62:34-40: *passim*), where we see the ubiquitous small jars or "milk bottles" and little else. The answer may be as simple as that the cemeteries at Khirbat Iskandar served the needs of the sedentary occupants of the site, whereas, seasonal peoples probably utilized the Central Hills cemeteries. The different assemblages probably reflect sedentary vs pastoral burial custom distinctions. Other permanent sites and associated cemeteries seem also to reflect a similar tomb/tall repertoire, e.g., Bāb adh-Dhrā' (Schaub and Rast 1989) and Jericho (Nigro 2003).

Excavation and survey of the present expedition affirms observations made by Nelson Glueck about the area east of the site. Glueck commented (1939: 128) on the numerous circles of stone, menhirs, and rectangular structures (open air sanctuaries) across the ridge as probably indicating a "tremendous ancient cemetery". Indeed, our excavations have uncovered remains of that cemetery, as well as numerous features visible at the time of Glueck's visit. The remaining features are the vestiges of what originally must have been a visually captivating landscape of not inconsiderable symbolic significance mirroring connections between the living and the dead.

Adding to this landscape is the recent discovery of a "high place", on the summit of Umm 'Idrum, overlooking the site from the north, and completing the virtual 360 degree cultic ring encircling the tall (and the living). Although this apparent ring could merely be utilitarian and/or fortuitous, it is highly likely that it was a purposeful and planned symbolic manipulation of the ecocultural landscape, and is reflective of a religious ideology, a sociopolitical ideology, or both. Along with the close connections between tall and tomb noted in the ceramic assemblages, this landscape suggests a symbolism of close ties between the living and the dead (Parker Pearson 1999: 124-41). Such strong ties are particularly obvious in the EB II-III charnel houses at Bāb adh-Dhrā', houses of the dead that are identical to houses of the living (and see Chesson 1999).

As tomb and tall assemblages evoke the close ties between the living and the dead, the 360 degree

cultic/mortuary landscape may reflect the watchful eye of the ancestors over the site and the living. As Parker Pearson notes, "Placing the dead is one of the most visible activities through which human societies map out and express their relationships to ancestors, land and the living (1999: 141)". If our interpretation of the distinctions between Cemeteries D and E has merit, then, at a deeper symbolic level, the megalithic aboveground features in that area may validate an ideology of inequality in the social organization of the site. For a discussion of archaeological correlates to complexity at the site, see Richard (2006) and Richard and Long (2006).

The megalithic structures at Khirbat Iskandar are part of a tradition of stone monuments that includes dolmens, menhirs, cairns, circles of stone, rectangular open sanctuaries. These date primarily to the EB I and IV periods, although there are examples from other periods. Scholars have surmised that megalithic structures (especially dolmens) may represent territorial markers of pastoral societies, or symbolic landscape markers between the agriculturalists and the pastoralists, or, at least, a border where the nomads and sedentists came into contact and maybe conflict (Zohar 1989: 27; Prag 1995), or perhaps the burials of EB II-III populations (Vinitzky 1992). Although the megalithic structures at Khirbat Iskandar could originate earlier in the Early Bronze Age, excavation has revealed sealed EB IV pottery in one of the megalithic structures; usage of the cemetery was in EB IV. From the vantage point of a well-established permanent Early Bronze Age settlement like Khirbat Iskandar, it is difficult to conclude that the megalithic structures represent territorial markers of a pastoral-nomadic society. More likely, they reflect a sacred landscape. Whether the symbolism evoked is an ideology associated with the ancestors and/or the social structure at the site, or whether it reasserts traditional hierarchies of the past, it seems clearly to reflect the close ties between the living and the dead in the EB IV at Khirbat Iskandar.

Acknowledgement

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The Foothill Cemeteries Behind Iktānū: The Vanishing Landscape

Jordan is still especially rich in monuments that are well preserved in arid regions and which provide a strong visual image of the past. Even when lacking documentation, they affect our feeling for the landscape and evoke a response. In lonely places one stands and considers who were our predecessors, and when and why they came there. While not among the top tourist destinations in Jordan, it seems to me, after many years, that the once quiet aridity of the south-east Jordan valley, the Ghawr around ash-Shūna al-Janubiyyah, is still one of the most interesting landscapes in the country, featuring as it does in biblical and historical events. Far older, is its dimension as a prehistoric mortuary landscape. The sense of time and permanence is strongest for a burial ground, which marks more than the material presence. In considering the peoples who passed through or crossed Jordan, these silent memorials in the landscape have their place.

Working at Iktānū provided the opportunity to observe this landscape, as the inhabitants do, at all times of day and night, at different seasons of the year, and under varied conditions. Sunrise over the eastern plateau, with Mt Nebo on the horizon, provided an almost daily drama at the beginning of the working day; the full heat of the sun at midday in summer is harsh; in winter, floods down the escarpment gush onto the alluvial plain.

This is an area that has been frequently, but not intensively, explored. The Chalcolithic site of Tulaylāt al-Ghasūl is its best known and most extensively excavated site. The Pontifical Biblical Institute project between 1929 and 1932 did not just excavate on the site, but made extensive explorations of the hinterland (Mallon *et al*. 1934).

The Explorations of Koeppel, Mallon and Stekelis

Koeppel's map of the south-east Jordan Valley, published in 1934, illustrated a complex landscape, with the Dead Sea to the south-west, foothills to the east, and a network of major and minor watercourses draining from east to west (Mallon *et al*. 1934: fig. 3). Tulaylāt al-Ghasūl is prominently marked in the north-west. Dotting the landscape are dolmens, round graves and rectangular graves, some occurring in isolation or small clusters, but also there are numerous cemeteries, some described as containing more than fifty graves. Stekelis estimated that the cemeteries in this region covered 25 square km., from the Wādī Muhtardja (the lower, western course of the Wādī ʻUyūn Mūsā) in the north, to the Wādī al-Abyaḍ in the south, and from Khirbat Suwayma in the west, to the foothills of Moab on the east (Stekelis 1935: 38). Mallon was aware that the cemeteries covered an even greater area, and he recorded yet more cemeteries north of the Wādī Muhtardja, extending almost to the Wādī Ḥisbān, near Iktānū (Mallon *et al*. 1934: fig. 67).

Two of the cemeteries were excavated, one just 2km. south-east of Tulaylāt al-Ghasūl by Stekelis in 1933; and one 3km. east of Tulaylāt al-Ghassūl by Mallon and Neuville. In the latter cemetery, spreading across both sides of a little wadi in the plain, more than 200 tombs were visible, including dolmens, cists and many row cists. The latter were constructed in series, sharing a common wall, normally with two or three in a row, but there was one series of ten in a row (Mallon *et al*. 1934: 154). In the cemetery Stekelis excavated, he recorded 168 cist graves and 11 tumuli, spread over an area of 140 x 80m (Stekelis 1935: 40). Rectangular cists, generally oriented east/west, were found more or less adjacent to tumuli and ring graves. Some of the tumuli and ring graves contained material dating from the late Early Bronze Age and beginning of the Middle Bronze Age (Mallon *et al*. 1934: 152).

More recent work, by the Dead Sea Survey in 1995 (‘Amr *et al*. 1996), indicates that there was more settlement and at least a dozen more cemeteries south of Suwayma. Altogether the area dotted with these cemeteries stretches for at least 13km. in a broad arc around the eastern foothills, and the dolmen field extends a further 3km. north of the Ḥisbān.

At and near Tulaylāt al-Ghasūl itself, Mallon considered that the dolmens and cists were related structurally, with cists built below ground and dolmens above, suggesting continuity in ritual forms, and it seems likely that he was broadly correct (Prag 1995). Also it seems likely that many of the cemeteries were associated with the settlement at Tulaylāt al-Ghasūl. According to Lee (1978: 1213) this view “cannot be upheld on the basis of current information”, but he does not say what that information is. However the occupation of Tulaylāt al-Ghasūl appears to have been continuous from the late Neolithic to the very latest Ghassulian phase (Lovell 2001: 49), and the assemblage recovered by Stekelis and Mallon from the majority of the cist graves they excavated is certainly Chalcolithic.

The only graves recovered from the settlement site at Tulaylāt al-Ghasūl itself were those of infants, in jars in cist graves that were very similar in construction to the silos, which were regularly encountered on the site. Mallon excavated silos built in stone, brick or clay at Tulaylāt al-Ghasūl, in which they found grain and olive stones. Not only are the stone silos of virtually the same construction as that of the child burials on the site, but the construction is the same as for the cist graves in the cemeteries (Mallon *et al*. 1934: cf. Pl. 18:1 with Pl. 24:5). All the evidence suggests they were contemporary.

In the cemeteries, cist graves were found in different sizes, and were often tiny, especially the row cists (Mallon *et al*. 1934: Pl. 59:3). Stekelis believed from the evidence of the bones (which were rarely found), that the dead were inhumed in a squatting position, sitting on their heels, with the head propped against the short north or west end of the graves, looking up at the rising or the midday sun (Mallon *et al*. 1934: 153, Pl. 59:2). Graves recovered further south near Bāb adh-Dhrā‘ led Clark (1979) to assume that such bones indicated that burials were disarticulated, with the head laid on the top of the bone pile. Both interpretations are possible (we note parallels from the burials of chieftains of the Zimbabwe culture on the Limpopo River in Africa who were “interred in semi-sitting postures”, Caton Thompson 1971: 24), but in the case of the tiny row cists, only disarticulated burial seems possible in the space available. Such factors raise the question of whether during Chalcolithic period the region was a cemetery for more people than just the inhabitants of al-Ghassūl, possibly for people coming from a distance and participating in annual or seasonal rituals.

Mallon and Neuville had already noted that in the cemeteries towards Wādī ‘Uyūn Mūsā, series of 6, 8, 10 and 13 row cists could be seen, and noted that their isolation from modern settlement had preserved them from the looting. With one of his workmen Mallon opened one of the little tombs in this area, in which the bones were disposed like those in the cemetery near Tulaylāt al-Ghassūl, with the head at the top against the north side of the grave, a disposition which Mallon again described as looking up at the noon sun (Mallon *et al*. 1934: 154).

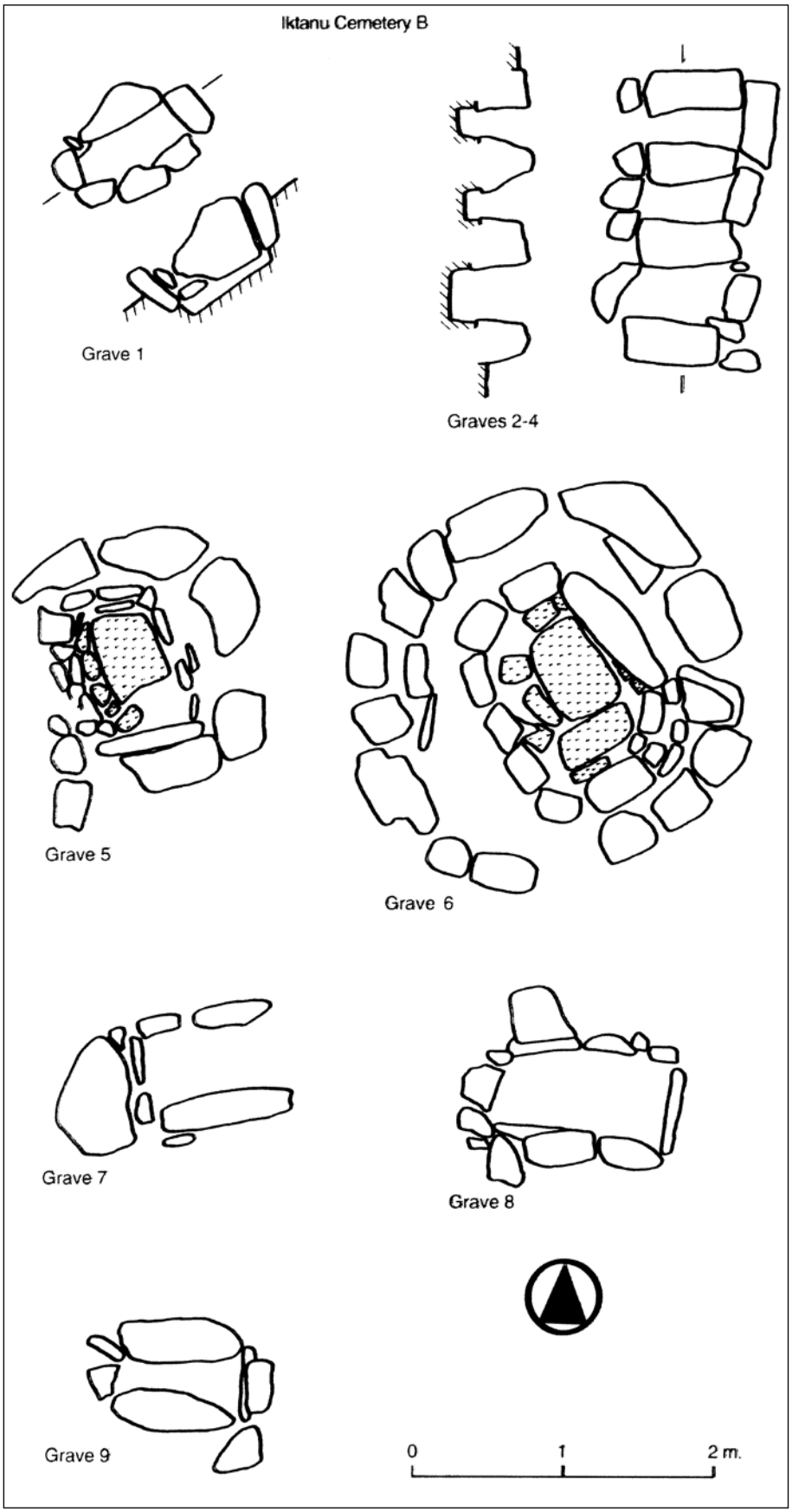
The Iktānū Cemeteries

The type of cist graves Mallon describes are distributed in small discrete cemeteries close to Iktanū. During the first excavations at Tall Iktanū in 1966 we explored briefly four of these cemeteries (FIG. 1), and we have attempted to re-locate them in more recent years.

Cemetery B was approximately 35m. in diameter, with two ring graves on the east side, oriented *c*. north/south. There were many small cists and row cists occupying the rest of the area, and these were oriented east/west (FIG. 2). The six cists graves we opened were all empty, except for a single sherd recovered in the fill of Grave 6, which is certainly Chalcolithic and from a small V-shaped bowl or cornet.

Cemetery F, further south, explored in 1989 (Prag 1990: 128, fig. 7, Pl. II), covered an area *c*.

1. Cemetery B, south of Iktanū. Work in progress during April/May 1966; from the west.



2. Cemetery B, south of Iktānū. Plans of graves 1-6.

36 x 42m. It was densely packed with at least 200 graves, again with two ring graves on the east side, and with huge numbers of row cists, mostly oriented east/west, but with a significant number oriented north/south in a separate group on the west side of the cemetery.

Ring graves, one from the Iktānū cemeteries and one seen at Adaima, are very similar but unfortunately dating evidence is sparse. The ring grave from one of the Iktanū cemeteries is 4.78m. in diameter, and appears to have a round or sub-rectangular cist within the circle. A single holemouth jar rim of probable EB I date was found with some Roman-Byzantine sherds in the looted remains. It was an isolated grave when seen in 1989, but the extensive development taking place in the area may have removed cist graves which once accompanied it.

Whatever the date of the ring graves and tumuli, there is at the very least a strong suggestion of spatial continuity in burial practice in this region over a long period.

The dolmen fields of the region, at ‘Udhayma, al-Maṭabba, Umm al-Quṭṭayn, Rawḍa and Ḥabbāsa, have been described elsewhere, with the evidence indicating that they date to the EB I period, some being reused (or possibly built) late in the third millennium in the Intermediate Bronze Age (Prag 1995: 79). Some of the dolmens at al-Maṭabba are aligned in a close-set north/south row of rectangular structures, and have the appearance of giant row graves.

Ritual at Tulaylāt al-Ghasūl

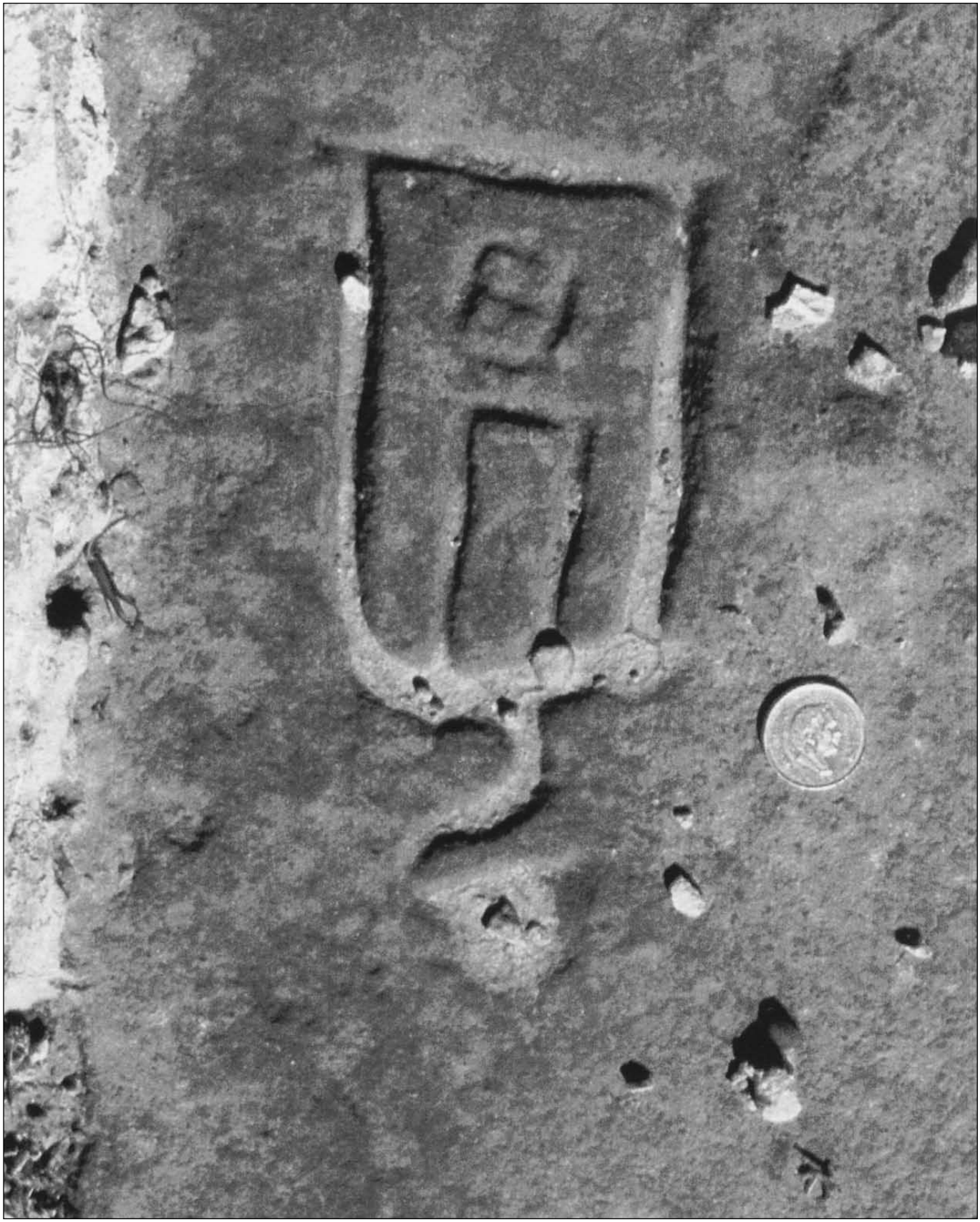
For the Chalcolithic period, and perhaps lingering into the Bronze Age, it is hard to escape the idea that this is not just a mortuary landscape, but also a ritual landscape. The people of Tulaylāt al-Ghasūl conducted rituals of which we have glimpses, in their wall paintings and material assemblages. At Tulaylāt al-Ghasūl, processions played a significant role, with colourful costumes, obscure symbols and dramatic masks (Mallon *et al*. 1934: Pls 66-70; Cameron 1981). Whether religious, magical or secular, these ritual activities were part of the normal human process of re-formulating and mediating past experience “as a social animal, man is a ritual animal” (Douglas 1966: 62-69, 72).

Masks play a considerable role in traditional religions and shamanistic rituals in both the ancient and modern worlds. They are found in several Neolithic and Chalcolithic contexts in the south Levant (e.g. Bar-Yosef and Alon 1988: frontispiece and Pl. XI) and it is likely that the repeated depiction of black and white eye images represents such masks at al-Ghasūl. Cameron (1981: 10) suggested these masks were linked to death rituals.

Just one of many modern ethnographic images of the ritual use of masks (made of vegetable fibres and shells) can be seen amongst the Dogon people of Mali in West Africa, who celebrate the living in an annual funerary ritual (Griaule 1963: fig. 154: E, Pl. XX: B; DeMott 1982: fig. 21). The Dogon have a great variety of masks and other symbols associated with ceremonies, and they record many of the symbols in the form of rock-paintings (Griaule 1963: e.g. fig. 165) which are reminiscent of some of the al-Ghasūl images painted on walls, though the meanings of the latter are lost to us.

I have long wondered about the origins of a carving on a flattish piece of bedrock about a kilometre south of Tall Iktānū, recorded one day in 1989, not directly associated with a cemetery, but in the same landscape (FIG. 3). It is about 20cm. in length, and carved in medium relief. It is weathered, suggesting that it is not modern. It does not resemble any of the tribal wasms recorded by Conder (1889: 210-211, 297-299) although in many ways this seems to be the most likely origin; but it was not recognised as a form of Islamic graffito by Geraldine King or M.C.A. Macdonald, both of whom have conducted extensive surveys of Islamic epigraphic material in eastern and southern Jordan and who kindly looked at the photograph. When similarly consulted, J. Malek noted that it “does not look Egyptian. A *serekh* (palace facade) might be considered because of its general shape, but there are too many difficulties associated with it, so it is not a very good choice”. Its origin and significance remains unidentified. Again there are similarities to it in some of the Dogon paintings of masks from West Africa (e.g. Griaule 1963: fig. 168: B, 185: D; 187), and other paintings, which depict bags carried by Dogon men at festivals (Griaule 1963: 671, fig. 207: centre). It might just be possible to see it as a depiction of a ‘porthole’ dolmen, as an elevation viewed from the entrance at the narrow end of the structure, but whether as such it can be linked to the dolmen builders of the EB I or possibly the IB period or incised by a much later passer-by, is unknown.

The great red and black star, the best known feature of the Tulaylāt al-Ghasūl wall paintings (Mallon *et al*. 1934: frontispiece) is a very ancient symbol of the sun, but equally could represent other celestial



3. Graffito on bedrock, south of Iktānū.

bodies (as Cameron 1981: 5). Whether variation in orientation of graves is a chronological distinction, or has other, perhaps astral, significance we cannot know. In the south Jordan Valley we do know that the appearance and disappearance of the sun, and the heat of the noon sun, are marked factors in the landscape and environment, and this undoubtedly influenced Stekelis and Mallon in their interpretation of the skeletal remains found in the cist graves.

The survival of the cemeteries was due largely to the lack of later large-scale settlement in the arid foothills and in the vicinity of Tulaylāt al-Ghasūl; thus the location in itself serves to reinforce the early date of the cemeteries, before the desiccation of the western Ghawr (Prag 1995: 84). Why the foothills? As in most traditional societies, the burial of the dead was often in the poorer, rocky and dry land adjacent to, but not impinging, on the agricultural land. For both cist and dolmen burial a supply of suitable stone was needed. Wadi boulders could be made to suffice for small cists, but generally the cist graves were constructed with smallish stone slabs from the foothills: so the dead were taken to the stones, rather than the stones to the dead. Such events comprise rituals, or are commemorated in rituals.

For the foothill cemeteries and this landscape however, the present is much more bleak. The expansion of the gravel extraction operations came as a shock to me in 2005, and today the quarries and their dumps threaten to encroach on Iktanū itself (FIG. 4). The roar of quarry lorries now fractures a quiet crossing of the landscape.

In reflecting on those who have crossed Jordan, the theme of this tenth conference, I think not just of the ancient inhabitants of this region crossing a landscape perhaps ritualized by mortuary practices, but also of Father Alessio Mallon, who died of illness in 1934 in hospital at Bethlehem at the age of 58; his record of this ancient landscape is invaluable, and in every aspect that I have seen, beautifully observed and most accurate.

4. The quarries south of Iktānū, December 2005.

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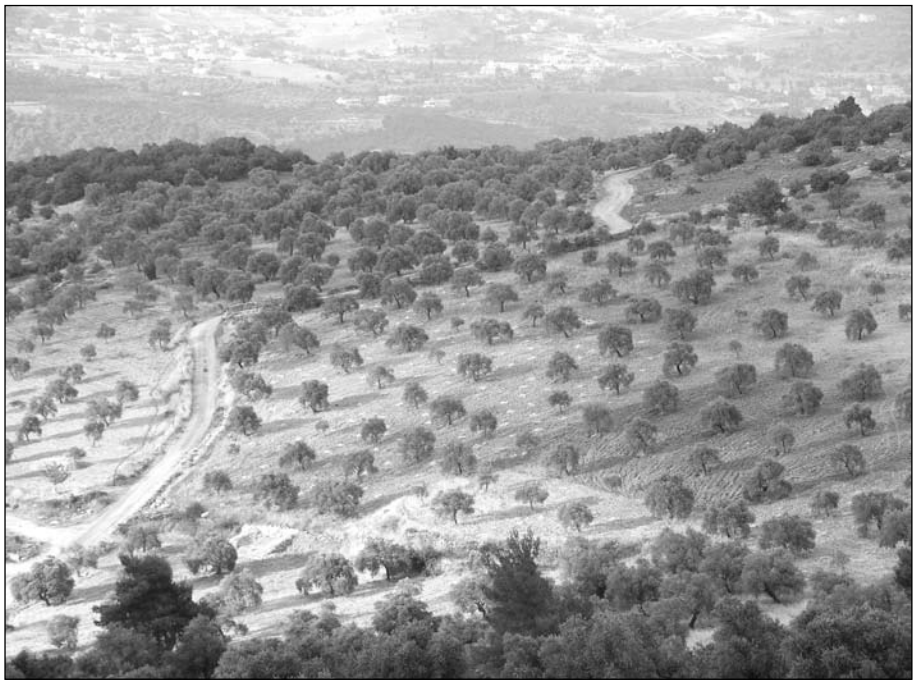
Technological Similarities Across the Jordan Valley

Introduction.
The olive tree is a typical Mediterranean plant. Its cultivation in the Near East dates back at least to the Chalcolithic and is well attested in the Bronze and Iron Age. In Jordan, traces of a possible Early Bronze Age oil press were found at Tall Rakān II / Wādī Ziqlāb (Banning and Najjar 2000) (FIG. 1).

With the transition from nomadism to sedentism, the olive tree was one of the first to be adopted by man and cultivation of better varieties began. The reason for the success of the olive tree in the region under consideration is that this area is its natural habitat, and both soil and climatic conditions are suitable for its needs. The light to medium lime and terra rossa soils, which are well aerated, encountered in the mountains of Jordan are ideal for growing olive trees. Also, the climatic conditions (long hot summers and mild winters) are optimal for the tree and the fruits. The olive tree will not fruit below the isohyet of 200mm of rain per year except, of course, in irrigated orchards. There are two main olive producing regions in modern Jordan: the western mountainous region and the north eastern desert region. The former is rain-fed; farms tends to be small, but it produces 70% of the country's total olive production. The latter is irrigated; farms tend to be larger and it produces the remaining 30% of the country's total olive production.

Domesticated olive trees have been grown in Jordan since the Chalcolithic period and since then numerous varieties of the tree have been developed. Today the most popular olive variety in the country is known as "Nabāli" or "Rūmī", possibly testifying to its ancient origin.



1. Olive trees near 'Ajlūn Castle (T. Waliszewski).

The olive harvesting season starts in October and ends in January of each year. In order to extract the precious oil from the olive fruit, the extraction process naturally focuses on the separation of the oil and supplementary liquids from the solid material. The process begins with the washing of the harvested olives with potable water and removing the leaves. Then, crushing the olives with stone mills produces a paste. The extraction of the olive oil is accomplished by pressing: the oldest and most common method of oil extraction in which pressure is applied to stacked mats, smeared with paste. The 'waste' consists of solid and liquid waste. The solid waste is used as fuel, fertilizer, herbicide and animal feed.

Such favorable environmental conditions in Jordan for olive tree cultivation should result in rich archaeological evidence for olive oil production. However, the image received from Jordan is different to that which might be expected. Almost nothing has been published on the subject, including few field reports (e.g. 'Ammān Citadel, Yājūz, as-Salṭ, Jil'ād etc.). References to olive oil installations are scarce and very incomplete. Three oil presses from the Roman period have been excavated by the French-Jordanian team at Kh. adh-Dharīḥ and remain unpublished.

Jordan appears in Raphael Frankel's impressive catalogue of oil and wine presses in the Mediterranean as an almost completely blank map with two or three points seemingly randomly selected by the author (Frankel 1999: map 7, 14, 16, 42). It is hard to believe that this image is true, especially when we take the present status of the olive oil industry in Jordan into account.

The main factor encouraging me to look into the problem of olive oil production in ancient Jordan was, on the one hand, an important gap in the scholarly literature pertaining to Jordan and dealing with this particular branch of the ancient economy and, on the other hand, the major progress made in this field in Palestine, Syria and other regions of the Mediterranean over the past 20 years, thereby enabling firm comparisons to be made (Callot 1984; Hadjisavvas 1992; Amouretti and Brun 1993). Apart the reports mentioned above, the only comprehensive and serious article on the subject in Jordan was published as recently as 2004. A.S. Abu Dayyeh has given a detailed account of an oil press building recently discovered by Y. Ulayan at 'Abdūn, 'Ammān (Abu Dayyeh 2004). We should also mention a recently published Ph.D. thesis on the "Identification of Ancient Olive Oil Processing Methods Based on Olive Remains" by Peter Warnock (Warnock 2007). It focuses on the chemical aspect of the production, rarely recorded during previous excavations, and possible ways to reconstruct ancient methods of extraction of olive oil in Jordan.

Owing to limitations of space I have decided to only to review briefly some important facts and to discuss the problem from the most important (in this instance) aspect: technical varieties of installations. Geographical and chronological issues, as they need more research, will be developed in another paper.

Olive Oil Installations in Jordan

Typically, olive installations consist of a huge stone crusher, crushing stone, beam weights, basin and, of course, a wooden beam, always missing on archaeological sites. Monumental stone elements are easily spotted on the ground surface and were thus sometimes mentioned by travelers (Glueck 1935: 9, fig. 2). Monolithic stone elements may, even to this day, form part of the landscape of a traditional Jordanian village (Biewers 1997: 153-157). As they were used in the same form and location for centuries, their dating is far from precise and remains potentially misleading.

A survey of the scholarly literature has permitted the creation of a preliminary list of all ancient oil presses or their isolated elements ever mentioned in archaeological publications pertaining to Jordan, especially fruitful was the analysis of the JADIS list of sites, which lists more than 30 oil presses from different periods. Another important source of information, the Annual of the Department of Antiquities, delivered 21 examples of oil installations mentioned or briefly described. A further 13 were found in other publications, giving a total of 64 sites where traces of olive oil production in antiquity have been recorded.

To correlate the texts with remains in the field, during course of the summer of 2005 a limited but representative number of previously identified sites was visited, starting from Abila in the north and extending to southern sites in the Petra region. Some of the sites mentioned in JADIS have already been destroyed, as at Kh. 'Ajam in Wādī al-Mūjib where the olive crusher recorded in late 1990 has disappeared under the rising waters of the new lake (Abu

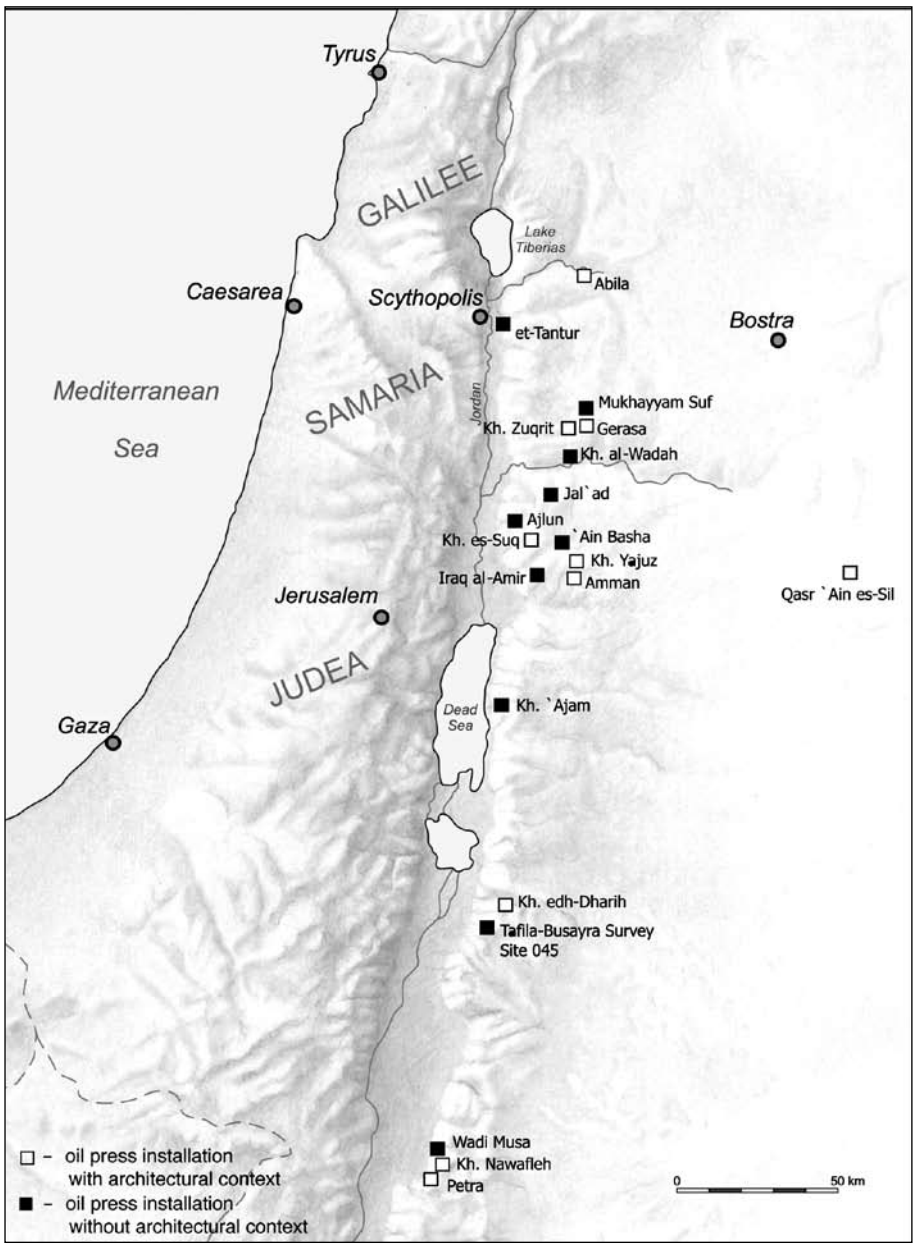
Shmais 2000: 10). Other olive installations, however, still exist.

The results of this preliminary investigation has enabled a typology of installations to be established, and some basic data about their geographical distribution and chronology to be presented.

Geographical Distribution (FIG. 2)

The geographical distribution of olive oil installations in Jordan shows no discrimination as to the region, with the exception of the deserts and the lowlands between ʻAmmān and Wādī al-Mūjib. This region is known to be especially rich in wine presses, very much like the Hauran to the north (Saller and Bagatti 1949: 13-15; Herr *et al*. 1991; Dentzer-Feydy *et al*. 2003).

Generally, the location of installations corresponds to the natural olive tree regions known in modern Jordan, including ʻAjlūn, as-Salṭ and Abila, but also the Petra region. The Petra region has at least four main locations. In 1979 F. Zayadine discovered a crusher and weight dated to the Byzantine period at Zurrābah (Zayadine 1982). Between 1996 and 2000 Dr ʻAmr excavated several elements of oil presses dated to the Nabatean-Roman and Ayyubid-Mamluke periods at Wādī Mūsā and Kh. an-Nawāflah (ʻAmr and Momani 2001; ʻAmr 2000). Also, in 2000 the Swiss-Liechtenstein team



2. Olive oil installations in Jordan (first century BC - eighth century AD) (M. Puszkarski).

unearthed a component of what seems to be the oldest press from the Nabatean period at az-Zanṭūr IV (Kolb and Keller 2001).

The aṭ-Ṭafīla region is marked by the presence of three olive oil installations, located in Wādī la'bān at the Nabatean-Roman site of Kh. adh-Dharīḥ (FIGS. 3-5). Two presses are located within the village, whereas the latest one occupies a room adjacent to the main temenos of the former temple (Muheisen and Villeneuve 1990). During his surveys of the aṭ-Ṭafīla-Buṣayra sector, B. MacDonald noted a huge limestone crusher at Site 045 (MacDonald 2004: 196, fig. 12) and in 1999 A. Abu Shmais saw another crusher in Wādī al-Mūjib (Abu-Shmais 2000).

We owe the discovery of three important oil installations, all dated to the Byzantine or Early Islamic

3. Kh. adh-Dharīḥ. Oil press in the temenos of the temple (T. Waliszewski).

4. Kh. adh-Dharīḥ. Crusher of the oil press in the temenos of the temple (T. Waliszewski).

5. Kh. adh-Dharīḥ. Weight of the oil press in the temenos of the temple (T. Waliszewski).

period, to Jordanian archaeologists working in the area of 'Ammān. One was excavated in 1975-1977 by F. Zayadine (Zayadine 1977/78) at 'Ammān Citadel, close to the Umayyad Palace. An important discovery of a rural, possibly monastic, complex containing a well-preserved oil press, was made in 1995-1996 by Y. Ulayan (Abu Dayyeh 2004). Also, the site of Kh. Yājūz, on the northern outskirts of 'Ammān, has yielded one installation situated in a cave (Thompson 1972) and a small press located in dwellings near the Byzantine basilica (Suleiman 1999).

Two weights of an unusually ancient form were noted by the author close to the Tobiads residence at 'Irāq al-Amīr. Perhaps they belonged to a Hellenistic oil installation, so far unknown. A crusher near a Roman farm, according to the surveyors, was spotted at Kh. al-Wada'ah in Wādī az-Zarqā' (Caneva 2001: 88-89), whilst another crusher lies by the main road at 'Ayn al-Bāshā.

The road taking us to the north passes the area of as-Salṭ, where important discoveries of Roman/Byzantine oil installations were made by S. Hadidi

at Kh. as-Sūq and Jil'ād (Hadidi and Melhim 1998) (FIGS. 6, 7). Unfortunately, the 'Ajlūn region, known for its olives, has only a few crushers and weights without any architectural context. Much richer is Jarash and its environs. J. Seigne has excavated an oil press close to the South Gate of the city. Two others were unearthed by Jordanian archaeologists at Mukhayyam Sūf and Kh. Zuqrīṭ (Seigne 1986: 47-49, pl. VI-VIII).

More recently, P. Watson, during her survey of the Pella Hinterland found, among many wine-presses, components of an olive press at the site of at-Tantur (Watson 2004: 497). The crusher and weight seem to be of Roman-Byzantine date.

Lastly, two further sites have to be mentioned to complete our picture of ancient olive oil installations in Jordan. The American team working in Abila has mentioned an olive press situated in a cave in Area H (Mare 1999: 457-458). To the best of my knowledge, the only installation ever published from the Eastern desert comes from al-Azraq and was excavated at Qaṣr 'Ayn as-Sayl by G. Bisheh (Homes-Fredericq and Hennessy 1989).

6. Oil press installations at Jil'ād (T. Waliszewski).

7. Oil press installation at Jil'ād (T. Waliszewski).

Typology of Installations (FIG. 8)

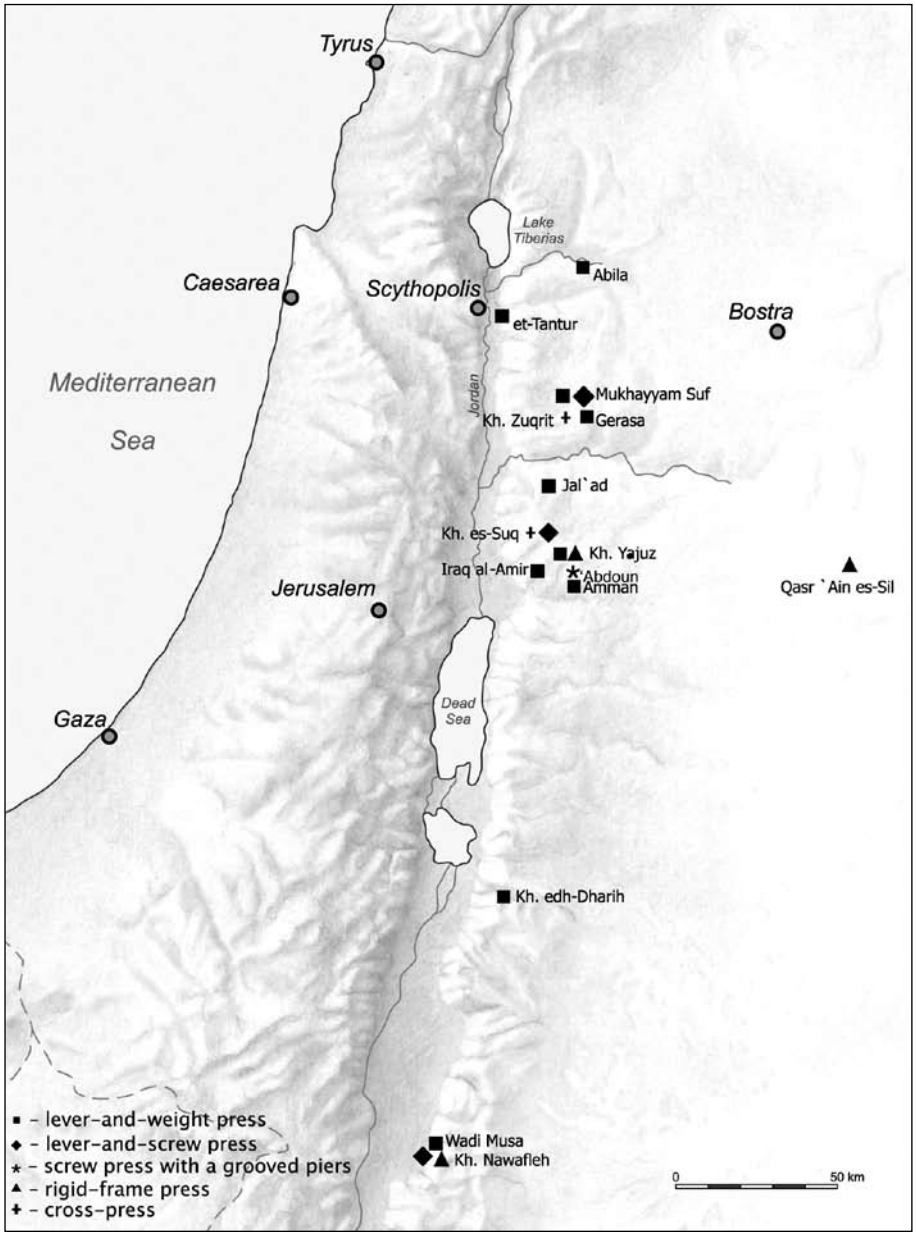
Extraction of oil from olives has always demanded human ingenuity, whether in the form of a relatively simple Bronze Age press or a much more sophisticated Roman mechanism. Thus, the most logical way to build up a typology of olive oil installations is to base it on technical similarities and differences.

Thus, a preliminary list of all known elements of oil presses in Jordan has been created, containing some 64 sites, most of them poorly documented. 33 olive crushers in 7 typological variants were recorded, as well as 71 crushing stones in 9 variants and 38 beam weights in 5 different variants. It is interesting to note that many crushers are composite, built from several sections around a centrally placed monolithic core (e.g. 'Ammān Citadel). Other crushers are monolithic and closely resemble examples from Palestine. Beam weights, an indispensable element of lever-type presses, belong for the most part to one general reversed T-bore type, wide-spread all over the Levant.

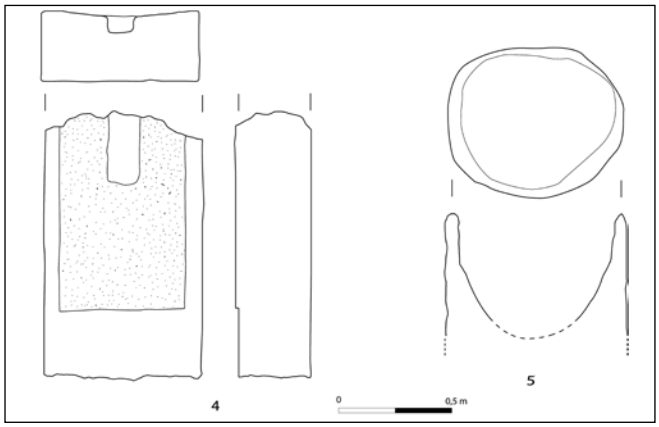
The architectural context for these installations is comprises only 15 buildings or caves scattered all over the Jordan. The chronological spread of the dated examples ranges from the Nabatean period (the earliest known example dates to the second half of the second century BC) through the Roman-Byzantine period and up to the Umayyad-Ayyubid period.

The preliminary typology of the presses corresponds to similar typologies known from Palestine or Syria. The majority of examples (13) belong to the lever-and-weight type. This is the most traditional type, known from several Iron Age and Roman sites in Palestine. A wooden beam is fixed at one end to a niche in a wall, and weights are attached to the other end. Pressure is thus applied to olive paste placed in mats under the beam. Examples of this widespread type are scattered across the country, from Abila in the north to Petra in the south. The building excavated by F. Zayadine at 'Ammān Citadel, may well represent the type described above, although we are missing a few elements of its original furniture. The building was dated by the excavator to the Byzantine period (FIGS. 9-14).

Two other presses (Kh. As-Sūq and Mukhayyam



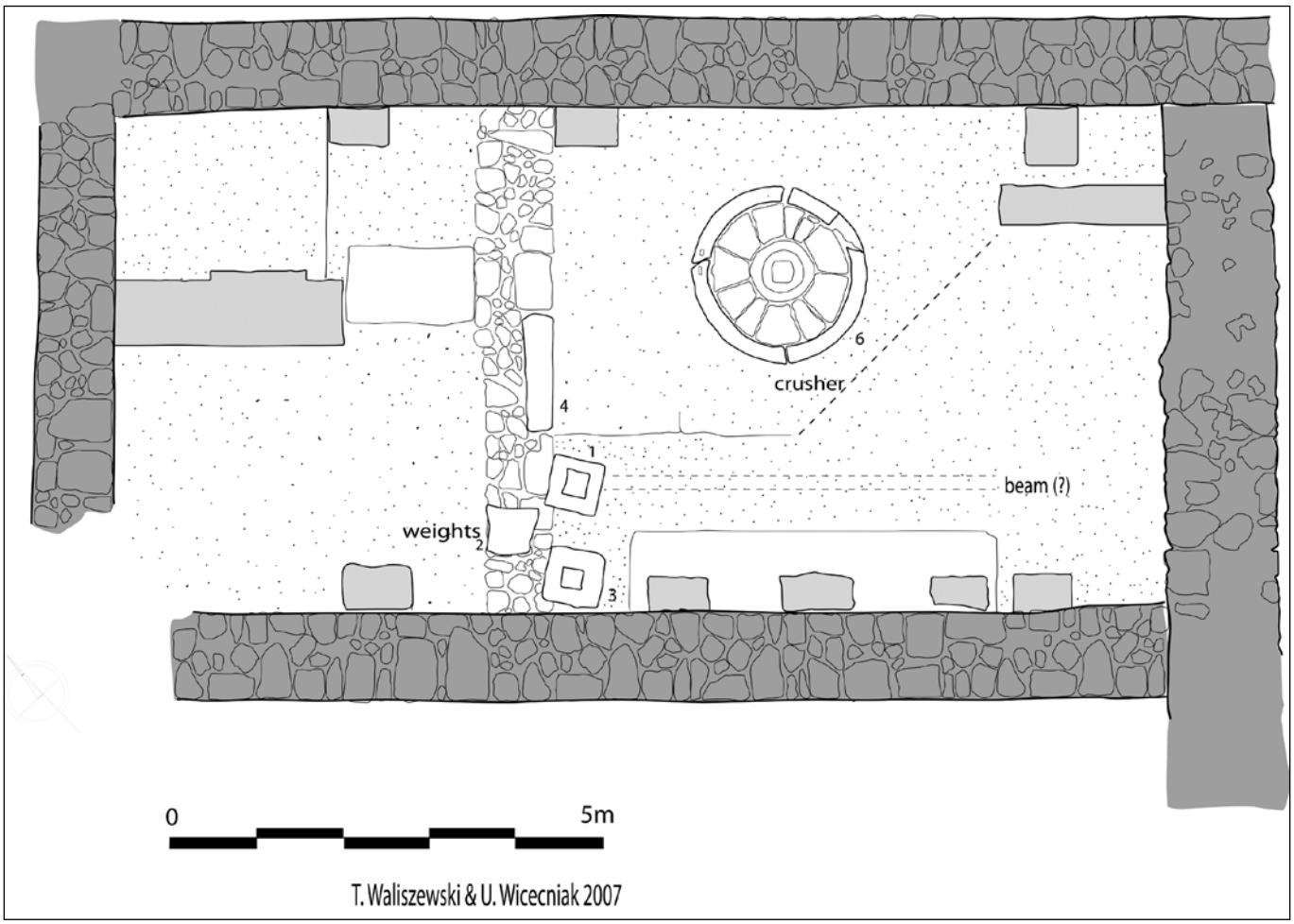
8. Typology of oil installations in Jordan (first century BC - eighth century AD) (M. Puszkarski).



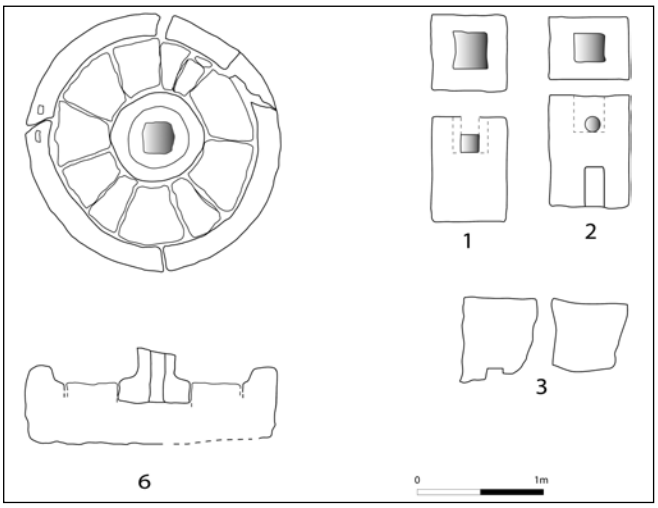
9. Elements of the oil press at ‘Ammān Citadel (U. Wicenciak).

Sūf) belong to a lever-and-screw type, which is a development of the previous type. The only difference between the two is in the force applied to the beam. The weights were replaced by a huge block to which a wooden screw was attached. It moved the beam up and down and, unlike the weights, was easy to operate. This innovative type of press seems to be introduced in Italy in the first century AD and thus belongs, chronologically, to the Roman period. In the Levant similar solutions were introduced during the second-third century AD, but never truly replaced the traditional lever-and-weight press (FIGS. 15-18).

The application of a wooden screw to the olive



10. Oil press at ʻAmmān Citadel (U. Wicenciak).



11. Elements of the oil press at ʻAmmān Citadel (U. Wicenciak).

12. Oil press at ʻAmmān Citadel (T. Waliszewski).

press installations eventually resulted in yet another development: a screw press with grooved piers where pressure was applied directly to the stacked mats with paste placed between two monolithic blocks. The majority of examples are concentrated in Byzantine Judaea; thus the type seems to be Palestinian and to have been developed in Late Roman period. The only known Jordanian example was

13. Crusher of the oil press at ʻAmmān Citadel (T. Waliszewski).

14. Weights of the oil press at ʻAmmān Citadel (T. Waliszewski).

excavated by Ulayan in a rural, possibly monastic, complex at ʻAbdūn, ʻAmmān (ʻAbu Dayyeh 2004); its proposed sixth century date seems entirely feasible. The main room contains a large crusher and two monolithic piers with a space for mats between them and a small basin for oil (FIGS. 19, 20).

The three types of press described above can be attributed industrial installations, if we take into consideration their size and capacity to produce olive oil on a large scale. The two following examples represent presses of more domestic dimensions, but ones which would still have been capable of producing significant quantities of oil.

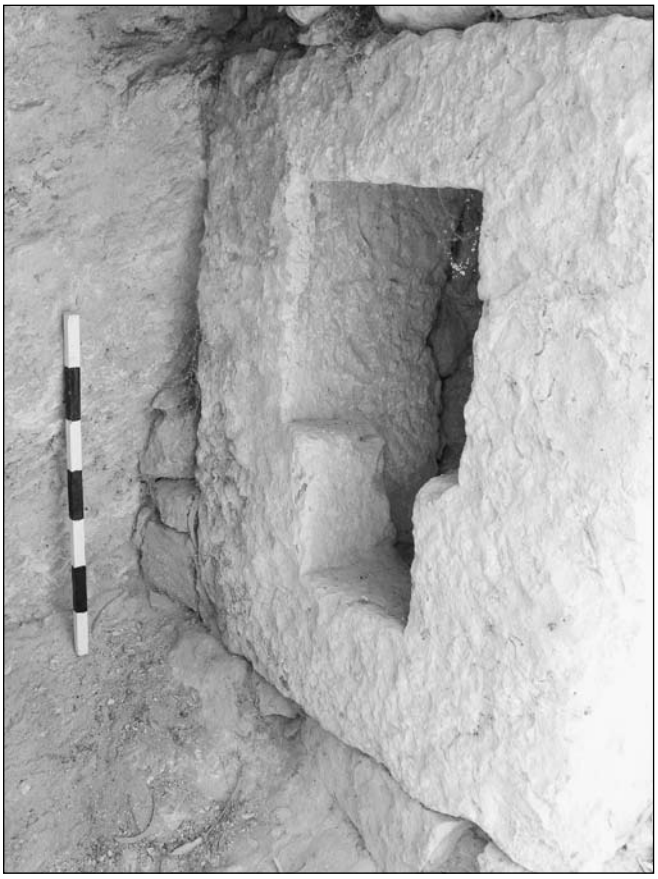
The so-called cross-press is, to date, represented in Jordan by two examples known from Kh. Zuqrīṭ near Jarash. A subterranean room has a large crusher in the centre, with fittings for one bigger and one

15. Oil press at Kh. as-Sūq (T. Waliszewski).

16. Crusher of the oil press at Kh. as-Sūq (T. Waliszewski).

smaller screw-press arranged in the lateral walls. This type is especially well-known from the Byzantine Judaea and seems to have been imported and adapted to the needs of the inhabitants of the Jarash region in antiquity (FIGS. 21, 22).

The rigid-frame type, where a wooden screw is fixed to the stone base, has been recorded in Jordan



17. Niche for the beam at Kh. as-Sūq (T. Waliszewski).

19. Oil press at ʻAbdūn, ʻAmmān (T. Waliszewski).

18. Screw-weight at Kh. as-Sūq (T. Waliszewski).

in at least in three locations: Kh. Yājūz, Qaṣr ʻAyn as-Sayl and Kh. an-Nawāflah near Petra. The University of Yarmuk expedition found a small base for such a press in one of the easternmost rooms of the so-called ʻpalaceʼ at Yājūz. G. Bisheh excavated another in an Umayyad rural residence at Qaṣr ʻAyn as-Sayl at al-Azraq Oasis, where it was placed in a small room adjacent to the courtyard. All examples are dated to the late Byzantine-early Islamic period and are well known from Byzantine Galilee (FIG. 23).

There is one phenomenon common to all the types mentioned above. They correspond almost exclusively to presses known from Roman and Byzantine Judaea and Galilee. Early presses — like the Nabatean and Roman examples from Kh. adh-Dharīḥ — are less well-represented and differ slightly in their technical aspects from later examples. The lack of any technological innovations that are not known from other regions is also worth underlining.

The results presented above are very preliminary. Several issues closely associated with the oil installations themselves should be also investigated, like the technology of production and its social and economical context. But only regionally-orientated studies, including proper excavation of the newly discovered installations, will lead to a better comprehension of the problem of olive oil production in Jordan.

20. Grooved pier of the oil press at ‘Abdūn, ‘Ammān (T. Waliszewski).

21. Niche for the cross-press at Kh. Zuqrīṭ (T. Waliszewski).

Chronology of Installations (FIG. 24)

Chronology has proved to be the most fragile part of this research. Only a few of the installations have been subjected to regular excavation. Many have been found during rescue excavations or, worse, their archaeological context remains completely unknown.

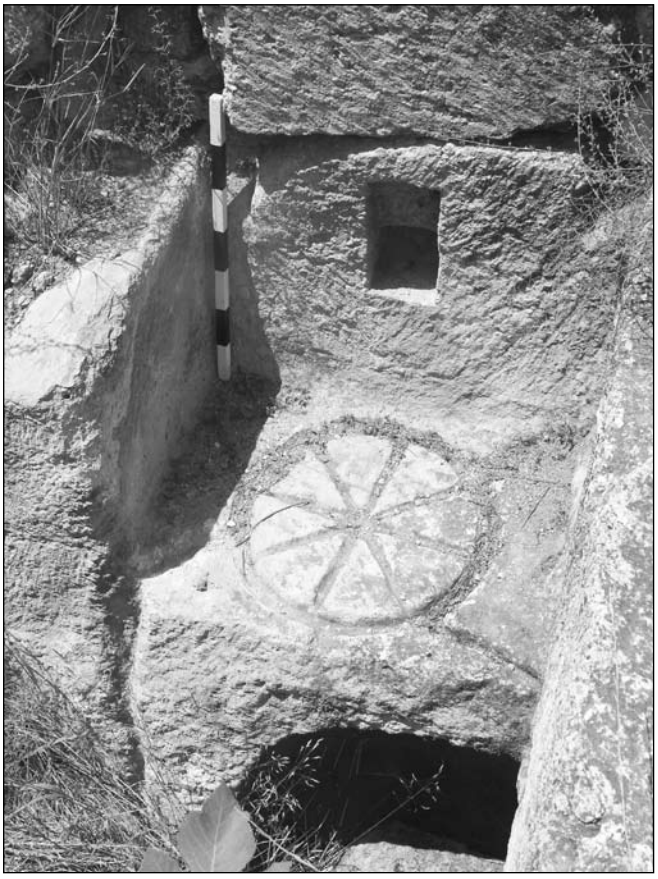
The archaeological evidence available to date allows us to identify Petra az-Zanṭūr IV as the site with the most ancient olive oil installation (taking into account the chronological framework established for this paper). In 2000 the Swiss-Liechtenstein expedition discovered a crusher built into the corner of a Nabatean mansion dated to the second half of the second century BC or the early first century BC (Kolb-Keller 2001: 318-319). Rescue excavations carried out at Kh. an-Nawāflah and Wādī Mūsā by Dr ‘Amr suggest that the oil installations discovered there should be dated to the early first century AD (‘Amr 2000: 239) or, possibly, the late first century AD (‘Amr and Momani 2001: 265).

Nabatean-Roman olive installations have been excavated in Kh. adh-Dharīḥ by the French-Jordanian team. Securely dated by the pottery, oil press V10 existed there in the late first or early second century AD (Muheisen and Villeneuve 1990). Unfortunately, the majority of published installations have only been ascribed to general periods. Jil‘ād, Kh. Zuqrīṭ and Abila to the Roman-Byzantine, Kh. Yājūz tomb to the Byzantine, Qaṣr ‘Ayn as-Sayl to the Umayyad and Kh. an-Nawāflah to the Ayyubid-Mamluke periods.

Towards a Conclusion

Despite a significant gap in the scholarly literature pertaining to the production of olive oil in Jordan during antiquity, traces of oil press installations are scattered across the land, from Abila to Petra, from the Nabatean to the Early Arab periods.

The picture that emerges from this very preliminary report confirms the importance of olive oil in the ancient economy of Jordan. We should however be aware that only regional studies, involving the systematical excavation of newly discovered installations, would make a more meaningful contribution to our knowledge of this important branch



22. Cross-press at Kh. Zuqrīṭ (T. Waliszewski).

23. Rigid-frame press bed at Qaṣr ʻAyn as-Sayl (T. Waliszewski).

of ancient agriculture. The lack of regular excavations has led to a situation in which the chronology of many of the installations remains uncertain.

This preliminary typology of installations known from Jordan corresponds to similar typologies already established in Palestine and Syria, and has particularly close parallels with the types known from Palestine. The majority of examples belong to the lever-and-weight type, two more to the lever-and-screw type; one to the screw-press with grooved pier type; two to the so-called cross-press type and six others to the rigid-frame type. Strikingly, the predominance of the lever-and-weight type of press links Jordanian territory to the Judean and Galilean sphere of technological development, where lever-and-screw presses — known mostly from western Galilee and Phoenicia — are almost absent. We should also note the presence, in the region of Jarash, of cross-press types typical of Roman and Byzantine Judea and Galilee. Also worth underlining is the lack of any independent technological innovation unknown in other regions.

The close parallels observed between the late antique olive oil installations in Jordan and Palestine shed new and innovative light on the history of local technology and demonstrate the close links that existed between both sides of the Jordan River.

Acknowledgments

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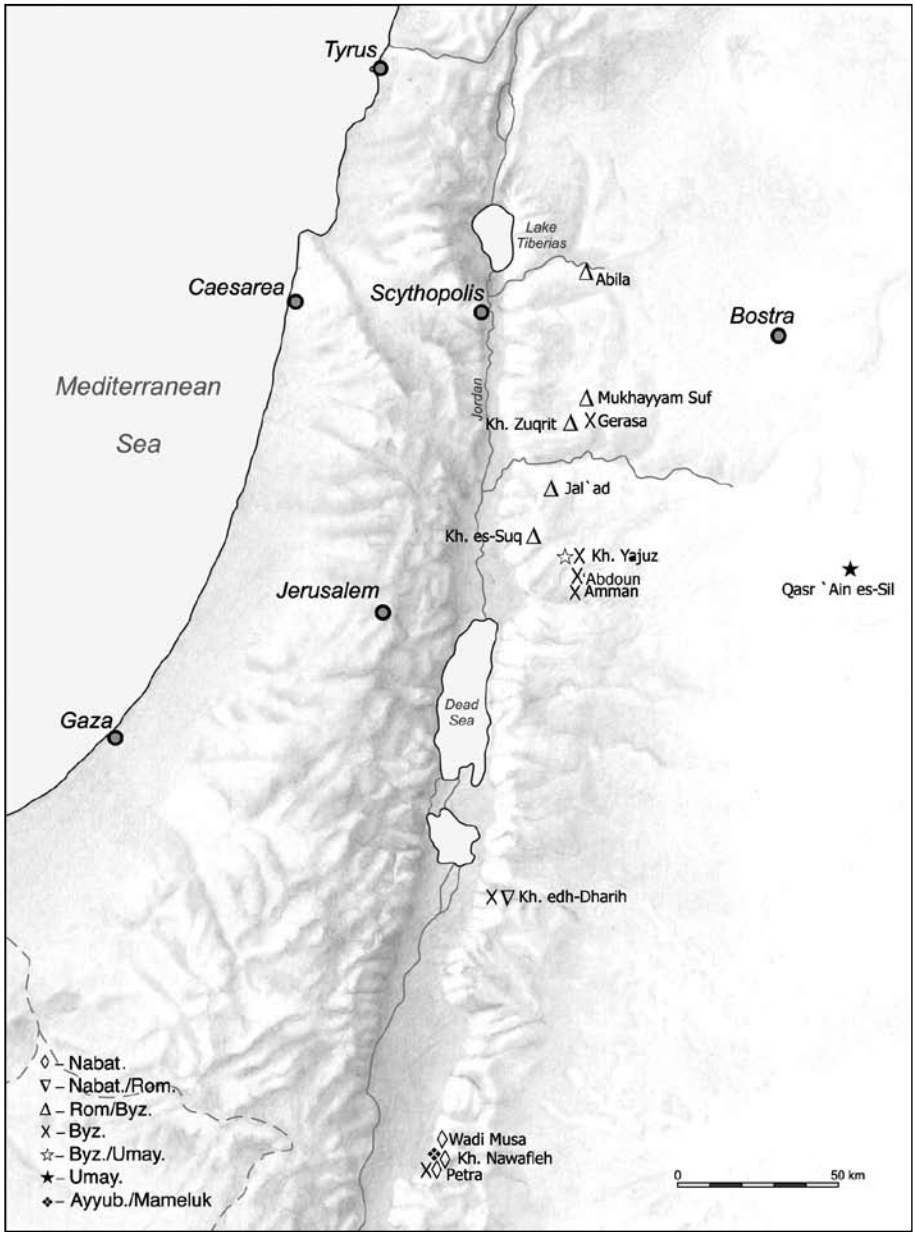

24. Chronology of oil installations in Jordan (first century BC - eighth century AD) (M. Puszkarski).

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Iron Age Roads in Moab and Edom: The Archaeological Evidence

With regard to research on ancient roads in the Near East, it is a commonly held opinion that paved interurban roads existed only from the Roman period onwards. For example, the entry for ancient roads in the Anchor Bible Dictionary (Beitzel 1991: 776) states that: "even a remnant of a paved road or highway connecting ancient Near East towns is practically unknown before the Roman era". David Dorsey (1991: 28) in his book 'The Roads and Highways of Ancient Israel' wrote: "In sum, there is neither archaeological nor historical evidence for paved open roads in Iron Age Israel". It is obvious that interurban roads did exist before the Roman Period. Egyptian, Mesopotamian and Biblical sources attest to this fact (Dorsey 1991: 1-51; Aharoni 1979: 43-63). However, what can we say about the physical character of these routes? As mentioned above, archaeological research has yet to produce evidence for the existence of pre-Roman roads.

We face here an exceptional scholarly challenge regarding this matter, because a map showing the peak of the Roman road system in the Roman provinces of Palestina and Arabia in the second-third centuries AD (Roll 1999) shows a network so dense that it may be assumed that it overlaid most of the ancient roads that passed along the same topographical tracks. For example, the ancient Iron Age roads from Rabbat Ammon ('Ammān) to Dibbon (Dhībān), or from Shechem (Neapolis–Nablus) to Jerusalem were covered over by the Roman pavement.

Theoretically, we are searching for tracks that were in use during the period prior to Roman road construction, but which for some reason were not utilised during that period thereby leaving the ancient road undisturbed. It is obvious that in densely settled areas throughout the ages, and in modern times, it is difficult to identify the remains of built-up ancient roads since their curb stones and pavements were often robbed and re-used in agricultural terracing or for building houses. Thus, in desert or fringe areas the chances of discovering ancient roads are much greater.

Since Moab and Edom were settled areas adjacent to the desert they make a unique field laboratory in which to inspect the physical remains of built-up roads which are earlier than the Roman period, particularly those dating to the Iron Age: the days of the kingdoms of Moab and Edom.

These new insights were gained completely by accident in the wake of field trips to Jordan and reading archaeological publications relating to Moab and Edom. Furnished with the well known aerial photograph of Nelson Glueck (1939: 112, 1940: 12, 1965: 200) of the ancient road that crosses Wādī al-Mūjib, we attempted to locate these impressive remains. Having failed to do so we initially assumed, like previous scholars, they had been covered by the modern asphalt road connecting Karak to Dibbon (Dhībān) and Mādabā.

However, on a field trip that was carried out after reading an article by Maxwell Miller (1989a) on the six al-Mudayna sites in Moab, we reached a view point on the western bank of Wādī an-Nukhayla: the southern branch of Wādī al-Mūjib not far from Mudaynat al-Mu'arraja. From that point the 'lost' road of Glueck was clearly visible, in almost the same state of preservation as in the picture of the 1930s. Note, however, that its actual location is completely different to its anticipated location on the highway between the Karak plateau and the plateaus of Dibbon and Mādabā. Today, with the exceptional research tool of Google Earth, it is possible to pinpoint the exact location of the road: 31220575 N 35514476 E.

While standing above the observation point we

1. The ancient road ascending the eastern slope of Wādī Nukhayla.

were certain that such impressive road remains must have been mentioned in one of the publications on Moab. Having re-read everything written about the subject, we were surprised to find that this was not so. The extensive survey of the Karak plateau by Miller (1991) reached as far as the western bank of Wādī an-Nukhayla. Opposite, Parker's (1987, 2006) survey of the Limes area reached only as far as the eastern bank of the same wadi. So much so, that the wadi itself was left outside these important surveys.

Once we descended the slopes of the wadi and were able to observe the road remains at close quarters, we noticed that it is technically different from Roman roads, such as segments of the *Via Nova Triana* (Graf 1995; MacDonald 1996) or the roads from Moab to the Dead Sea like the ascents of Kathrabba (Mittman 1982) or Zoar (Ben David 2002).

Unlike Roman roads, the curb stones of Glueck's road, which from afar appear to be built into a wall, are actually arranged one near the other (FIG. 1). In the very steep upper part of the road, its originally impressive width diminishes to the width of narrow camel's *naqeb*. Again, this phenomenon is not encountered along Roman roads as Roman engineers knew how to overcome steep slopes by construction, as can be seen very well in the Zoar(Zughar) ascent.

At the head of Glueck's road, just above the ascent, is a ruin that can be seen from far and wide. It is Site No. 57 in Parker's survey (Parker 2006: 60) and is known as Rujm al-'Abid by local bedouin (FIG. 2). The site is an elliptical structure, measuring 31 x 39m., built entirely of basalt with an outer wall constructed of two rows of well-laid blocks. On the western side of the enclosure there are remains of a large tower overlooking the cliff. According to the survey results most of the pottery collected at the site (61 out of a total of 94 sherds) dates to the Iron Age. In the words of the surveyors, "this was probably an Iron Age fort". More recently, during the 2006 field season of the Edom Lowlands Archaeological Project, a similar fort and enclosure dated to the Iron Age II period was discovered by Erez Ben Yosef (this volume), guarding an ancient Iron Age route in the vicinity of Khirbat an-Nuḥās, the major copper production area in the Iron Age.

These observations led us to propose that these remains do not belong to the Roman road system but to an earlier one, dated to the Iron-Age (Kloner and Ben David 2003). After this initial discovery we asked ourselves whether there might be any other tracks in this area of Moab that were in use in the Iron Age but were not subsequently overlaid by Roman construction.

The Aroer Ascent

In the centre of the Moab plateau is the deep gorge of Wādī al-Mūjib — Biblical Arnon — which forms

2. The Iron Age fortification of Rujm al-'Abid.

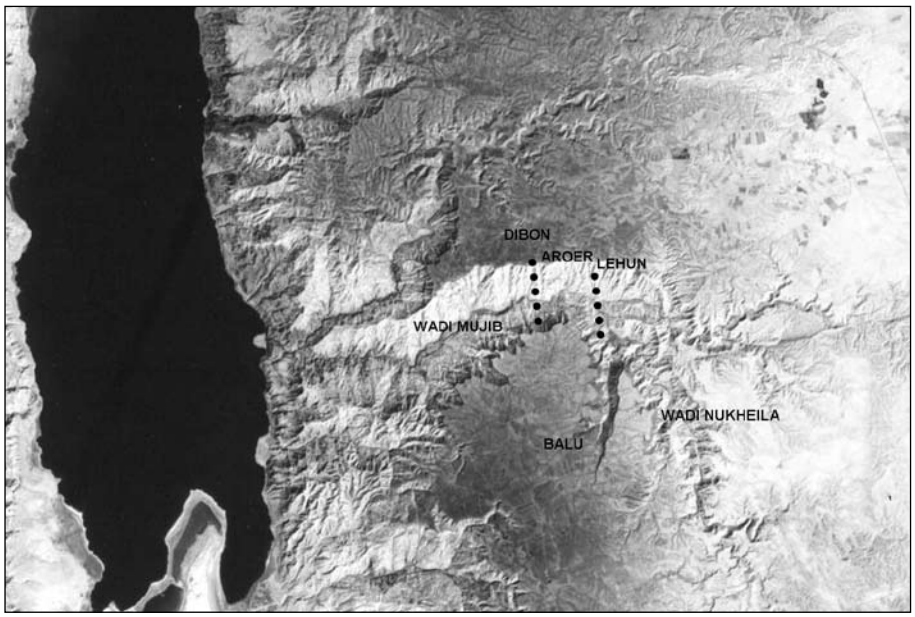
a canyon ranging from 250 to 800m. in depth that leads eastward from the Dead Sea for about 40km. as the crow flies. In order to traverse the Moab plateau, one has to cross the Arnon. Only to the east, in the desert, can the deep gorge be bypassed, as is done by Darb al-Ḥaj, the Hejaz Railway and the modern Desert Highway from ʻAmmān to ʻAqaba. However, this route is far from permanent Moabite settlements and from water sources. In the settled region of Moab, the Arnon could only have been crossed along the 3 to 4km. of its length that lie between the juncture of the tributary wadis of an-Nukhayla and Suʻayda to the east and the impassable sandstone canyon to the west.

Three paths ascend the northern bank of the Arnon gorge in the narrow area that can potentially be crossed, and each of them has an Iron Age site at the top: Tall Dhībān on the route of the modern road, Aroer and al-Lāhūn (FIG. 3). The Roman road *Via Nova Traiana* crossed the Arnon not far from the modern Karak-Dhībān road. Travellers and scholars who passed through Moab in the nineteenth and early twentieth centuries described remains of the route (Kloner and Ben David 2003: 67-69).

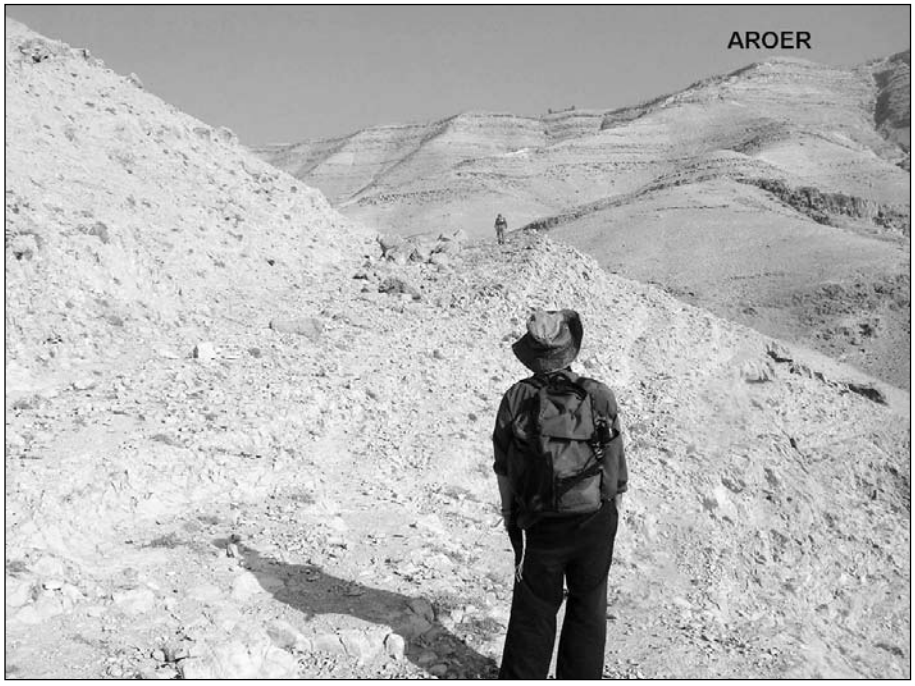
Glueck (1940: 15) thought that the Roman road which crosses the Arnon had been built on top of an older road: the Biblical 'King's Highway'. Andrew Dearman (1989: 192, 1997: 206) maintains that the Biblical route crossed the Arnon farther east. In his opinion the road went from al-Bālūʻ, about 3km. east of where the Roman road would later be built, towards Aroer or al-Lāhūn and not Dhībān. Other scholars who have focused on Moab (Miller 1989b: 594; Olivier 1989: 174; Worschech 1990: 111-114; Mattingly 1996: 95) also argue in favour of an eastern route, suggesting that from al-Bālūʻ the road descended through Wādī al-Bālūʻ to the juncture of the wadis Nukhayla and Suʻayda, from where it would have ascended to Aroer. Denyse Homes-Fredericq (1992: 200, 1997: 15), who excavated al-Lahūn, argues that the shortest route from al-Bālūʻ to the northern Moab plateau is through al-Lāhūn and that, she believes, was the path of the ancient road.

So, of the three potential tracks ascending the north bank of the Arnon, on which there are the Iron Age sites of Dibbon, Aroer and al-Lāhūn, the first, or Dibbon ascent, was overlaid by the Roman *Via Nova Triana* and the modern road. This would potentially have left the two other ascents undisturbed by Roman road builders. Searching for earlier descriptions of the two other tracks to al-Lahūn and Aroer, we found only a short description and drawing of Naqab Arar in Musil's (1907: 329) book on Moab.

Descending from al-Lāhūn to the gorge of the al-Mūjib, one can see a good camel *naqab* without the remains of construction. In contrast, in Naqab Arar we found the remains of a wide road and, in some sections, curb stones. The lower part of the *naqab* is disturbed by modern agricultural fields and the first remains (FIG. 4) are to be seen at 7678 4842 UTM below a hill marked on some maps as triangulation point 432. The road is sometimes up to 6m. wide



3. The potential passage of Wādī al-Mūjib.



4. The lowest ancient remains of Naqab Arar.

and clear sections of a few hundred meters can easily be seen from the upper parts of the *naqab* (FIGS. 5 and 6) and on Google Earth (31273904 N 35490100 E). In some places, constructed retaining walls are visible. Although these walls would not be needed for a regular camel *naqab*, they would have been necessary for a 4 to 6m. wide road. This wide road (FIG. 7) can be followed for about 1km. until it reaches the upper cliff, where its steep upper section narrows to a camel *naqab* (FIG. 8), just like Glueck's road. At the head of the ascent is the Biblical site of Aroer. According to the excavation reports (Olavarri 1965, 1969), this fortification

6. The lower wide section of Naqab Arar.

5. The wide sections of Naqab Arar as seen from the upper part of the *naqab*.

7. The upper wide section of Naqab Arar.

8. The narrow camel *naqab* in the upper part of Naqab Arar.

dates to the Iron Age but does not continue into the Roman period. These characteristics, and the certainty that the road crossed the Arnon further to the west (to Dibbon) in the Roman period, allow us to suggest that the remains in Naqab Arar date to the Iron Age.

Standing at the head of the Aroer ascent, it is impossible not to recall the inscription of Mesha from nearby Dibbon. In line 26 the Moabite king boasts, "I built Aroer", followed by "I made the highway at the Arnon". It would appear to be no accident that the two phrases are so close to each other, as already noted by Dearman (1989: 191-192).

It is plausible to assume that this Iron Age track from Aroer, which descended Naqab Arar, crossed the Arnon and then ascended the Karak plateau via Wādī ash-Shuqafiyya to al-Bālū'. As mentioned above, many scholars have suggested that this ancient route from Aroer to al-Bālū' was the ancient 'King's Highway'. Following Friedbert Ninow's important survey and discoveries in Wādī ash-Shuqafiyya (Ninow 2002 and this volume), this suggestion seems much more solid.

There are two additional examples that need further examination, one from Edom and the other from north-west Moab.

Naqab Dahal

Anyone who seeks to reach the 'Araba from the mountain plateau of Edom must first negotiate the sandstone cliffs and then, in a very steep descent, the underlying layer of igneous rock. Most of the ancient routes from the mountains of Edom to the 'Araba passed through natural gaps in order to avoid steep descents of the Umm 'Ishrīn sandstone cliffs and igneous rock below. One of the larger gaps, where there is no cliff at all, in the 'wall' of the Edomite mountains is to be found in the limestone ridge south of Wādī al-Khanāṣirī and north of Wādī Ḍānā. This path is known as Naqab Dahal (MacDonald 2006: 86) and was used by Lawrence of Arabia in his raid from Ṭafīlah to Beer Sheba (Lawrence 1938: 501). Today a dirt road passes there, in many places built directly on top of the ancient route. Nevertheless, some sections of an ancient built road can still be seen along this natural route that connected Buṣayra – Biblical Bosra, capital of Edom - and the 'Araba. The best preserved section can be seen in the descent to Wādī Dahal (Google Earth 30451571 N 35295924 E). This ancient, constructed *naqab* reaches a fortified structure (FIG. 9) just above the wadi (Google Earth 30452785 N 3529392441 E) and seems not to have been mentioned in previous surveys. The few pottery sherds observed at this site seem to belong to the Iron Age and not to the Nabataean or Roman periods. This important Iron Age route between Bosra and the Iron Age site at 'Ayn Hasiva (Cohen and Israel 1995), identified with Biblical Tamar, has recently been researched by Erez Ben Yosef as part of a regional survey of road systems in the area of Faynān.

9. The fortified structure on Naqab Dahal

The Zarqā' Mā'īn Crossing

A well-built ancient road running in a north-south direction to the east of the Dead Sea has been known since the PEF survey in Eastern Palestine (Conder 1889). The best-preserved remains are to be found on the banks of Wādī Zarqā' Mā'īn, east of the famous hot springs at Ḥammamāt Mā'īn. The PEF surveyors suggested that this road led from livias to Machaerus (Conder 1889: 193) but August Stobel's (1981, 1990, 1997) explorations in this area showed that it did not lead to Machaerus but to Khirbat 'Aṭarūz, the site of Biblical Ataroht. A fortified site called Būz al-Mushallah (Strobel 1990: 83-85; Strobel and Wimmer 2003: 84-88) was discovered above the crossing of the Wādī Zarqā' Mā'īn gorge, adjacent to the ancient road (FIG. 10). Following archaeological excavation, the site was dated to the Iron Age and was tentatively identified with Biblical Zereth-shahar (Wimmer 2000a, 2000b). The fact that the ancient built road did not lead to the Hellenistic-Roman site of Machaerus but to the Iron Age site of Khirbat 'Aṭarūz suggests that it too might date to the Iron Age period. The late Prof. Stobel was certain that, at the very least, the section of road that passes the Būz al-Mushallah Iron Age fortress is of Iron Age date as well, notwithstanding its amazingly well-preserved state (Stefan Wimmer pers. comm.).

As noted above, ancient roads tend to be restorations of older routes. Thus, Roman roads were built on earlier roads. This is the reason why it is so difficult to prove the existence and use of wide roads in pre-Roman periods. The roads discussed in this paper are rare examples of ancient roads that do not seem to have been rebuilt in the Roman period. In other words, they represent Iron Age road-building technology and, because there was apparently no significant need, they were not rebuilt by the Nabataeans or Romans.

10. The ancient road below the Iron Age site of Būz al-Mushallah.

Moab and Edom are a unique field laboratory in which to examine the physical remains of built-up roads which pre-date the Roman period, so hopefully more discoveries are to come.

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Roman Provincial Borders Across Jordan[1]

Abstract
By 400 AD Jordan was divided amongst four Roman provinces: *Palaestina Prima* in the southern Jordan Valley, *Palaestina Secunda* over most of north-west Jordan, *Palaestina Tertia* south of the Wādī al-Mūjib and *Arabia* over the rest. However, as in the rest of the Roman Empire, we are uncertain as to where some, or all, of the actual border lines ran. That the border was known in antiquity is clear from the evidence of toponyms, cadestration, tax records and pilgrims' accounts. That the border had some meaning is also clear — on principal borders a customs duty was imposed which distorted the trade in locally produced ceramics. This distortion is particularly clear in the southern Levant, and provides a tool to develop an archaeological methodology to detect provincial borders in a way not available to historians. The Borders of Arabia and Palaestina project is examining the area around Wādī ar-Rayyān in northern Jordan as a case-study, and the preliminary results of the first season of field work are presented.

The glue holding the Roman Empire together for over 800 years was its system of administration. The provinces were the basis of this system[2]. Their extent reflected varying economic, social and political factors. However, not one ancient source discusses the basis on which provinces were changed (Roueché 1999).

By 400AD there were approximately one hundred provinces in the Roman Empire, double the number a century beforehand (Jones 1964: 42-43 and 280-283). An understanding of the position, nature and function of the borders between each province is fundamental to any study of the administration of the Empire. Such an understanding is hampered by the fact that, nearly one hundred years after Mommsen published *The Provinces of the Roman Empire* (1909), we still do not know exactly where the internal borders ran. It appears that part of the problem is the attitude that we more or less know which territories belong to which province, and that this rough knowledge is sufficient for historical studies (Millar 1993: 31 and 535-544). The result of such an approach can be illustrated by the maps from a study of Roman provincial administration in the Danubian provinces (Dise 1999), although it should be stressed that this is merely a convenient example, and by no means the worst. Dise argued that Roman administration in newly conquered territories was an agent of Romanisation, and contrasted settlement patterns in neighbouring provinces. Maps of Noricum and Pannonia were published separately on adjacent pages in Dise's work. These provinces shared a border, but when the modern maps are overlaid it is clear that the line of the shared border was drawn differently on each map and these lines diverge for their entire length. The discrepancy represents a distance of up to 2 days journey in antiquity — large enough to have had a serious impact on the administration of a province[3]

[1] This paper is based on fieldwork conducted as part of the *Drawing the line: the archaeology of Roman provincial borders in Late Antique Palaestina and Arabia (AD250 – 650)* project (short title: *Borders of Palaestina and Arabia* / BAP), directed by the author and funded by the Australian Research Council 2006-2010 (DP0666110) and the University of Sydney. **Project website:** www.acl.arts.usyd.edu.au/bap

[2] There is no modern survey replacing the works of Arnold (1906) and Stevenson (1939), although the collection of Brunt's articles (1990) contains some pertinant studies, as do several contributions to the *Cambridge Ancient History*[2], volumes 10 to 14 and Mann's article in *ANRW* "Frontiers of the Principate" (1974).

[3] It is irrelevant who was responsible for the failure to check the maps, be it the author or the editor; it is simply an example that such information is seen as unimportant.

In the area of modern Jordan, there are abundant examples of maps with more or less arbitrary lines (e.g. Jones 1964; Avi-Yonah 1977). The Barrington Atlas maps of provinces carry the disclaimer that "Provincial boundaries are approximate and in many cases, very uncertain" (Talbert (ed.) 2000; Elliott and Barckhaus 2003).

It is clear from the history of border changes in *Palaestina* and *Arabia* alone that territorial changes occurred both before and after Diocletian, the traditional reformer (*Palaestina*: Mayerson 1988; Barnes 1982, 214; Tsafrir *et al*. 1994: 16; *Syria*: Bowersock 1983: 92; *Arabia* Bowersock 1983: 143). Provincial rearrangements were not a single event, but represented changing requirements within a changing Empire. The complexities of territorial change can be seen through the separate transfers of up to seven parcels of land along the northern border of Arabia between 188 and the end of the third century AD (Kettenhofen 1981).

By 400AD Jordan was crossed by several Roman provincial borders: *Palaestina Prima* extended into the southern Jordan Valley and east of the Dead Sea, *Palaestina Secunda* occupied an important part of north-west Jordan, *Palaestina Tertia* lay south of the Wādī al-Mūjib and *Arabia* over the rest.

Based on historical information, what do we know already? We know that Roman law was sophisticated enough to distinguish conceptually between the *finis* (limit) and *limes* (boundary) of land, and between land delineated by a natural feature and land measured out (Dilke 1971). We know that the measuring out of the *limites* of a colony was a solemn ritual event, worth illustrating on coinage[4]. Other religious aspects of boundaries include the general position of Terminus in Roman religion, and the specific activities of the Terminalia on the last day of the year (February 13) where landowners garlanded their joint boundary stones (Rose and Scheid 2003; Piccaluga 1974).

We know that land surveyors erected boundary stones marking a variety of territories, such as the Imperial forest in Phoenice (Breton 1980) and a series of markers in the Golan / southern Syria. There, approximately 40 Tetrarchic inscriptions have been collected by Millar (1993: 535-544) and the publishers of the Rafid survey (Urman 2006) and, by the variance in their formulae, have added considerably to the understanding of borders in this area (Graf 1992; Ma'oz 2006)[5].

We know from extant land deeds that boundaries of individual properties were known (Kraemer 1958), and that owners were permitted to move the boundary stones in order to sell a portion of their property.

Since provinces were mainly defined by the combination of cities, their dependent towns and villages, and all their associated territories, the extent of these territories defined the provincial border (Avi-Yonah 1977; Mann 1974). This edge was known to the relevant authorities, not least because of land taxes, but that information has not been very well preserved for us today. Although not consistent across the Empire, modern knowledge of which localities were assigned to which province is based on a wide range of data including boundary markers (Schlumberger 1939; Seigne 1997), milestones on interprovincial roads (Mittmann 1970; Isaac 1978), place names, historical documents, literary efforts and church council attendance lists[6]. There is a general modern assumption that between (or around) these few known points, the border followed topographic features (Avi-Yonah 1977; Bowersock 1983, 90-103) — not forgetting, as Kennedy has argued, watersheds (1998: 50-52) and, especially, rivers (Braund 1996). After the early 4th century AD much of this fades away, leaving traditional history without evidence.

To What Then Can We Turn?

Distribution patterns of locally produced ceramics are significant indicators of local economic activity (da Costa 2001 ; Shaw 1995; de Ligt 1993; Peacock 1982; Howard and Morris 1981). The different classes of ceramics seem to be showing similar uneven distribution patterns, e.g. cooking pots such as Galilean ware (Adan-Bayewitz 1993), fine table wares such as Jarash bowls (Watson 1989),

[4] E.g. Trajan founding Sarmizegethusa, sestertius, 104-107AD, RIC II 568; Hadrian founding Aelia Capitolina: AE22, 136AD, Meshorer Aelia 2.

[5] Graf believes that these boundary markers relate to surveys of imperial estates, rather than general land surveys. For the arguments presented in this paper, that difference may be irrelevant — their existence and the use of known survey points is the critical issue. Nonetheless, I wish to record my thanks to David Graf for his discussions with me about this paper during the conference, and his generosity and kindness in sharing his extensive knowledge and understanding of the material.

[6] Toponyms: *Ad Fines* in Bosnia lies on the border line of Savia / Dalmatia (Talbert (ed.) 2000, Map 20E5); Historical documents: e.g. the Bordeaux Pilgrim's itinerary (Geyer and Cuntz 1965); Eusebius' *Onomasticon*; Literary efforts: e.g. Ammianus Marcellinus' geographic digressions in Books XIV-XXVI.

ceramic lamps (da Costa 2001), recent work in the Golan (Hartal 2003) and on Levantine amphorae (Reynolds 2005).

In the case of early Byzantine Pella (3rd-5th centuries), Watson (1992) has shown that bulk importation of ceramics from an important production centre, Jarash, did not occur. Jarash ceramics only appeared at Pella in quantity from the end of the 6th century. The cities are, however, relatively close and linked by a major Roman road. Before the late 6th century, some other factor clearly acted as a barrier to local trade.

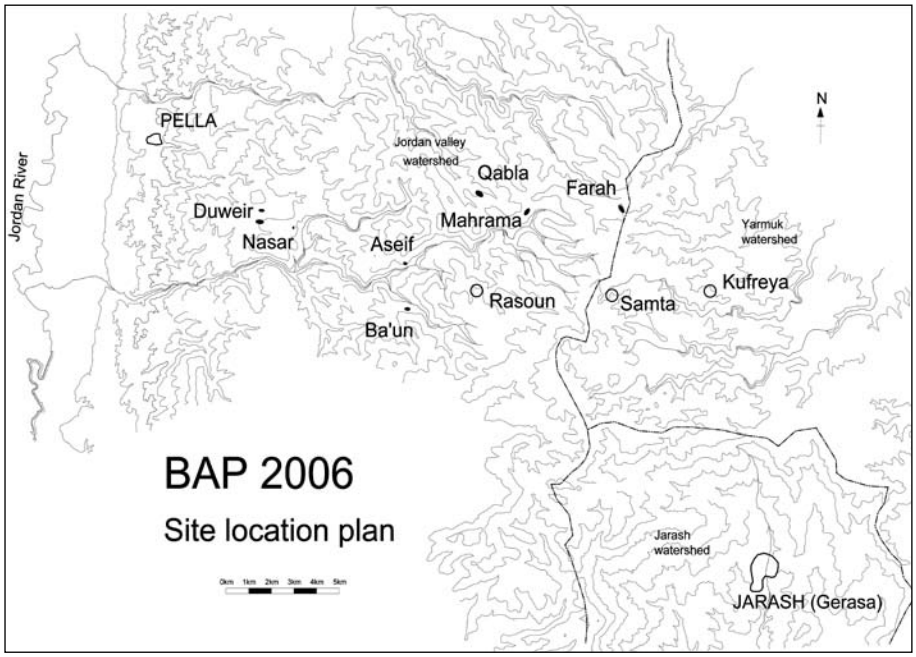
The patterns cannot be adequately explained by either topographic features or by simple distance from the production centre. They seem bounded by the approximate line of provincial borders, in the few places where these can be reasonably reconstructed. But why?

Our knowledge of a related issue, the collection of indirect taxes, is equally patchy (Delmaire 1989; Hopkins 1980; Goffart 1974; Jones 1974). Of these, customs duty, *portorium*, was levied on the Imperial frontiers, at 12.5% or 25%, and also within the Empire, where the rate is not certain but was probably 2.5% to 5% (Jones 1964: 429 and 825; Sijpestejin 1987). De Laet, in the major study of *portorium* (1975), was unable to comment on customs duty after Diocletian owing to a lack of written evidence. Our information, while heavily biased towards Egypt and the early Empire, shows that taxes, tolls and levies had a conspicuous effect on small-scale economics and local trade.

It seems clear that the customs duty on major borders, i.e. that between *Arabia* and *Palaestina*, rather than the internal borders of *Palaestina*, remained in place until the late 6th century and, by making it uneconomical to import local ceramics from neighbouring provinces, distorted trade patterns. This distortion can be utilised to map the location of the unknown sections of the provincial borders.

The Borders of Arabia and Palaestina project, based on a case-study in an area overlapping part of the border between *Palaestina Secunda* and *Arabia*, is developing an archaeological methodology to allow a more precise definition of provincial territory (FIG. 1). It seemed most efficient to test the methodology in an area where the leeway was most restricted, but could still contribute to solving a problem of political geography.

As it happens, the borders of *Palaestina Secunda* are amongst the best known in the Roman Empire. The evidence from Eusebius's *Onomasticon* is vital, although Isaac's reassessment of Eusebius's sources (1996) means that Avi-Yonah's interpretations, used for mapping in his historical geography (1976, 1977), will have to be reappraised. The south-east corner is less certain, but here the principal of ceramic evidence can be put into use. Dohelah has produced a corpus of lamps which seems much more like the range of lamps present at sites in *Palaestina* than Arabian lamps



1. Sites sampled during the 2006 BAP season 2006, with Pella and Jarash. Open circles indicate sites with incomplete site plans. Watersheds are represented by dotted lines (plan by H. Barnes).

(Sari 1991, 1992).

The project plans to collect ceramics of the 3rd to 7th centuries from sites in the area of the supposed border. The overall corpus from each site can then be categorised by reference to the known corpora from Pella ('*Palestinian'*) and Jarash ('*Arabian'*). The border ought to lie between the '*Palestinian'* and '*Arabian'* sites.

The first field season was carried out in November / December 2006. Cataloguing is incomplete, but ceramics were collected from 11 sites, mainly in the western part of the survey area. We targeted sites that had already been identified, mainly by Mittmann (1970) and the Wādī al-Yābis survey, and are aiming to recover about 3000 sherds per site. Some sites, like Bā'ūn, have enormous quantities of pottery. In other cases even more sherds than this will need to be collected, as there can be extensive Islamic occupation which reduces the proportion of Late Roman and Byzantine pottery as, for example, at Kh. Maḥrama. Additionally, part of the team acts as a documentary unit, planning as much possible of the visible part of the site and, especially, documenting the extensive evidence for underground housing and industrial installations we came across at several sites.

Preliminary observations, aided substantially by the expertise of Ina Kehrberg, suggest that sites south of the Wādī ar-Rayyān / al-Yābis do indeed have ceramics similar to the Jarash corpus. Sites to the north seem to have pottery more like that of Pella.

As we move east, away from the clear line of the river into the region where the line of the border is poorly understood, we have some difficulties. The change settlement pattern east of the main watershed is noticeable. There are fewer sites with material of the relevant time period and, of those, several lie almost entirely under modern villages. However, the material already published from Dohelah helps to fill in the gaps, as will the material from Ya'amūn (el-Najjar *et al*. 2001). ArchGIS modelling will help confirm our preliminary interpretations, adding some to subjective pottery cataloguing. In particular, it will be possible to compare the cost of travel between the various sites, which should clearly demonstrate that transport costs were not a limiting factor in the distribution of provincial ceramics.

We are therefore confident that we will be able to plot the route of the border far more accurately than has hitherto been the case, confirming the use of the Wādī ar-Rayyān itself as a boundary, rather than its northern or southern watersheds, and that the south-east corner of the province also had a wadi, possibly the Wādī al-Wārid, as its limit.

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The Kingdoms of Transjordan and the Assyrian Expansion

The general policy of the Assyrian Empire was the expansion to all surrounding territories, especially to the West, to secure the lucrative trade routes in general and especially the access to the Mediterranean Sea. This led in the first Millennium to an alteration in the balance of power in the Levantine region. The Assyrians occupied territories, erected new provinces, demanded heavy tributes or/and deported people. Only in unstable times after the death of an Assyrian king people in the West dared to rise against this mighty power. In the region itself the decline of power for example of Aram-Damascus and the kingdom of Israel led in the eighth century BC in Transjordan to a strengthening of the kingdoms of Moab and Ammon, they could extend their influence. One of the important main routes besides the coastal one for the military operations of the Assyrians was the 'Kings Highway' 8 North to South through Transjordan. Under the reign of Tiglath-Pileser III Ammon, Moab and Edom had become vassals of the Assyrian empire. But they seemed to be loyal to Assyria paying their tribute regularly, so they could maintain their independence until the fall of the Assyrian Empire.

To follow the process of involvement of Transjordan a study of the witnesses of the Assyrian influence through the centuries is necessary, first in Assyria, then in Transjordan. As a result there may be a clearer answer to the question, whether the Assyrian rulers on their campaigns to the West got in direct contact with the rulers and the people on the East side of the Jordan.

Ninth Century BC

King Shalmaneser III (858-824BC) was not the first Assyrian ruler expanding to the west, but the first, who extended the distance and consolidated the control on the Levant. In a bull inscription[1] Shalmaneser III mentions a campaign in his sixth year (853BC) to the west against the Aramaean coalition, led by Damascus, which ended in the decisive battle in Southern Syria, in Karkar, NW of Hama. He departed from Nineveh, crossed the Tigris and marched to the towns on the river Balih, approached Aleppo, Hamath, Argana and Karkara: 'I destroyed, tore down and burned down Karkara, his royal residence. He brought along to help him 1,200 chariots, 1,200 cavalrymen, 20,000 foot soldiers of Adad'idri (i.e. Hadadezer) of Damascus (…), 700 chariots, 700 cavalrymen, 10,000 foot soldiers of Irhuleni from Hamath, 2,000 chariots, 10,000 foot soldiers of Ahab, the Israelite (…), 500 soldiers from Que, 1,000 soldiers from Musri … […],000 soldiers from Ba'sa, son of Ruhubi, from Ammon — (all together) these were twelve kings. They rose against me [for a] decisive battle. I fought with them with (the support of) the mighty forces of Assur, my lord, has given to me, and the strong weapons which Nergal, my leader, has presented to me, (and) I did inflict a defeat upon them between the towns Karkara and Gilzau. …' It is the same report as on a stele of King Shalmaneser III from Kurkh[2] found in 1861. The stele shows the king himself, King Shalmaneser III, clad in a long garment with fringed edges, and sandals, who stands in a typical royal gesture with an upraised hand before the symbols of the gods. In his left hand he holds a mace (?).

The Assyrian kings erected such stele as political demonstrations during the retreat of their troops

[1] Sixth Year according to the Bull-Inscription, bull statues, Calah. ANET 1969: 279.

[2] BM 118 884 Annals from his six year <853>. For translation of the inscription see ANET 1969: 277-279.

back home on the borders of the Assyrian empire. There will be further examples of Esarhaddon in Sam'al and Til Barsip from the Seventh Century BC.

The fights of the Syro-Palestinian States against Shalmaneser III, and the Assyrian pressure on the Kingdom of Israel led to a strengthening of the Transjordanian Kingdoms. There are several monuments witnessing this development in Transjordan. The inscriptions are in West Semitic languages, using alphabetic scripts.

The strengthening of the Moabite Kingdom is best demonstrated on the Mesha Stele (FIG. 1) found in Dhībān, on which King Mesha (830-805BC) reports in Old Phoenician-Canaanaean that after a long time of paying tribute to Israel by his father and by himself, he has been victorious over the Israelites in 845BC. In gratitude he dedicated this stele to his god Kemosh.

The strengthening of the Moabites was also possible because the Assyrian kings after Shalmaneser III seemed not to put pressure on the region.

1. Mesha Stele (cast Berlin: Vorderasiatisches Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.

Eighth Century BC

The four successors of Shalmaneser III were not very visible in the west they had to deal with problems in other regions of their empire and with a general weakness in their power. But from the middle of the Eighth century on there is nearly uninterrupted information on the involvement of the Assyrian kings in the West: Annals, reporting on military campaigns and the installation of new provinces, correspondence, reporting exactly what sort of tribute the vassal states had to deliver, and the treatment of the delegations at the Assyrian court.

Nearly 80 years after the campaign of Shalmaneser III it was Tiglath-Pileser III (745–727BC) who tried on his campaigns into Palestine 734-732 to consolidate the areas in the West by the establishment of three provinces (FIG. 2): Qarnini (Qarnaim), Haurina (Hauran), and Gal'aza (Gilead).

This policy did not really affect the Transjordanian kingdoms. But Ammon, Moab and Edom became vassals, having to pay from now on regular tribute to Assyria. During military campaigns they had to supply the Assyrian troops with equipment and food and they had to assure safety on the main streets. One of the main routes was the Kings' Highway, whose use by the Assyrians was not only a burden, but brought much economical effort to the region.

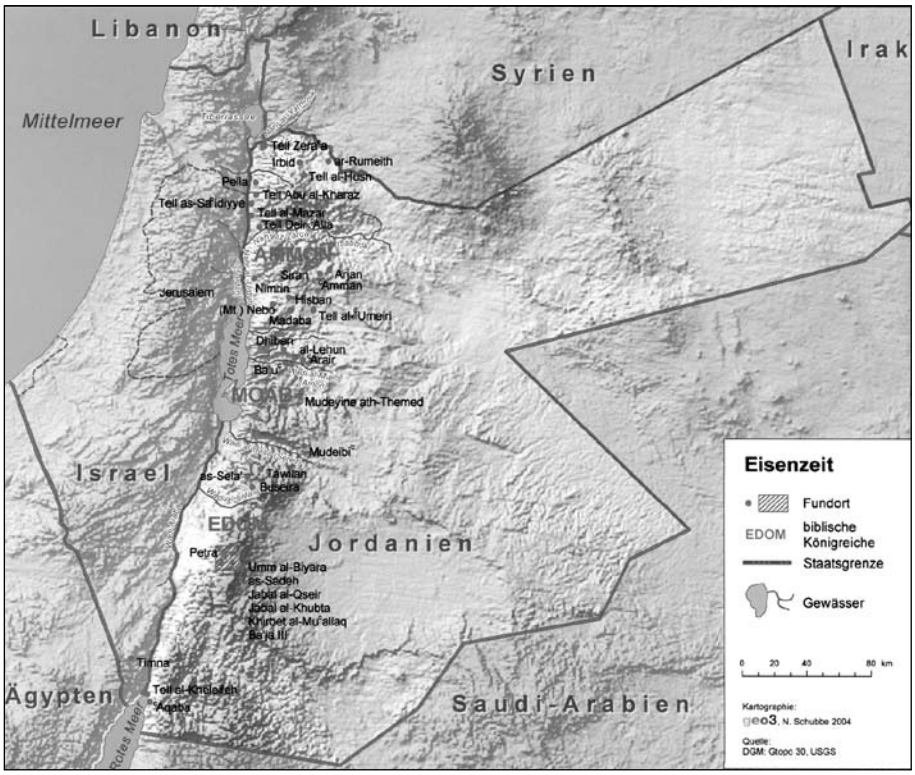
From the Assyrian royal correspondence, i.e. from the Nimrud Letters (Letter XVI) concerning the relations with the West, we know from the tributes, the Transjordanian Kingdoms had to pay[3]: 'I have inspected forty-five horses from …. The MAH-officials [LU.MAH.MES = emissaries, bringing tributes from states, which were not under Assyrian administration] of the Egyptians, the people of Gaza, of Judah, of Moab, of the sons of Ammon, when they entered Calah on the twelfth, delivered them at their hands … The Edomites …'.

Under the rule of Sargon II (722-705BC) there are letters from Nimrud[4] 'reporting the arrival of envoys from the West in Nimrud, bringing tribute. On the other hand there are mentioned gifts of wine, delivered to the Edomites …'.

On a receipt of tribute from Palestine from texts in Nineveh (British Museum K 1295 = ABL 632), dated to the period between Sargon II and Esarhaddon, we get to know the sort of items they had to

[3] Saggs 1955: 134 XVI <ND 2765>.

[4] Bienkowski 1992: 36.



2. Map 'Iron Age of Jordan' (Berlin: GdO geo3) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.

provide[5] 'Two minas of gold from the inhabitants of Bit-ammon ([mat]*Bit-Am-man-na-a-a*); one mina of gold from the inhabitants of Moab ([mat]*Mu-'-ba-a-a*); […mi]nas of silver from the inhabitants of [Edom] ([mat][*U-du-ma*]-a-a)…., … the inhabitants of Byblos, the district officers of the king, have brought'.

On a tablet from Nineveh from the palace of Sennacherib there is another hint of gifts given to the kingdom of Ammon[6] (K 8787 = No 58): Precious items issued to visiting delegation: '…, 2 rings, gold, small, Padu-il, from Bit-Ammon; …'.

On a prism inscription there is mentioned a rebellion of Yamani of Ashdod. Allies are Philistra, Judah, Edom and Moab. Sargon names them as tributaries to him. Edom's rulers seem to be loyal to Assyria afterwards.[7]

Beside the mentioned Assyrian testimonies there is an important one from Transjordan, the Bileam Inscription (FIG. 3) of the eighth century, found in Tall Dayr 'Allā in 1967, which reports in Aramaean-Canaanaean (red ink on plaster) of the prophet Bileam, son of Beor, and the relation between Israel and Moab and the different cult and religion. The main deity of Ammon was the god Milcom.

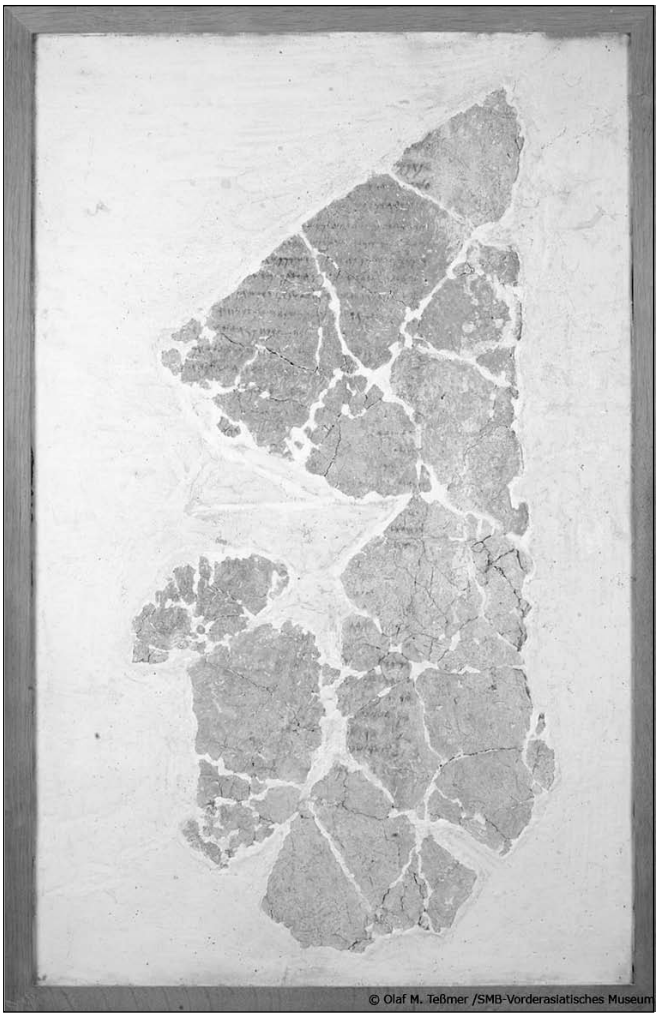
Eighth/Seventh Century BC

The Assyrian king Sennacherib (705-681BC) started again with mighty campaigns against the uprising provinces — they always tried to start rebellion during weak periods of change in the Assyrian Empire.

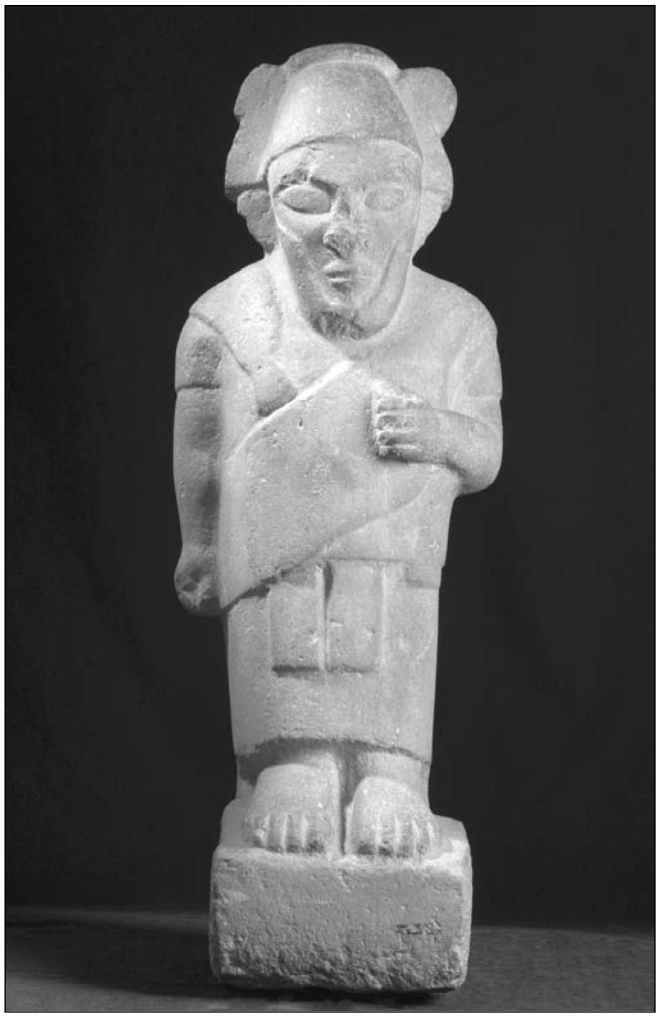
As demonstration of the self-image of the Assyrian kings may stay the introductionary passage of the Oriental Institute Prism[8]' of Sennacherib. Col. I-III:

Col. I[9]: 'Sennacherib, the great king / the mighty king, king of the universe, king of Assyria / king of the four quarters (of the earth); the wise ruler/ favourite of the great gods, guardian to the right/ lover of justice; who lends support / who comes to the aid of the needy, who turns (his thoughts) to pious deeds; / perfect hero, mighty man; / first among all princes, the powerful who consumes / the insubmissive, who strikes the wicked with the thunderbolt; / the god Assur, the great mountain, an unrivalled kingship / has entrusted to me, and above all those / who dwell in palaces, has made

[5] ANET: 301; Fales 1995: 30.
[6] Fales 1992: 73.
[7] Bienkowki 1992: 36.
[8] OIP Prism Col. IV-VI (read OIP p. 44f. V,61-V,80): In Col. V be find all the gods and weapons cited. s.a. Rassam Cyl. ~ 700.
[9] Luckenbill 1924: 23 I,1 to I,19.



3. Bileam Inscription (‘Ammān: Jordan Archaeological Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.



4. Ammonite Ruler (‘Ammān: Jordan Archaeological Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.

powerful my weapons; / from the upper sea of the setting sun / to the lower sea of the rising sun / all humankind (the black-headed race) he has brought in submission at my feet / and mighty kings feared my warfare — / leaving their abodes and / flying alone, like the *sudinnu*, the bird of the cave / to some inaccessible place’. It is clearly visible that everything is done in the name of the god.

In Col. II[10] in connection with the siege of Jerusalem tributes by the Transjordanian Kingdoms are mentioned: ‘In my third campaign I marched against the Hittite land / Lule, king of Sidon, — the terrifying splendor / of my sovereignty overcame him and far off / into the midst of the sea he fled. (There) he died / Great Sidon, Little Sidon / Bit-Zitti, Zaribtu, Mahalliba, / Ushu, Akzib, Akko / his strong, walled cities, where there were supplies / for his garrisons, - the terrors of the weapon of Assur / my lord, overpowered them and they bowed in submission at my feet / Tuba’lu I seated on the royal throne / over them, and tribute, gift(s) for my majesty / I imposed upon him for all time without ceasing / From Menachim, the Shamsimurunite / Tuba’lu, the Sidonite, / Abdi-liti, the Arvadite, / Uru-milki, the Gublite / Mitinti, the Ashdodite / Budu-ilu, the Beth-Ammonite / Kammusu-nadbi, the Moabite / Malik-rammu, the Edomite / kings of Amurru, all of them, numerous presents / as their heavy tribute / they brought before me for the fourth time, and kissed my feet ...’.

In Transjordan, at the same time, we find an impressive example for a powerful local craftsmanship, the Ammonite Ruler (FIG. 4), found on the Citadel of ‘Ammān, showing Egyptian elements as

[10] Luckenbill 1924: 29 II,37 to II,60.

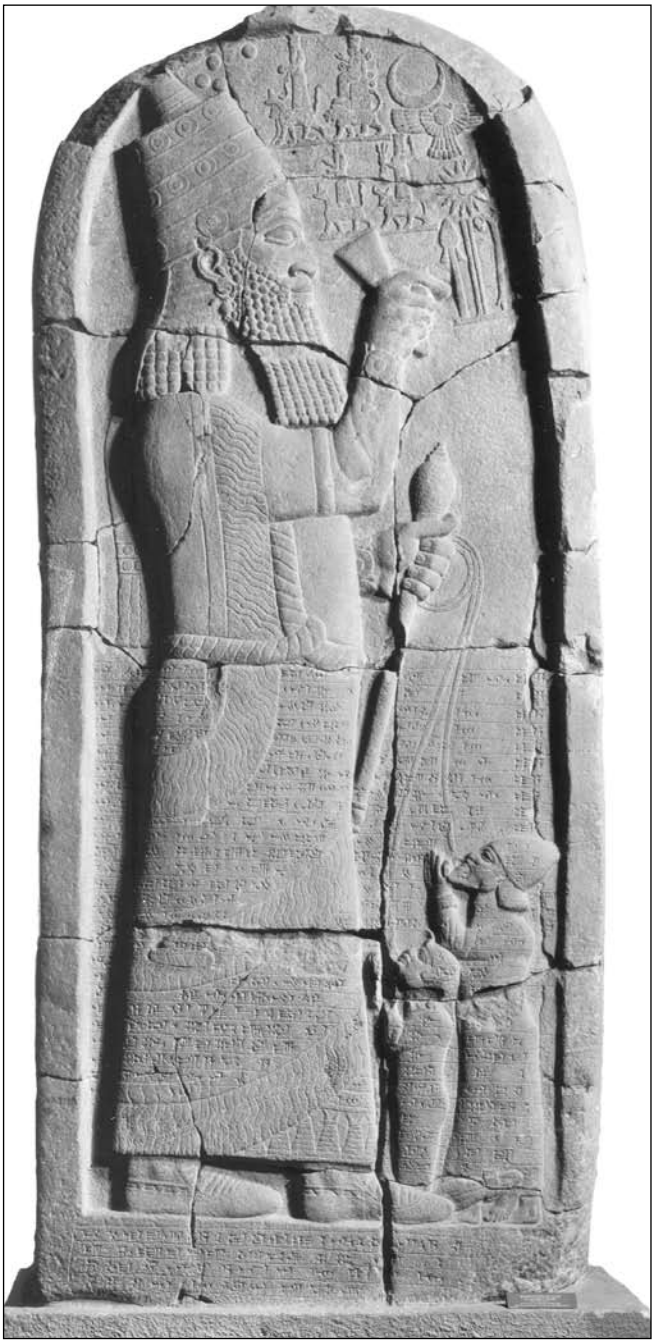
well with his Atef-crown.

Seventh Century BC

The direct successor of Sennacherib, the Assyrian king Esarhaddon (681-669BC), led again a campaign to the West. The Syro-Palestinian campaign on the 'prism' of Esarhaddon mentions that the king called among others Transjordanian kings to transport building materials from Lebanon to *Nineveh*[11]: Col. (V,54 to VI,1) 'I called up the kings of the country Hatti and (of the region) on the other side of the river (Euphrates) (to wit): Ba'lu, king of Tyre, Manasseh (*Me-ne-si-i*), king of Judah (*Ia-u-di*), Qaushgabri, king of Edom, Musuri, king of Moab, Sil-Bel, king of Gaza, …, Puduil, king of Beth-Ammon, … - 12 kings from the seacoast; …; all these I sent out and made them transport under terrible difficulties, to Nineveh, the town (where I exercise) my rulership, as building material for my palace: big logs, long beams (and) thin boards from cedar and pine trees, products of the Siara and Lebanon (Lab-na-na) mountains, which has grown for a long time into tall and strong timber, (also) from their quarries in the mountains, statues of protective deities (of lamassu and Shedu) made of asnan-stone, statues of (female) *abzaztu*, thresholds, slabs of limestone, of asnan-stone, of large- and small-grained breccia, of *allalu*-Stone …'.

The most impressive manifestation of the Assyrian power is a stele in the Vorderasiatisches Museum in Berlin, the Esarhaddon Stele (FIG. 5), depicting the king himself after his successfull battle against Egypt in 671. On his way back to Assyria he gave order to erect three victory stelae, one in Sam'al, and two in Til Barsip. The illustration of the king himself on the front, humiliating his captives Abdi-Milkutti from Sidon and the crown prince of Egypt, and of his heirs on both sides, seems at the first glimpse very similar. But there are differences on a closer view, as Barbara Nevling Porter showed in two articles[12]. As 'vehicles' for Assyrian propaganda they contain different messages.

The Esarhaddon Stele in the provincial capital of Sam'al was placed at the gate leading to the citadel. It was erected at the gateway to Asia Minor[13] 'for the astonishment of all enemies unto distant days' (rev., II, 52-53[14]). One of Esarhaddon's titles is 'holder of the leashes of kings' (obv., I, 24[15]), and



5. Esarhaddon Stele (Vorderasiatisches Museum Berlin) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin

in this function he is shown with his captives. The kings of Assyria acted as representative of the god Ashur, so every campaign against foreign countries happened in the name of the god Ashur. The stele is also praise for the warrior god Ashur.

Til Barsip on the other side was a provincial capital on the upper Euphrates, so the craftsman-

[11] ANET: 291.
[12] Porter 2000; 2000a: 157, 174.
[13] Porter 2000: 10.
[14] Porter 2000: 11.
[15] Porter 2000: 11.

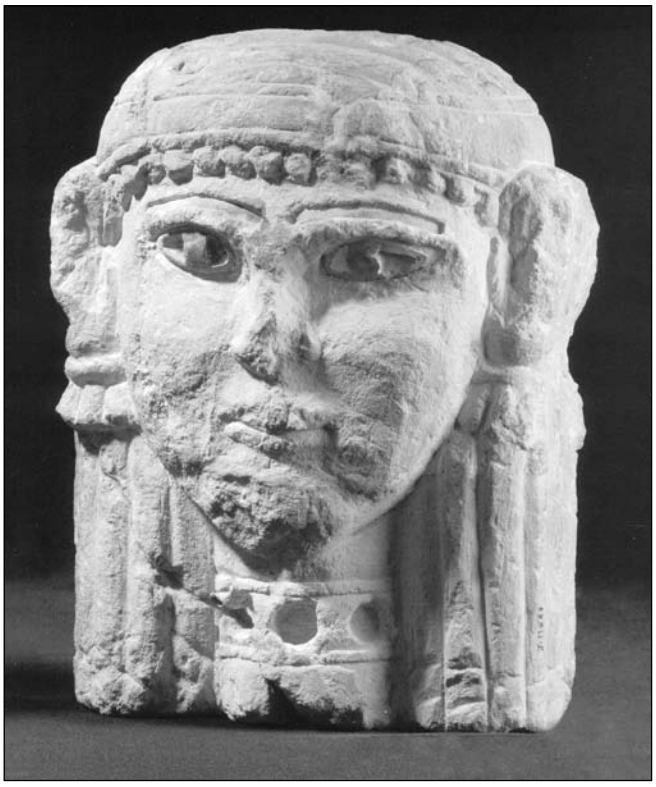
ship of the two stelae was not so spectacular as in Sam'al. One stele was placed near the Assyrian palace, the second one at the lion gate. Although the general scene is nearly the same on all three stelae, the texts on the Sam'al and the Til Barsip stelae are completely different.

At the same time in Transjordan we notice in the double-faced sculptured heads of women from the second half seventh century (FIG. 6) strong connections to the Assyrian court. Found at the Citadel in 'Ammān, the bifacial heads show stylistically strong Phoenician influence. On the other hand with the famous 'Lady at the window' from Nimrud it is part of the Assyrian palatial art. So in craftsmanship, there seems to have been a direct influence from the neighbouring powers.

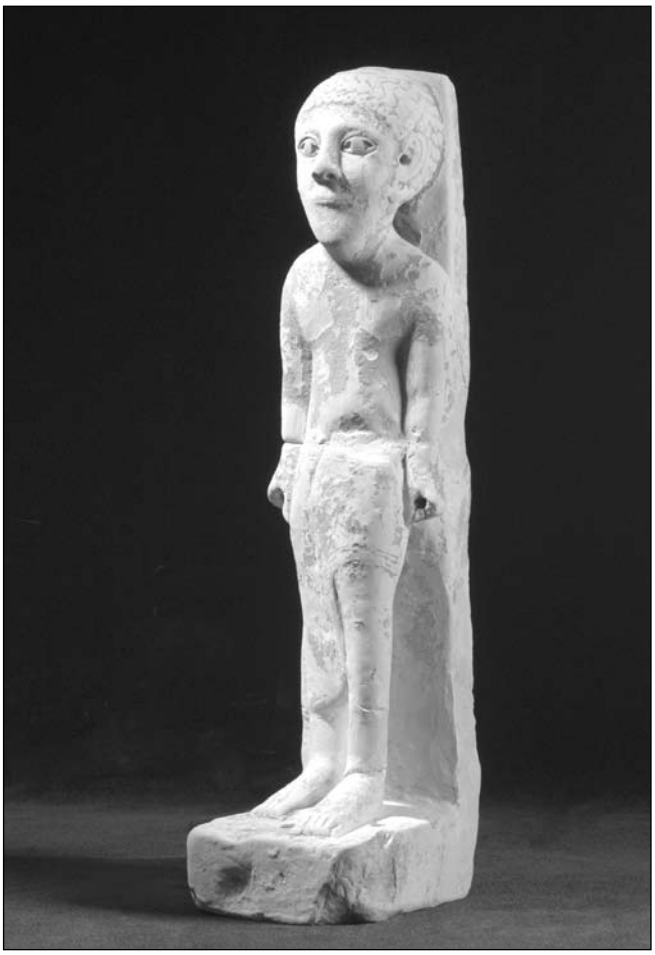
Under the Assyrian king Ashurbanipal (669-627BC) during his campaigns against Egypt and Arabic nomads, people of Transjordan had to serve in the military. They had to join his first campaign against Egypt[16]. 'Ba'al, king of Tyre, Manasseh, king of Judah, Qaushgabri, king of Edom, Musuri, King of Moab, Sil-Bel, king of Gaza …, Amminadbi, king of Beth Ammon …, Kisu, King of Silua [Sela?], …, together 12 kings from the seashore, the islands and the mainland; servants who belong to me, brought heavy gifts (*tamartu*) to me and kissed my feet. I made these kings accompany my army over the land — as well as (over) the sea-route with their armed forces and their ship (respectively) …'.[17]

In Transjordan, the figure of the so-called 'Warrior' of Arjan (FIG. 7), a limestone figurine of around 50cm height, may be a good example for the reports in the Assyrian texts of Transjordanian warriors, showing a man in a fringed short skirt, whose weapons are missing.

Amminadbi, the king mentioned by Ashurbanipal, is found in an inscription on a sixth century bronze bottle from Siran (FIG. 8): '... Amminadab, the king of the Ammonites ...'.[18]



6. Bifaced head of women ('Ammān: Jordan Archaeological Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.



7. 'Warrior' of Arjan ('Ammān: Jordan Archaeological Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.

[16] Rassam Cylinder 'C' from Nineveh I, 24-46; Weippert 1987: 99.
[17] ANET: 294.
[18] Weippert 1987: 99.

8. Bronze bottle from Siran (‘Ammān: Jordan Archaeological Museum) Olaf M. Teṣmer / SMB – Vorderasiatisches Museum Berlin.

To sum up:

After the fall of the Assyrian Empire in 612 under its Neo-Babylonian successor, there are only few hints to Transjordan.

As we have seen by the monuments there seemed to be very little direct contact of the Assyrians with people in Transjordan. Only the late Assyrian king Ashurbanipal incorporated local troops in his army for his battle against Egypt and against the Arabs. In earlier times the Transjordanian Kingdoms are mentioned in Assyrian texts as allies of the Aramaean coalition against Assyria, but their territory is not mentioned as a battlefield. Maybe that is one of the reasons that they were not pressed into the provincial system of the Assyrian Empire. From Tiglath-Pileser III on they were only forced to pay their annual tributes, and to support Assyrian troops, give them way on their streets and transport from time to time precious materials to Assyria. There are no depictions at all of Transjordanian tributes or captives on Assyrian victory monuments.

So in general the kingdoms of Ammon, Moab and Edom benefited from the political situation in the First Millennium, strengthening their power against the states on the Western side of the Jordan.

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Travelers to a Permanent Abode: Burial Practices of the Early Bronze Age I in the Southern Ghawrs of Jordan

The large cemeteries of Bāb adh-Dhrā‘, aṣ-Ṣāfī/an-Naq‘ and Fīfā of the southeast ghawrs of Jordan (FIG. 1), dated to the Early Bronze Age I period, present major challenges to interpreters. First of all there is a demographic problem. These cemeteries appear to be far too large for the estimated populations of this period. In addition, despite extended surveys in the area, the EB I cemeteries of the southeastern ghawrs cannot be definitely linked to settlements of that period. These concerns along with the documented practice of secondary burials have led the Expedition to the Dead Sea Plain (EDSP) to propose that the burial practices in these cemeteries should be ascribed to transhumant pastoralists that brought their dead to these burial grounds periodically over an extended period of time. Many have objected to that hypothesis, insisting on a demonstrated territorial connection in the anthropological literature between burial grounds and nearby settlements. The differences among supporters and opponents of the EDSP hypothesis often revolve around different definitions of pastoralism and sedentism, and how one is to describe the relationship between the two in the ancient Near East. This study will offer a brief summary of evidence from the BD cemetery for this period and briefly re-state the current hypothesis of the EDSP along with the various criticisms of the current hypothesis. This in turn will lead to considering the evidence of the cemeteries of Fīfā and aṣ-Ṣāfī/an-Naq‘ which reinforces the problem of mobility and lack of sedentary occupational evidence. Finally, we will consider some different hypotheses and briefly propose a modified hypothesis that combines the minimal evidence for sedentism together with that for mobile pastoral groups to explain the burial practices of EB I in the southern ghawrs — travelers, over a short or long distance to a permanent abode.

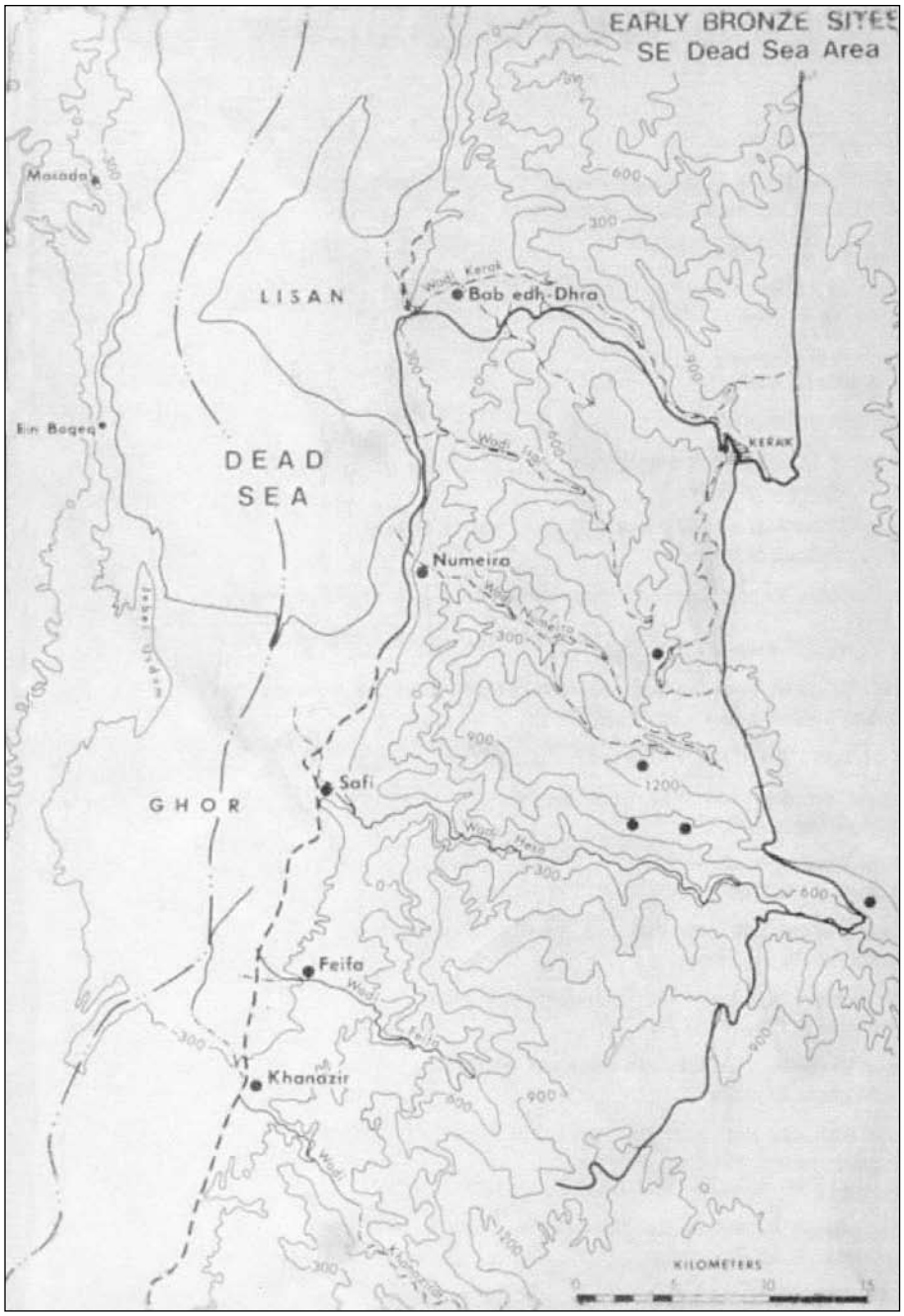
Bāb adh-Dhrā‘

The cemetery of Bāb adh-Dhrā‘ is well known, thanks to the excavations and publications of Paul Lapp (1966, 1968) and the subsequent excavations and preliminary and final reports by the EDSP (Schaub and Rast 1989; Schaub 1993, 2008; Chesson and Schaub 2007; Ortner and Frohlich 2008). Lapp excavated 28 EB IA shaft tombs with 48 chambers in Cemetery A and an additional 6 tombs from Cemetery C. The EDSP added to these EB IA totals with 22 shaft tombs with 63 chambers in Cemetery A, three shaft tombs from Cemetery G and four more tombs from Cemetery C. Three tombs (a surface burial, a shaft tomb and a round charnel house) excavated by Lapp were assigned to EB IB. A similar grouping of a surface chamber, shaft tomb chambers (3) and a round burial house belonging to EB IB were excavated by the EDSP.

The basic hypothesis of the EDSP, based on the four seasons of work in the town site and cemetery, argues that socio-cultural shifts were continuous with a development from:

1) A non-permanently settled area in EB IA toward;
2) An open village with a settled population in EB IB to;
3) A walled city in EB II-III to;
4) A new open village settlement, definitely sedentary, following the termination of the EB III walled city (Schaub and Rast 1989: 547).

The changes in burial practices in the cemetery dovetail with these socio-cultural shifts. For the EB IA period, apart from isolated camping areas and some minor structures in the area, there is no evidence for a large settlement (Rast and Schaub 1989: 73). During this period we have argued that the large number of tombs distinguished by formal secondary disarticulated burial practices is best ex-



1. Map of the Southeast Dead Sea Plain.

plained by groups coming from a distance, most likely seasonal pastoralists who made periodical visits. I would emphasize that the large number of tomb chambers with an average of 8 individuals in each chamber is the key factor in positing people coming from a distance rather than disarticulated burial practices. In the latter part of EBI round burial houses become the norm together with the beginning of a major settlement. Secondary burials continue along side some primary articulation.

There has been no lack of opposition to the basic hypothesis of seasonal pastoralists. David McCreery suggested that small Chalcolithic sites in the southeast ghawr were likely predecessors to EB I farmers (1980: 250-56). He proposed limited sedentary agriculture in the area contemporary with the earliest burials. Gillian Bentley was the most through going in her analysis (1987: 6-44). She examined the use of the term pastoral nomads and rejected it for the later fourth millennium in this area. In its place she proposed herdsman husbandry, a herding of small flocks close to a sedentary agricultural village. Her main argument focused on the strong territorial connection between land and

the inhabitants. In conclusion she states "secondary burial as evidence of the pastoral nature of EB IA has been given unwarranted significance" (1980: 35).

Other more recent opponents to the pastoralist hypothesis include Eliot Braun, David Ilan, Timothy Harrison and Ben Badhann. Braun spends an unusual amount of time in his reviews of our final reports rejecting outright the hypothesis of seasonal pastoralism, which he interprets as nomadism (1991, 2006). Ilan suggests that there must be a settlement for the EB IA period nearby, perhaps buried under the alluvial fan of the Wādī al-Karak (2002: 95). Harrison acknowledges our arguments for lack of settlement evidence and is willing to allow for a relatively transient EBIA population (2001: 219). Ben Badhann, in a balanced treatment of all of the mortuary evidence of the Southern ghawrs, proposes that the EB I inhabitants of the area could have maintained a certain degree of sedentism. At least, he argues the archaeological evidence and ethnographic data suggest that the current mobile pastoralists hypothesis concerning EB I in the southern ghawrs "needs refinement" (2003: 169).

With the exception of Ben-Badhann most of these commentators did not have the additional evidence from the cemeteries of Fīfā and aṣ-Ṣāfī/an-Naq' available to them. This data along with new estimates of size and density of the Bāb adh-Dhrā' cemetery complicates the picture. Two large cemeteries at aṣ-Ṣāfī/an-Naq' and Fīfā, apparently as large if not larger, than Bāb adh-Dhrā', have been excavated, with well-built cist tombs and predominantly secondary burials. Dating of the tombs ranges from Late Chalcolithic to a few from EB IV but most belong to the EB IA-IB periods. Despite extensive surveys in the areas of these cemeteries no evidence has surfaced for nearby settlements from the late fourth through the third millennium. Where did these people live? Where did they come from?

Cemetery Sizes (see TABLE 1)

Bāb adh-Dhrā'

Recent estimates by Bruno Frohlich, based on conductivity readings in the cemetery area, offer realistic assessments of the use of the Bāb adh-Dhrā' cemetery (Ortner and Frohlich 2008: 260-2). Frohlich determined high-density areas of 170 tombs per hectare and low-density areas with 17 tombs per hectare. These figures yield an estimate for the entire cemetery area of 2,856 shaft tombs. With an average of 8.1 individuals in each chamber and average of 19.7 burials in each shaft tomb the estimated number of burials for the EB IA period interred in the cemetery would be 56,263. Frohlich further estimates that the living population needed to provide 56,000 burials over a 100 years period is about 9,902 at any point in a given time. A period of 200 years would cut that figure to 6,600 and a period of 400 years would result in a population of about 2500 people to produce the expected 56,263 burials (2008: 262). Frohlich argues further that a population size of almost 10,000 people would have needed an area of 10,000 square kilometers in order to support nomadic or semi-nomadic behavior. The high estimates for 100 or 200 years are at least three to five times the estimated population of the town site of Bāb adh-Dhrā' at its' maximum extent during EB II-III. This fact, along with the estimate of the large subsistence area needed, persuaded Frohlich to argue for the 400 years period as more likely and also for a smaller area for the pastoralists to depend on for their survival (2008: 262). The cultural evidence, however, does not support a long 400 years period for the EB IA tombs. Lack of variation in the ceramic repertoire, in form, decoration and wares, and of other tomb artifacts, is indicative of a much shorter time period. From this perspective the range of 100-200 years is more realistic. The shorter time period with higher estimated living populations necessary to explain the amount of burials raises anew the question of where these people were living. Who were these EB I folks and where did they come from?

Fīfā

The evidence from Fīfā exacerbates the numbers problem for the southeast Dead Sea region. The ancient site of Fīfā is located approximately 20km south of the southern shore of the Dead Sea. The most visible element of the site is a small fortress at the west end. Excavations in the cemetery area to the east were carried out by the EDSP in 1989-90 (Schaub 1991) and again for the Department of Antiquities by Muhammad Najjar in 2001.

During the excavations of the EDSP in the cemetery area three trenches were laid out, 125 m. apart, and cist burials were uncovered in each of the areas. Eleven tombs were excavated in the three trenches and two other exposed tombs were cleared. A trench across the town site exposed three

TABLE 1: Eb I Cemetry data of the Southeastern Ghawrs.

BAB ADH-DHRĀ‘ Cemetery Size - 33 hectares = 330,000 sq. m - B. Frohlich
High Density area -15 hectares – 170 tombs per hectare

Low Density area – 18 hectare – 17 tombs per hectare

Estimate –High Density Area – 2550 tombs
- Low Density Area – 306 tombs
Average Burials – 8.1 individuals in each chamber
- 19.7 individuals in each tomb
Total estimated number of burials in the EB I Bāb adh-Dhrā‘ Cemetery = 56,263

Life Expectancy 17.6 years

Estimated size of living population needed to provide 56,263 burials:
100 year period for EB IA – 9,902 +/- at any given time
200 year period for EB IA – 6,601 +/- at any given time
300 year period for EB IA – 3,300 +/- at any given time

FĪFĀ - Cemetery Size – M. Najjar – 75 hectares = 750,000 sq. m
- Z. Ben Badhann – 17 hectares = 170,000 sq. m
- EDSP excavation – 3.5 hectares = 35,000 sq. m (16 excavated)

Estimated density in EDSP area = 6 tombs in each 50 sq. m

Estimate of tombs in EDSP area at Fīfā - 2000 to 4200 tombs?

AN-NAQ‘ – Cemetery Size estimates vary from 20 hectares to 125 hectares
D. of A. /Mutah U. 98 cist tombs
Ioannina U. – 14 cist tombs
Estimated density = 5 tombs in each 100 sq. m
Low estimate of tombs = 10,000?

GRAVE CIRCLES
Bāb adh-Dhrā‘ town site – 9 recorded, 3 excavated
Potash township site (McCreery/Clark) – 31 grave circles, 14 excavated
Wādī Jarra – (Worschech) 47 recorded, 1 excavated
Wādī Ḥaditha – (Worschech) 29 recorded
Karak Plateau – 60 recorded (Miller), 9 excavated (Worschech)

more cist tombs underneath the Iron II town wall.

Two types of the cist tombs were identified. The walls of one type were built up and lined with small boulders (FIG. 2). In a second type the walls of the cist were formed of standing slabs in the bottom part and capped by small boulders in the upper part (FIG. 3). Both types were covered with slab cap-stones. Numerous cist tombs from the cemetery at Adeimeh appear to be similar to the slab-lined types from Fīfā, although the Adeimeh types do not have boulders on top of slabs (Stekelis 1935: figs. 9-12).

Burials were all secondary and disarticulated. Individuals varied from 1 to 6. Multiple burials, from 2 to 6 individuals were found in 13 of the 16 chambers excavated. Pottery in the slab-lined

2. Boulder type Cist tomb at Fīfā.

3. Slab lined Cist tomb at Fīfā.

tombs had many forms which appear to be typologically either very late in Late Chalcolithic or early in Early Bronze I. They are different in basic form and in the range of types from the typical EB I pots from Bāb adh-Dhrā‘. In addition to the vessels excavated by the EDSP, I have looked at slides of the large group excavated by Muhammed Najjar. The dominant forms are jars, large-to-medium small, with tall necks equal to the height of the body and without handles. Only a few jars have loop handles and none have ledge handles. Some small bowls occur but none of the large deep bowls which are frequent at Bāb adh-Dhrā‘ are found in the Fīfā assemblage. The boulder type tombs had forms which are duplicated in the EB IB tombs at Bāb adh-Dhrā‘ and at aṣ-Ṣāfī/an Naq‘, including cups with a horned handle above the rim, shallow dishes with a similar horned handle above the rim, juglets with loop handle above the rim, some with vertical painted stripes, and amphoriskoi with lugs on the shoulder. Basalt jars, mostly crude in form, occur along with mace heads. Ceramic vessels in all but one of the tombs ranged from 1 to 8 with 3 to 4 the most consistent grouping. One tomb, dated

to EB IB by forms and decoration, contained 23 vessels.

The size of the cemetery at Fīfā remains to be fully determined but all indications are that it is very large (TABLE 1). The area to the east of the town site explored by the EDSP was 35,000 sq.m. Density of the cist tombs in the areas excavated averaged 6 tombs for every 50 sq. m. If that density were consistent throughout the entire area it would come to 4200 tombs. Even halving that estimate would result in over 2000 tombs. Actually, subsequent excavations by the Department of Antiquity and later visits to the site, which documented recently robbed-out areas, suggest a much larger number. Zakariya N. Ben-Badhann estimated the cemetery to be approximately 170,000 sq. m. (2003: 22). Muhammad Najjar suggested a much larger area, 0.50km north south and 1.5km east west or 750,000 sq. m. (2004)

Aṣ-Ṣāfī/an-Naq‘

The cemetery at aṣ-Ṣāfī/an-Naq‘ is south of the town of modern aṣ-Ṣāfī and the Wādī al-Ḥasā. aṣ-Ṣāfī/an-Naq‘ has been excavated several times. In 1995 the Department of Antiquities and Mu’ta University carried out the most extensive excavations revealing ninety-eight cist tombs and two monumental chamber tombs (Waheeb 1995). In 2000, 14 more cist tombs were cleared by Ioannina U. and further rescue excavations were carried out by Muhammad Najjar for the Department of Antiquities in 2001. The cemetery area has also been systematically robbed over the years.

Practically all of the tombs excavated at an-Naq‘ are cist tombs (FIG. 4) (Ben-Badhann 2003: 54-56). As at Fīfā there are two distinctive cist tomb types. One is slab-lined with additional rows of small stones adding to the height and the second is completely stone or boulder lined. Most of the tombs (83/116) belong to the second type (2003: 54-56). Many of the tombs were filled with silt and recovery of the skeletal material was poor. The most consistent observed pattern was of a disarticulated bone group with skull fragments surrounded by artifacts including ceramic vessels and, at times, basalt vessels, mace heads, shell armlets and beads. Most of the burials appeared to be single. Only six tombs were recorded as having more than one burial. Partial or full articulation was recorded in only 8.5% of the tombs (Ben-Badhann 2003: 129).

Ceramics of the aṣ-Ṣāfī/an-Naq‘ cemetery have been dated by parallels to EB I. Typical aṣ-Ṣāfī cups with handle above the rim have been found in Bāb adh-Dhrā‘ EB IB tomb A 100N (Schaub 1981b: fig. 6:11) and they are also common at Fīfā (personal communication from M. Najjar). Overall the pottery forms range from EB IA to EB IB with many red-painted forms over white slip, there may be a correlation similar to that found at Fīfā. Ben-Badhann has argued that the slab tombs are earlier (EB IA) and the boulder tombs are later (EB IB) (2003: 82).

Estimates of the size of the aṣ-Ṣāfī/an-Naq‘ cemetery size vary widely from 200,000 sq. m. to

4. Cist tomb area at an-Naq‘ near aṣ-Ṣāfī.

1,125,000 sq. m (Waheeb 1995: 553; Politis 1998: 628-31). According to Ben-Badhann, tomb density seems to be consistent but no estimate is offered. Even using half of the low estimated area and a low estimate of 5 tombs per 100 sq. m. the projected number of tombs would be 5,000 tombs.

Other Theories

The size of the three cemeteries of Bāb adh-Dhrā‘, Fīfā and aṣ-Ṣāfī/an-Naq‘ poses a major problem. Secondary disarticulated burials are the norm at all three cemeteries. All three cemeteries are very large and generally dated to the EB I period although Fīfā could have some earlier material. Despite many surveys in the area over the past fifty years no major settlements dated to this period in the southern ghawr have been recorded. Where did the people live? If seasonal pastoralism is not acceptable, should we return to theories of the late sixties and early seventies of Kenyon and Lapp and look again at some major immigration into the area. Too much evidence has been accumulated since then for rejecting those hypotheses including all the evidence for continuity in indigenous traditions from the Late Chalcolithic. Yet, certain features of a people movement hypothesis remain tempting. A migration of people with their own traditions might explain the unusual and unique pottery traditions of the early Bāb adh-Dhrā‘ shaft tombs which are yet to find good group parallels in the local areas. In addition, the studies of Ortner suggest that the Early Bronze I population was undergoing significant stress. Life expectancy, excluding fetal and infant burials from the sample, was about 26 years. There is a prevalence of metabolic diseases including scurvy and rickets. “It seems likely that there were at least fairly common periods of famine within the EB IA in which women and young children would be particularly vulnerable (Ortner 2008: 303). Similar health concerns are not associated with the EB IB burials, although the sample is much smaller. The unusual pattern of burials in EB IA Bāb adh-Dhrā‘ with an average of 9 burials per chamber, including male, female, sub-adults and frequent fetal skeletons is difficult to correlate with patterns of death in a society. Is it reasonable to suppose that they all died at the same time? Did each kinship group have a primary burial site maintained over a considerable period time before the bones were collected for re-burial? It seems at least possible that these unusual burial patterns and the health status of the EB IA groups could be a result of a migration before which a group collected the bones of their ancestors to move to a different area and during which the population was subject to metabolic diseases and periods of famine. Abrupt changes in burial customs have been cited in studies on central Asia as a result of migrations (Aleshkin 1983: 377-9).

Ritual Landscape

Another possibility that has been insufficiently explored for the Bāb adh-Dhrā‘ cemetery is that the entire area of the Sahl adh-Dhrā‘ was a ritual landscape which drew people from a large area including the highlands. That term has been used recently by Steve Falconer to account for the large number of grave circles spread out in the Sahl adh-Dhrā‘ (2004: 191). Prag had used the term earlier for the ritual landscape north of the Dead Sea area (1995). David McCreery also argued that the Sahl adh-Dhrā‘ may well have been the setting for cultic festivals or agricultural feasts, linking the spring of ‘Ayn adh-Dhrā‘, some fallen monoliths near Bāb adh-Dhrā‘and a large tabular monolith with a platform to the east of the Sahl adh-Dhrā‘ (1980: 279-302).

Each of these installations, fallen monoliths, the large tabular monolith to the east and the grave circles deserves a closer look. Albright reported six fallen monoliths just to the east of the walled area of Bāb adh-Dhrā‘(1924: 6). McCreery was the first to notice the large tabular monolith with a 400m long wall snaking down a ridge far to the east (FIG. 5). This monolith was excavated by Korber (1993) and dated to the Late Chalcolithic and EB. The grave circles appear to play a significant role in the development of this area as a ritual landscape. Lapp excavated two grave circles (B1 and B2) south and east of the Bāb adh-Dhrā‘ town site on the edge of the cemetery area (Schaub and Rast 1989: 483, 489). One was unusual in its construction with upright slabs forming the outside wall. The EDSP excavated a grave circle with two rings of stone and a central monolithic chamber in 1975. They also recorded a series of fairly even-spaced grave circles in an east-west direction towards the hills and the tabular monolith. Neither the Lapp excavation nor those of the EDSP were able to conclusively date these grave circles but their proximity to the town site and cemetery of Bāb adh-Dhrā‘, an exclusively EB site, strongly supports this connection. A sur-

5. Walter Rast standing at the Monolith (adh-Dhrā‘/al-Wu‘ayda) overlooking the Sahl adh-Dhrā‘.

vey by Clark and McCreery in 1977 recorded thirty-one of these grave circles to the south of Bāb adh-Dhrā‘, in the area now occupied by the Potash town site (Clark 1979; McCreery 1979). Clark and McCreery excavated fourteen of the grave circles. They were built of concentric rings of stone varying from 2-4 circles around a central burial cavity which was enclosed by boulders, stone walls or in some case large orthostats. Generally the skeletal material was poorly preserved. The burials were all secondary, disarticulated and incomplete. Several of the circles had no bones at all. Significantly there was an almost complete absence of any grave goods. In addition to the circles they recorded a long, 1m. wide wall that extended E-W through the survey area for 1km (McCreery 1979: 155). Falconer recently observed at least 50 more circles over a two to three km. stretch south and southeast of Potash city (2004: 193). It would appear that this entire area was a ceremonial burial ground during some period.

In 1998, Worschech re-visited many of the cairn sites described in Miller's survey of the Karak plateau (1991: nos. 44-46, 48-51, 125-126, and 130) and located and cartographed 60 ‘grave circles’ (Worschech 2000: 193). He excavated nine of these circles at ar-Raḥa in 1998 and developed a typology of the different types (2000). Earlier he had documented a necropolis of 47 grave circles in the Wādī Jarra (1985: 28 – site 37) and another with 29 Cairns east of Ḥadītha toward the Wādī ibn-Ḥammād (1985: 34, site 39). His soundings in the circles on the plateau produced the same results as those excavated in the ghawr by Clark and McCreery: very fragmentary skeletal remains and a total absence of grave goods.

The consistent combination of fragmentary skeletal material (in many instances none at all) with no grave goods raises the possibility that some of these circles may have once been used as primary burial sites for an in-between liminal period. Once the flesh had been excarnated the bones were gathered to be transported to a secondary final resting place where grave goods were deposited, such as the cemeteries of Bāb adh-Dhrā‘, Fīfā and aṣ-Ṣāfī/an-Naq‘. Intriguing but there are major problems with such a neat solution. Many of the grave circles yielded burials, which were already secondary even though incomplete. There is no indication of primary burials in any of the grave circles. More importantly, dating the circles continues to be elusive.

In the Potash township survey area McCreery states that the great majority of sherds they collected in the area (639 or 81%) were Chalcolithic / EB with the majority of this group (69%) EB I-II (1979: 51). Clark believed the pottery was Early Chalcolithic, Pre-Ghassulian and even possible Neolithic. Falconer recently has argued for a possible MB II date of the grave circles on the basis of a few sherds (2004: 195). One of the sherds he cites is from Tomb B1 at Bāb adh-Dhrā‘. The sherd is definitely

MB but the locus was described as nearby and not from the tomb (Schaub and Rast 1989: 489). In his most recent studies Worschech has suggested that the Cairns on the plateau belong presumably to the Late Chalcolithic and Early Bronze Age periods (1986) because of the proximity of other installations of those periods and the immense number of flints from those periods (2000). At least three grave circles very close to Bāb adh-Dhrā‘ with its extensive EB I cemetery and EB II-IV town site strongly support the idea that some of these circles were used in EB.

Following his survey of the Arḍ-al Karak, Worschech proposed three distinctive ecological regions; 1) the plain of the ghawr near the Dead Sea, 2) the hilly slopes to the east and 3) the top of the Jordanian plateau (1986:40-52). In the ghawr, village dwellers lived along transhumants in a complex socio-ecological milieu in a way also found in the high plateau culture. Furthermore several campsites on the slopes between the ghawr and the plateau suggest that there was communication and trade between the people of the plateau and the ghawr. The same could be said for burial practices. The grave circles in all three regions appear to represent a common burial tradition shared by the inhabitants of the three ecological regions. Prag develops similar arguments linking the areas of the dolmen fields north of the Dead Sea. Some are located on the western fringes of the Plateau, 800m asl., on slopes and ridges above steep wadis. Others are found in the lower western courses of the same wadis between -300 bsl and + 200m. asl (Prag 1995: 76). The two areas correspond to the summer and winter grazing zones of transhumant pastoralists of the 19th and 20th centuries and probably parallel those of earlier periods 1995: 78). “Generally there seem to be increasing agreement that the dolmen cemeteries are those of tribal pastoralists (isolated cemeteries on hill slopes at a distance from settlements and arable land), who are in contact with sedentary groups, possibly linked in social and economic patterns, or who are themselves sometimes semi-sedentary or sedentarising (cemeteries close to arable land and settlements) (1995: 84).

To return to the southern ghawr it is possible, which a sacred burial ground had been established at least in the Chalcolithic period in the Sahl adh-Dhrā‘. The large monolith overlooking the ghawr would appear to be used first in that period, along with long walls setting aside sections for ritual burial grounds. A tradition had been established of this area being used for burials. That tradition may have been followed by EB I folk who introduced the shaft tomb tradition in the soft limestone marl closer to the Dead Sea. Where did these people live who buried their dead in these tombs? One answer might be that they lived in these three ecological zones (much as they do today): in villages in the highlands, in scattered small homesteads in the in-between hills, and in small villages in the plain. Uncertainties concerning the dating and use of the grave circles discussed above however, diminish the attractiveness of this proposal.

Summary

Many problems remain in attempting to identify where the EB I people who buried their dead in the cemeteries of the southeastern ghawrs lived. In a recent article it was stated, “we have no concrete information beyond educated guesses as to where the EB IA people lived, or if they were sedentary farmers or mobile pastoralists” (Chesson and Schaub 2007: 255). In this article I have looked at some possible educated guesses prompted by the statistics associated with the three EB I cemeteries of Bāb adh-Dhrā‘, aṣ-Ṣāfī/an-Naq‘ and Fīfā. The notion of migration to explain the large number of burials over a short period was considered to be attractive but it runs counter to the large body of evidence that supports continuity in the local population between the Late Chalcolithic and Early Bronze I. Data on the widespread occurrence of ‘grave circles’ that could be interpreted as sites of primary burials is interesting, especially in the recognition of the three ecological areas of the circles but there are too many uncertainties concerning the dating of these ‘monuments’ and their function. I am left with re-stating our original hypothesis of mobile pastoralists but would now lean to a more nuanced expression of the relationship of pastoralists and sedentary or semi-sedentary agriculturalists akin to the complex relationship of these groups expressed by Prag in her interpretation of the ritual landscape of the dolmens and burial fields north of the Dead Sea (1995: 84).

Overall, the consideration of the features associated with these three cemeteries of the southeastern Dead Sea plain reinforces the notion that the EB I peoples looked upon this area as a ritual landscape, a prime burial area for the transition of their dead to a more permanent abode.

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A Symbol of Peaceful Coexistence Umm ar-Raṣāṣ / Kastron Mefaa on the World Heritage List

On July 11th 2004 the national newspapers came out with the news that the ruins of Umm ar-Raṣāṣ, located in the eastern steppe of Mādabā and historically identified with Kastron Mefaa, were inscribed on the World Heritage List by UNESCO at the 28th Session of the World Heritage Committee held between June 28 to July 7 in Suzhou, China.

This prestigious international acknowledgment rewarded the joint efforts of the Department of Antiquities of Jordan and the Franciscan Archaeological Institute on Mount Nebo that started archaeological excavations at the ruins, located 30km east of Mādabā[1].

This venture started in summer 1986 with the discovery of the amazing floor mosaic at the Church of Saint Stephen, dated to the eighth century or Umayyad period, with architectural representations of eight cities of Palestine, starting with a vignette of the Holy City of Jerusalem, nine cities of Jordan, including ʻAmmān, Mādabā and Kastron Mefaa, and ten cities of Egypt starting with Alexandria.

The Greek inscriptions made it possible to identify the ruins of Umm ar-Raṣāṣ with the historical city of Kastron Mefaa[2]. The name of the ancient town appears twice in the main inscription in the nave, and for a third time labeling the architectonic plan of the city itself, which is depicted among the cities of Transjordan. Later on, the name of Katrom Mefaa was found for a fourth time accompanying a double vignette in the mosaic floor of the Church of the Lions.

The Moabite town of Mefaa, located on the high plateau of Moab, appears in the Bible where it is recorded along with Mādabā, Māʻīn, Nebo, Ḥisbān, al-ʻĀl and many other localities on the road, which connected central Moab to the northern region. In the Roman period, Kastron Mefaa was a military camp for Arab auxiliary cavalry in the Roman army under the command of the Dux Arabiae[3]. In the Byzantine period, according to the results of the archaeological excavations which continued until summer 2006, the town reached the peak of its urban development with domestic houses built inside and outside the walls of the Roman camp and a dozen churches, beautifully paved with floor mosaics, which date to the time of Sergius, Bishop of Mādabā, i.e. the end of the sixth century AD.

Kastron Mefaa flourished as a Christian city under the new Islamic government of the Umayyad and Abbasid periods, as primarily evidenced by the Church of Saint Stephen which was built and decorated at the time of Bishop Sergios II of Mādabā in 718AD. In 756AD, the pavement in the presbytery of the church was renovated and a new mosaic floor made at a higher level by a local team of mosaicists guided by Staurachios, son of Zada from Ḥisbān, and his colleague Euremios. The building of the church at the time of Job, Bishop of Mādabā,

[1] For the texts relating to the history of the explorations at Umm ar-Raṣāṣ, Brünnow, R.E. and Domaszewski, A. 1904-1909. *Die Provincia Arabia*. Strassburg, II, 63-67; Saller, S. and Bagatti, B. 1949. *The Town of Nebo (Khirbet el-Mekhayyat)*. Jerusalem, 245-251; Piccirillo, M. 1989. *Chiese e Mosaici di Madaba*. Jerusalem, 269-308, 1992. *The Mosaics of Jordan*. Amman, 209-337; Piccirillo M. and Alliata, E. 1994. *Umm al-Rasas - Mayfaʻah I. Gli scavi del Complesso di Santo Stefano*. Jerusalem.

[2] Piccirillo, M. 1990. L'identificazione storica delle rovine di Umm al-Rasas-Kastron Mefaa in Giordania. *Biblica* 71: 527-541.

[3] Eusebius, bishop of Caesarea on the Sea metropolis city of the Roman-Byzantine Province of Palaestina, knows a unit of the Roman army stationed on the edge of the desert at Mephaat (*Onomasticon* 128, 21), a locality which the historian identifies with the Levitical city of refuge of *Mepha'at* in the territory of the tribe of Reuben on the *mishor Moab* (Joshua 13, 21; 21, 37; Jeremiah 48, 21). The *Notitia Dignitatum* records that *equites promoti indigenae*, auxiliary troops of the Roman army, were stationed in the camp of *Mefaa* under the command of the *Dux Arabiae*.

was funded by several local benefactors, among them Kaioum, Abbot of the Monastery of Moses at Mount Nebo. The church provides historical evidence for a flourishing urban Christian community on the steppe of Jordan during the eighth century: a period of peaceful co-existence between the Christian population and the Islamic authorities.

Kastron Mefaa was known as Mayfa'ah in Arabic. The town is mentioned in the *Sirat al-Rasūl*, the first biography of the Prophet Muḥammad, which has come down to us in its extant form from the hands of Abū Moḥammad Abd al-Malik bin Hishām (died 834AD), who edited materials originally assembled by Mohammad bin Isḥāq (died 768AD)[4]. A section of the book tells the stories of four men who, just before the coming of Islam, broke with the polytheism of the Quraish in Mecca. They were representatives of the famous *ḥunayfa*, or pre-Islamic Arabian monotheists in the terminology of the Qur'an. Three of them became Christians, one of them Zayd bin Amr bin Nufayl, "stayed as he was: he accepted neither Judaism nor Christianity". As for the other three, Zayd bin Amr "had determined to leave Mecca to travel about in search of the *ḥanafiyyah*, the religion of Abraham". After a long journey through the Persian Empire and Syria, in the Byzantine Empire "where he was questioning monks and rabbis" about the *ḥanafiyyah*, he arrived at Mayfa'ah in the land of al-Balqā' in the territory of Mādabā, where he received, as an answer, a monk's prophecy about the future mission of Muḥammad.

Between 1987 and 1998, a Swiss team from the Max Van Berchem Foundation of Geneva joined efforts with our team for investigation of the ruins inside the castrum[5]. Still working at the site are the Department of Antiquities of Jordan and the archaeologists of Mount Nebo, whose work is funded by the Franciscan Custody of the Holy Land and the Italian Ministry of Foreign Affairs.

Excavation of the Ruins 1986-2006

The Christian character of the Byzantine-Umayyad period ruins of Umm ar-Raṣāṣ / Kastron Mefaa is highlighted by the four large ecclesiastical complexes excavated by our mission, of the Franciscan Archaeological Institute, in the northern outer quarter of the city and the Twin Churches, excavated by the Swiss Max Van Berchem archeological mission near the eastern wall of the castrum (FIG. 1).

The sacred edifices so far identified and partially excavated include four in the castrum and 10 in the outer quarter. Recently, to the church at the base of the tall tower, we have had to add another small chapel identified in the fields south of a small two-floor building, with a fortified door closed by a

1. Umm ar-Raṣāṣ / Kastron Mefaa: the excavated part of the northern quarter (drawing by C. Pappalardo).

[4] Griffith, S.H. 1994. Mayfa'ah: un sito dimenticato nella primitiva tradizione islamica. Pp. 51-54 in M. Piccirillo and E. Alliata (eds.), *Umm al-Rasas - Mayfa'ah I. Gli scavi del Complesso di Santo Stefano*. Jerusalem.

[5] Bujard, J. 1992. Les églises géminées d'Umm er-Rasas. Fouilles de la mission archéologique suisse (Fondation Max Van Berchem). *ADAJ* 36: 291-306.

rolling stone, which has been excavated by the Department of Antiquities. We owe the identification of the Byzantine-Umayyad cemetery west of the castrum, between the wall and the modern asphalt road, to looters.

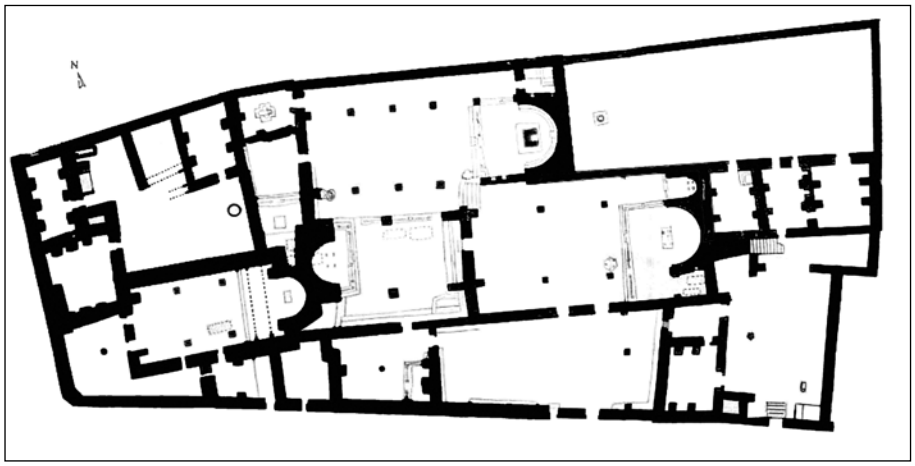
The five complexes which we have excavated in the outer quarter are — one after another in a north-south direction leading towards the northern wall of the castrum — the Saint Stephen Complex, the Saint Paul Complex, and the Church of the Lions Complex and — in a west-east direction along the wall of the castrum — the Tabula Ansata Complex and the Complex of the Reliquary Church, the latter being the last church excavated by the Department of Antiquities, which was completed by us. The dated mosaics range from the sixth to eighth centuries, providing us with an important opportunity to trace the historical development of liturgical furniture in the churches: the altar, ambo and offering table.

We are currently examining the so-called 'Palace' in front of the north gate of the castrum[6].

The Saint Stephen Complex (FIG. 2)

In summer 1986, work started on the north-east edge of the ruins, where a large and interconnected liturgical complex composed of four churches, two chapels and a baptistery room, was identified and explored. It comprised the two mosaiced churches, the Bishop Sergius Church to the north and the Saint Stephen Church to the east, with a paved courtyard between them which was later converted into a church — the Church of the Courtyard — by the addition of an apse on its western wall — and a fourth paved church in the south-west sector, the Church of the Niche. A funerary chapel and room with the baptistery basin were added on the west side of the Bishop Sergius Church. A small chapel, the Chapel of the Column or Chapel M, was built in the Umayyad period on the south side of the Church of the Courtyard. The complex was enclosed within a continuous wall[7].

The main entrances to the complex were from the south. Through a double door, one could cross a stone-paved courtyard and enter the church of St. Stephen, or one could enter a second room on the west side and descend to the Courtyard church. A chancel screen separated this church from the Bishop Sergius Church. Through the main entrance of the Bishop Sergius Church, one entered a mosaiced room between the baptistery on the north side and a funeral chapel on the south. The cruciform basin of the baptistery, which was covered with a waterproof reddish plaster, was badly damaged during a secondary re-use of the room. The liturgical purpose of this new church, with its apse orientated to the west, can be explained by the two barrel-vault tombs of the funeral chapel which continued to the east under the presbytery of the Courtyard Church. This funereal character was emphasised by the finding of two multiple tombs below the floor slabs of the church itself. Several women were buried in the tombs, some wearing bracelets, rings and necklaces with bronze crosses. In the latest phase, the double door of the Courtyard Church was blocked and the adjoining room converted into a poor cha-



2. The Saint Stephen Complex with the four churches of Saint Stephen, Bishop Sergius (with the baptistry), the Courtyard Church and the Edicule Church.

[6] Umm ar-Rasas 2005. Excavation Report, Ricerca Storico-archeologica in Giordania, XXV (2005). *LA* 55: 491-498; Umm ar-Rasas. The XIXth Archaeological Campaign 2006. *LA* 56: 568-572; Pls 44-46.

[7] Piccirillo, M. and Alliata, E. 1994. *Umm al-Rasas - Mayfa'ah I. Gli scavi del Complesso di Santo Stefano*. Jerusalem.

pel with reused materials (Chapel of the Column or Room M; see also above).

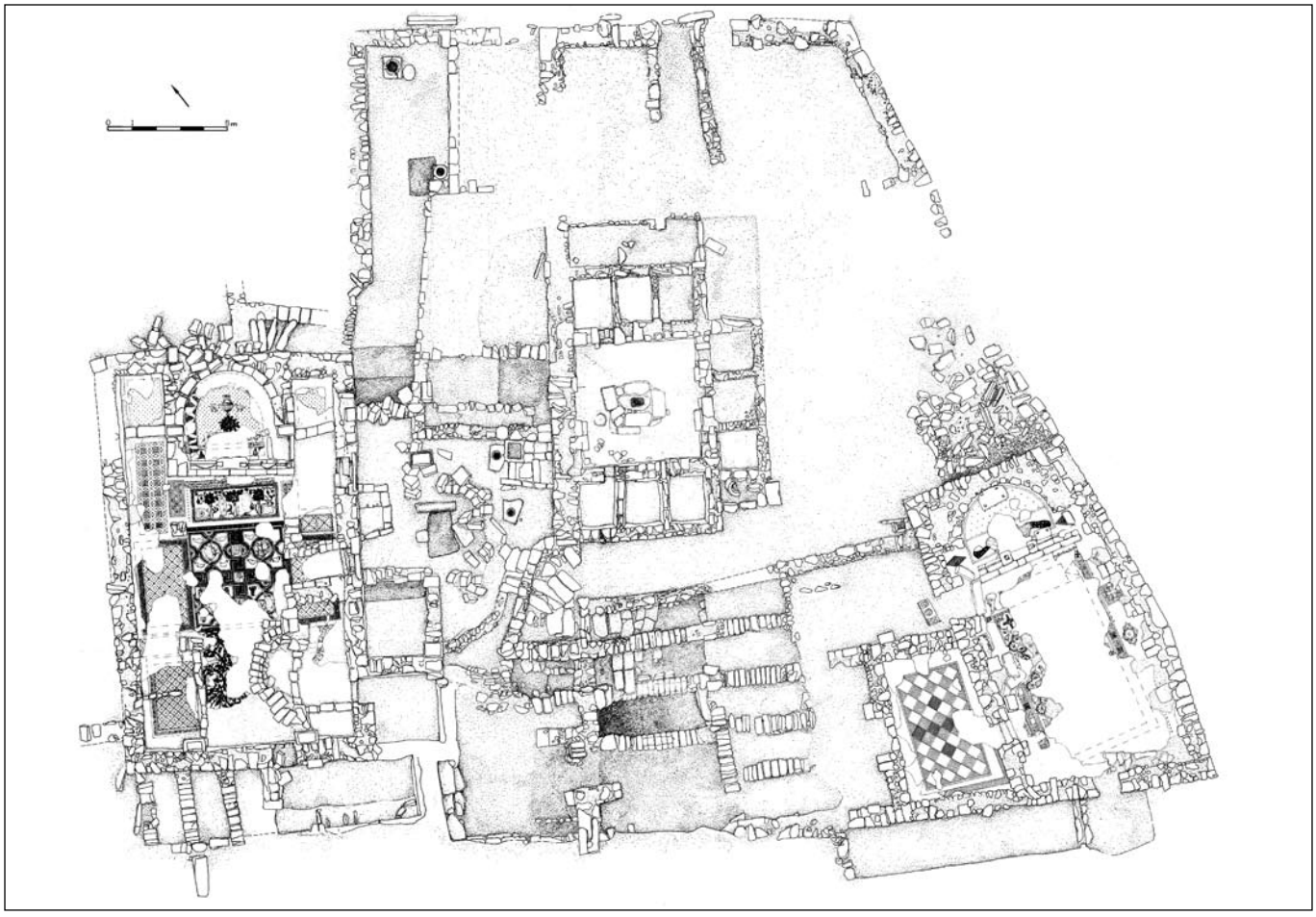
The Church of the Niche was slightly isolated from the other three churches and had its own entrance at the south-west corner of the complex. A courtyard with cistern, situated to the north of the Church of the Niche, was reached from inside the town through a tunnel which passed below the presbytery of the church. In a tomb excavated under the paved floor of the church, we found several metal, wood and glass objects in a straw basket, possibly the beauty case of a lady buried there.

The main changes to this complex, which was built in the sixth century, took place during the Umayyad period. It was abandoned towards the ninth-tenth century, on the basis of the pottery found under the collapse of the main structures. One of the main results of these excavations was the realisation that the northern walls of the ecclesiastical complex were used as a defensive wall of the urban outer quarter, a detail of town planning highlighted in the representation of the town on the mosaic floor of the Church of the Lions.

The Saint Paul Complex (FIG. 3)

Having brought the greater part of the Saint Stephen Complex to light, excavations continued inwards towards the south within the urban area delimited by the Saint Stephen complex to the north and the perimeter wall of the castrum to the south. A survey of the emerging walls showed that the area had two ecclesiastical complexes at its centre.

The church of the second complex, buried under a thick layer of accumulated rubble but still predominant because of its raised position in the centre of the ruins, was easily identifiable from its apsed form. The name was taken from an invocation to the Apostle Paul incised on a roof tile recovered from the collapse deposit. The ecclesiastical complex comprising the Church of Saint Paul and Chapel of the Peacocks is part of a block of buildings surrounded on three sides by



3. The Saint Paul Complex with the Church of Saint Paul to the north, the Chapel of the Peacocks to the south and the wine press with cellars in the centre (B. Steri).

roads[8]. To the north, this block opens out on to a small street which runs along the edge of the Saint Stephen Complex and which seems to have been the natural line of communication between the two ecclesiastical complexes.

The plan of the church is that of a normal basilical church, with a raised apsed presbyterium. It had a double entrance on the south wall, shifted slightly to the east, which led to a covered portico supported by three arches, which rested on two columns and pilasters. A third door on the same wall, close to its south-west corner, led from the church into a service area which, externally, was a continuation of the portico yet distinct from it. The floor of the church was mosaiced in its entirety.

In the mosaic of the apsed presbyterium, two bulls facing each other across a fruit-laden tree were set on a geometric composition created by a grid of flowers. The central nave is divided into three separate panels. In the eastern rectangular panel the benefactors of the church, Sergis, Rabbus and his son Paul, were portrayed. Iconographically, the central panel is the most elaborate. It has the personification of the Earth placed at the centre of the composition, surrounded by the personifications of the four Rivers of Paradise accompanied by their names — Ghion, Phison, Tigris and Euphrates. In the western panel, four registers of vine scrolls show the usual vintage and pastoral scenes.

The Chapel of the Peacocks is built at a lower level than the road, which stretches along the south wall. On the evidence of the odd deviation of the south wall of the chapel in a north-westerly direction, it could be that the road pre-existed the chapel, which was built on the edge of the property in the south-west corner. The door in the facade opened onto the road. The internal level of the chapel was reached by a row of steps.

The chapel comprised a prayer hall with apse and a northern service room with its own door near the north-west corner of the chapel. A second door in the north wall connected the chapel with an inner paved courtyard to the north. In the apsed area, two items of liturgical furniture were still preserved: first, the base of the altar against the curve of the apse and, second, the base of the offering table, near the chancel screen on the south side of the entrance to the sanctuary. In the northern service room, we noticed a small columnet inserted in the mosaic floor near the east wall, possibly the base of a table.

Evidence for the reuse of the chapel as a dwelling before the collapse of the roof, included a *ṭābūn*-type oven built in the south-west corner of the chapel with sherds of a cooking pot of rough black ware, as already known from the Church of the Lions.

In the inner courtyard, between the two sacred edifices, a large winery was excavated. It comprised a wine press with a central roofed, square room surrounded by nine small wine rooms, with two underground storage cellars on the south side that were linked by a stone stairway. On the basis on the stratigraphy, the winery was constructed in the Umayyad period. The grapes may have been grown in the orchards visible around the city and in the terraced valley, which separates the urban settlement from the high tower to the north.

The Church of the Lions Complex (FIG. 4)

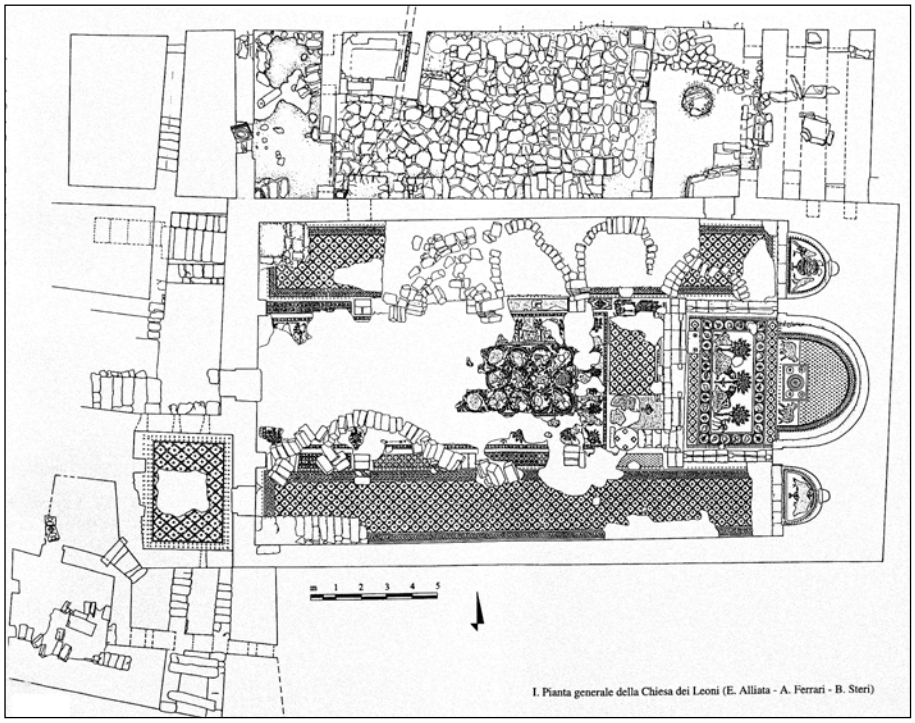
The third complex is that of the church, which we have called the Church of the Lions, inspired by the two superb animals depicted in the floor mosaic in front of the altar. This is only a detail within the rich and beautiful design of the floor, in which a second double vignette of Kastron Mefaa is depicted[9]. The Church of the Lions is the only example in the entire Mādabā region of a three-apsed church with a diakonikon room placed on the front facade.

The church, which was covered with a double series of arches in east-west direction, occupies the south-east sector of the ecclesiastical complex. The door in the central facade led to the vestibule and, up a flight of five steps, to the higher central courtyard of the complex, which was surrounded by several rooms. Two doors in the church's north wall led to a stone-paved yard at the centre of the north wing of the complex, which opened on to the inner road. A stone staircase, added to the south wall in the south-western corner, allowed access to the south yard and to the road that ran along the complex on this side.

A probe carried out in the vestibule area, both inside and outside the main door of the church, exposed several tombs of the Byzantine period and led us to conclude that the church was built in a funerary area. Two series of tombs, following one after the

[8] Piccirillo, M. 2002. The Ecclesiastical Complex of Saint Paul at Umm al-Rasas - Kastron Mefaa. *ADAJ* 46: 535-559.

[9] Piccirillo, M. 1992. La Chiesa dei Leoni a Umm al-Rasas - Kastron Mefaa. *Liber Annuus* 42: 199-225.



4. The Church of the Lions Complex (E. Alliata, B. Steri and A. Ferrari).

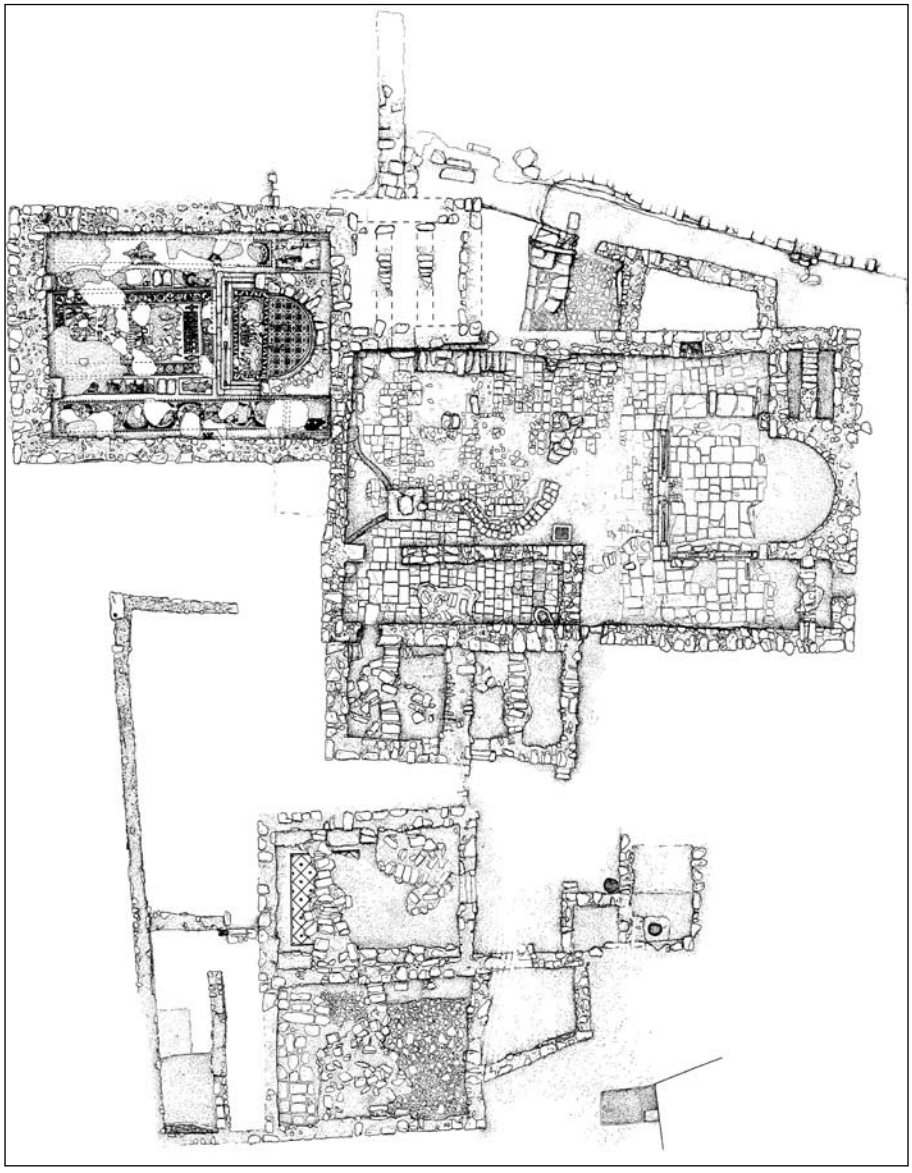
other in an east-west direction, were still in use with the church on the north-west corner of the vestibule.

The Tabula Ansata Church Complex (FIG. 5)
The small church, which we later called the Church of the Priest Wā'il, was among the first sacred Christian edifices identified by explorers amongst the ruins. The apsed building was, to a certain extent, isolated on the south-west edge of the area beyond the walls of the castrum. Upon closer examination of the visible remains, the church was found to form part of an ecclesiastical complex which included, to the south-east, a larger church which we called the Church of the Tabula Ansata after an inscription framed in a tabula incised on a gypsum slab in the paved floor of the presbyterium[10]. The Tabula Ansata Complex developed during the sixth-seventh centuries in the vicinity of a two-storey tower constructed on the west edge of the ruins of the quarter outside the north-west corner of the castrum.

Originally, the Tabula Ansata Church was isolated in the centre of an open courtyard that was skirted to the south by a small road leading into the quarter. The rooms on the south wall were part of the church. Built in the sixth century, it was restored in the first half of the seventh century. The floor mosaic in the presbyterium, the oldest so far found amongst the ruins, had been covered and replaced with slabbed flooring. In a continuation of this work, the entire church was paved using gypseous stone, during which the mosaic surface, that seems not to have extended beyond the second series of pilasters in the nave, was meticulously removed.

In 586AD, accepting the date of the mosaic as a point of reference, the Church of the Priest Wā'il was added. This second church was partly set against the facade of the Tabula Ansata Church and partly against the corresponding wall of the tower. The figurative parts of the church's mosaic floor were seriously damaged during the iconophobic intervention. Three oxen were pictured in the presbytery panel, two on the right and one on the left, which faced each other across a spectacular tuft of acanthus from which sprouted vine shoots with leaves and bunches of grapes. In the central carpet, despite the mutilations, one can distinguish four scenes set at different levels. At the top and in association with the last line of the inscription ("This is the priest and his servant") there is a person in a tunic and cloak, with raised hands, set in a central position who is receiving or giving a twig to

[10] Piccirillo, M. 2003. La chiesa della Tabula Ansata a Umm al-Rasas - Kastron Mefaa. *LA* 53: 285-324; Tavv. 1-24, 1993. La Chiesa del Prete Wa'il a Umm al-Rasas - Kastron Mefaa in Giordania. Pp. 313-334 in F. Manns and E. Alliata (eds.), *Early Christianity in Context. Monuments and Documents*. Jerusalem.



5. The Complex of the Tabula Ansata Church with the Church of Priest Wa'il (B. Steri and S. De Ruvo).

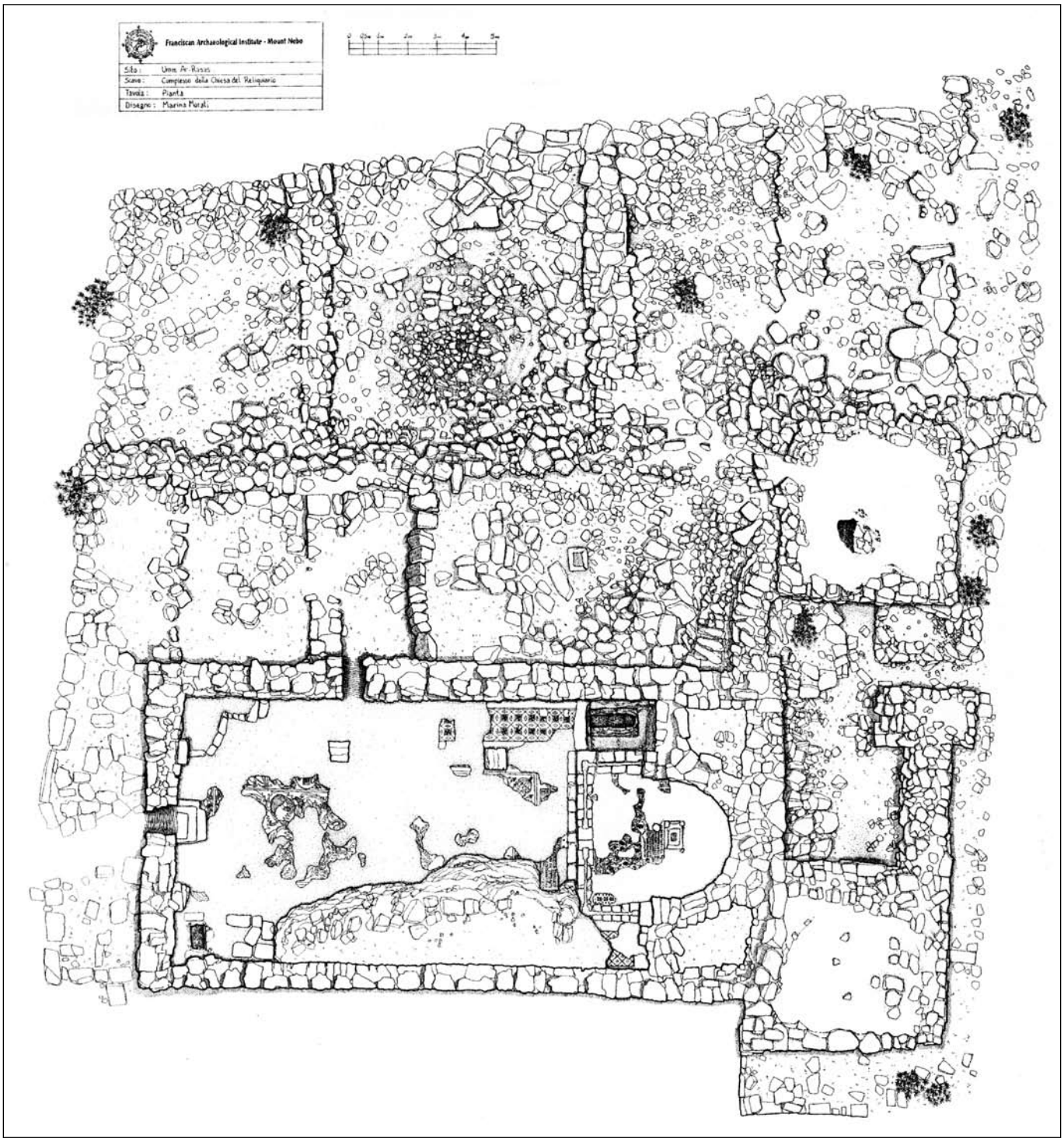
another character on the right, who is riding a deer of which the branched antlers remain visible. This is probably a portrait of the Priest Wa'il rendered using unusual iconography. On the left the outlines of two characters, both having a raised hand holding a wand, can be seen.

A carriage covered with a red awning, pulled by a horse moving among long stemmed flowers, follows. It is thought to represent the arrival of relics at the city[11]. On one of the intercolumnar panels were depictions of the busts of the Seasons, divided by architectonic motifs.

The Complex of the Reliquary Church (FIG. 6)
Of this large complex, so far only the Church has been explored, in summer 2004[12]. A Greek inscription in the floor mosaic, west of the altar, has preserved the names of the main benefactors of the church, all citizens of Kastron Mefaa already known from inscriptions in other churches excavated in the town. In the main inscription in the nave of the church, the name of Sergios Bishop

[11] A horse drawn carriage is depicted in the Michaelion at Huarte in Syria clearly referred to the transportation of relics (P. and M. T. Canivet, Huarte. Sanctuaire chrétien d'Apamène (IVe - VIe s.), Paris 1987, I, 216-220; II, Pl. CXX).). I owe this reference to my friend P.-L. Gatier.

[12] Piccirillo, M. 2006. La Chiesa del Reliquiario a Umm al-Rasas. *LA* 56: 375-388; Pappalardo, P. 2006. Ceramica e piccoli oggetti dallo scavo della chiesa del Reliquiario a Umm al-Rasas. *LA* 56: 389-398.



6. The Complex of the Reliquary Church (M. Marina).

of Mādabā and the year 586AD could be read, together the names of benefactors, such as Wā'il son of Amrilios and Abosobeos, members of the Arab community of the town.

From the few remains which survived destruction after the abandonment of the church, it is possible to reconstruct the general design of the mosaic floor, which follows the designs of other churches built in the town during the same period: the Church of Bishop Sergios dated 587AD, the Church of Saint Sergios inside the walls and the Church of Priest Wā'il, both built in the same year, 481 of the

Provincia Arabia, i.e. 586AD. It is another example of the splendid artistic achievements attained in the territory of Mādabā during the second half of the sixth century.

The Two Vignettes of Kastron Mefaa and the Urban Setting of Kastron Mefaa

Archaeological excavations have shed light on the development of the town from the Moabite Iron Age II period to the Umayyad-Abbasid period.

Evidence of the Moabite settlement of the seventh and sixth century BC is restricted to a few sherds found under the paved floor of the Chapel of the Column, a basalt base found reused in the Church of Bishop Sergius and a scaraboid found in a tomb along the facade of the Church of the Lions.

The excavations of the Max van Berchem Foundation team inside the walled castrum, (which extends 158m. by 139m., with a wall 2m. thick with 18 buttresses, five each on the north and south sides, and four each on the east and west sides) have clarified the military nature of the castrum built at the end of the third century. It had a gate between two towers in the middle of the eastern wall, with two more gates on the north and east walls respectively[13].

A Latin inscription found on the east side of the Church of Saint Stephen, along with Thamudic graffiti, bear witness to the presence of the Roman Army and its Arab auxiliaries (*equites promoti indigenae* of the *Notitia Dignitatum*, possibly a detachment of the *Legio IV Martia* based at al-Lajjūn 35km. to the south-west).

To this period also belong several milestones of Diocletian's era, reused in the walls of the Tabula Ansata Church Complex. They are the first clear evidence of the so called *via militaris* hypothesised by some scholars working in the area.

The main urban development of Kastron Mefaa, which gradually became a town, or fortified village, inhabited by Arab families after it was abandoned by the Army, can be divided into two periods. This parallels developments at other castra in the region such as Khirbat as-Samrā, al-Ḥumayma, Umm al-Jimāl, Zīzyā and Umm al-Quṭṭayn[14]. The first period should be dated from first half of the fifth century, when the army left, to the first half of the sixth century. It can be seen as a transitional period of occupation within the existing structures by a semi-nomadic population.

The second period of building activity started in the second half of the sixth century, when the first churches were built, mostly at the time of Bishop Sergius of Mādabā who was in seat from 574 to 603AD. The inscriptions of the mosaic floors bear witness to a settled Christian population of Arab origin, as evidenced by their names, with their clergy and civil officials drawn from the territory of the Episcopal city of Mādabā.

The building activity inside and outside the castrum gave rise to the town, which reached its maximum extent in the Umayyad Period. As at other sites, the main characteristic of the settlement was the occupation of the public space inside the castrum and the expansion of the quarter to the north with ecclesiastical complexes and houses mainly composed of one or two rooms with flat stone roofs, supported by arches flanking the side of an inner courtyard. Rainwater was collected in private cisterns and a public water reservoir.

The orchards and fields on the outskirts of the village, together with the large wine press we excavated in the courtyard of the Saint Paul Complex, constitute historical evidence for the economy of the population, which was based mainly on sheep and goat herding and agriculture. In this agricultural context, two structures of particular interest are preserved in the fields. The first is situated on the eastern slope of the valley to the north of the inhabited area, while the second, better preserved and comprising a two-storey house with a nearby chapel, is found to the south-east of the tall tower, situated as usual on the rocky slope which emerges towards the bottom of the valley.

The evidence for the late occupation of the churches after their abandonment is archaeologically important. The coarse black (or Bedouin) ware found in the rooms built within the churches date this occupation to the ninth-tenth century.

In the Church of Saint Paul, the newcomers entered the abandoned sacred edifice through the western door on the south wall. Inside the church, they built a rectangular room between the two

[13] Bujard, J. 1995. La fortification de Kastron Mayfa'ah/Umm al-Rasas. *SHAJ* V: 241-249. Amman.

[14] Hamarneh, B. 2003. Topografia cristiana ed insediamenti rurali nel territorio dell'odierna Giordania nelle epoche bizantina ed Islamica, V-IX sec, Roma: 56-58.

southern pillars and a wall with a central door on the north wall. A long stone lintel decorated with crosses in relief was reused in the foundations of the east wall of the room. A small corridor divided this room from a second eastern room, constructed in the aisle between the south side of the presbyterium, apse and south wall of the church. A third, smaller room was built outside the church with an entrance from the east, and an oven was used inside the church in its north-west corner. The collapsed remains of the church covered these later structures[15].

In the Tabula Ansata Church, the newcomers occupied the abandoned church by building a new room along the south wall with access to the cistern in the centre of the church. Two ovens were used, one in the south-west corner of the church, the second near the steps leading to the Church of the Priest Wā'il to the west. A stone basin and plaster basin were recovered from this house[16].

In light of this historical development of the ruins at Umm ar-Raṣāṣ / Kastron Mefaa, one could go further in studying the vignette of Kastron Mefaa and attribute to the mosaicist the intention of describing the urban setting of the the town and the churches that existed at that time within the castrum (the double church of the Saint Sergius complex) and in the northern quarter (the Saint Stephen complex).

The vignette of Kastron Mefaa was depicted in the mosaic floor of the Church of the Lions (end of the sixth century) and in the mosaic floor of the nave of the Church of Saint Stephen (first half of the eighth century); both are double vignettes.

In the Church of the Lions the likelihood is that the vignette was part of a scene, possibly a hunting scene, which unfolded along the step up to the level of the ambo but that it was later disfigured during the iconophobic crisis.

In the upper vignette, we have a polygonal plan of a city surrounded by high walls and towers with battlements. Steps precede an arched entrance. Black lines separated by yellow ones serve to identify the various storeys of the towers, which have a double window in each storey. Two churches with red sloping roofs, both viewed frontally, can be seen within the walls. These are joined by a colonnade with balcony and a possible hint of stairs at the front. A schematic building with doors or windows between two side-shutters abuts the south church.

The second vignette is also surrounded by walls and towers with battlements, which are kept low and adjoin the previous vignette. Several arched doors, depicted frontally, can be seen amongst the towers along all the circuit. Along the internal perimeter of the walls at least three churches are represented, with red sloping roofs. Two adjacent churches are in the foreground and another two are isolated on the sides. The isolated church to the left has two additional doors in the side wall as well as the door in the central facade. The church in the foreground is depicted with three levels of windows on its side wall. A column on a three-stepped base rises at the centre of an otherwise empty vignette, rendered with white tesserae. The column is crowned with a capital and a cross.

The vignette, with its descriptive naturalistic character refers to the bi-partite urban plan of Kastron Mefaa made up of the Roman castrum and the neighbourhood that developed to the north beyond its walls. It clarifies the much more schematic vignette found in the mosaic in the Church of Saint Stephen, where a church inside the walled castrum is clearly visible, the outer quarter being exemplified with the church of Saint Stephen.

The iconographic meaning of the column remains unclear. In both of the Kastron Mefaa vignettes, the column is placed at the centre of the quarter outside the walls. One might suspect a Christianised memorial of the castrum's military past borrowed from the vignettes we find in the codices of the *Notitia Dignitatum*. It is also a feature found in the vignette of the Holy City of Jerusalem in the Mādabā mosaic map, and in the mosaic floor of the Church of the Martyrs at Taybat al-Imam, north of Hama, where a column on a base is depicted near the vignette of a high building.

These historical and artistic discoveries are worthy of the honor bestowed by UNESCO on the ruins of Umm ar-Raṣāṣ / Kastron Mefaa, which remains a symbol of peaceful co-existence between people.

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[15] Piccirillo, M. 1997. La Chiesa di San Paolo a Umm al-Rasas - Kastron Mefaa. *Liber Annuus* 47: 375-394; Sanmorì, C. and Pappalardo, C. 1997. Ceramica dalla Chiesa di San Paolo e dalla Cappella dei Pavoni - Umm al-Rasas. *Liber Annuus* 47: 395-428.

[16] Abela, J. and Pappalardo, C. 1999. Umm al-Rasas. Campagna 1999. Chiesa della Tabula Ansata. *Liber Annuus* 49: 479ss; Piccirillo, M. 2003. La chiesa della Tabula Ansata a Umm al-Rasas - Kastron Mefaa. *LA* 53: 285-324; Tavv. 1-24.

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Human Presence / Absence in the Southern Segment of the Transjordanian Plateau

Abstract
The paper considers the archaeological and literary evidence for human presence/absence — from the Pottery Neolithic to the Modern period — in the territory from Wādī al-Ḥasā in the north to Rās an-Naqab in the south, i.e., the southern segment of the Transjordanian Plateau. The literary evidence is the Egyptian, Assyrian, Babylonian, and biblical as well as the epigraphical material from the territory itself. The archaeological evidence for this paper comes, primarily, from the findings of four survey projects that I carried out in the area between 1979 and 2007. The goal is to attempt to understand why there were periods during which there is evidence for seemingly intense occupation while in others there appears to be little human presence in the area.

Introduction

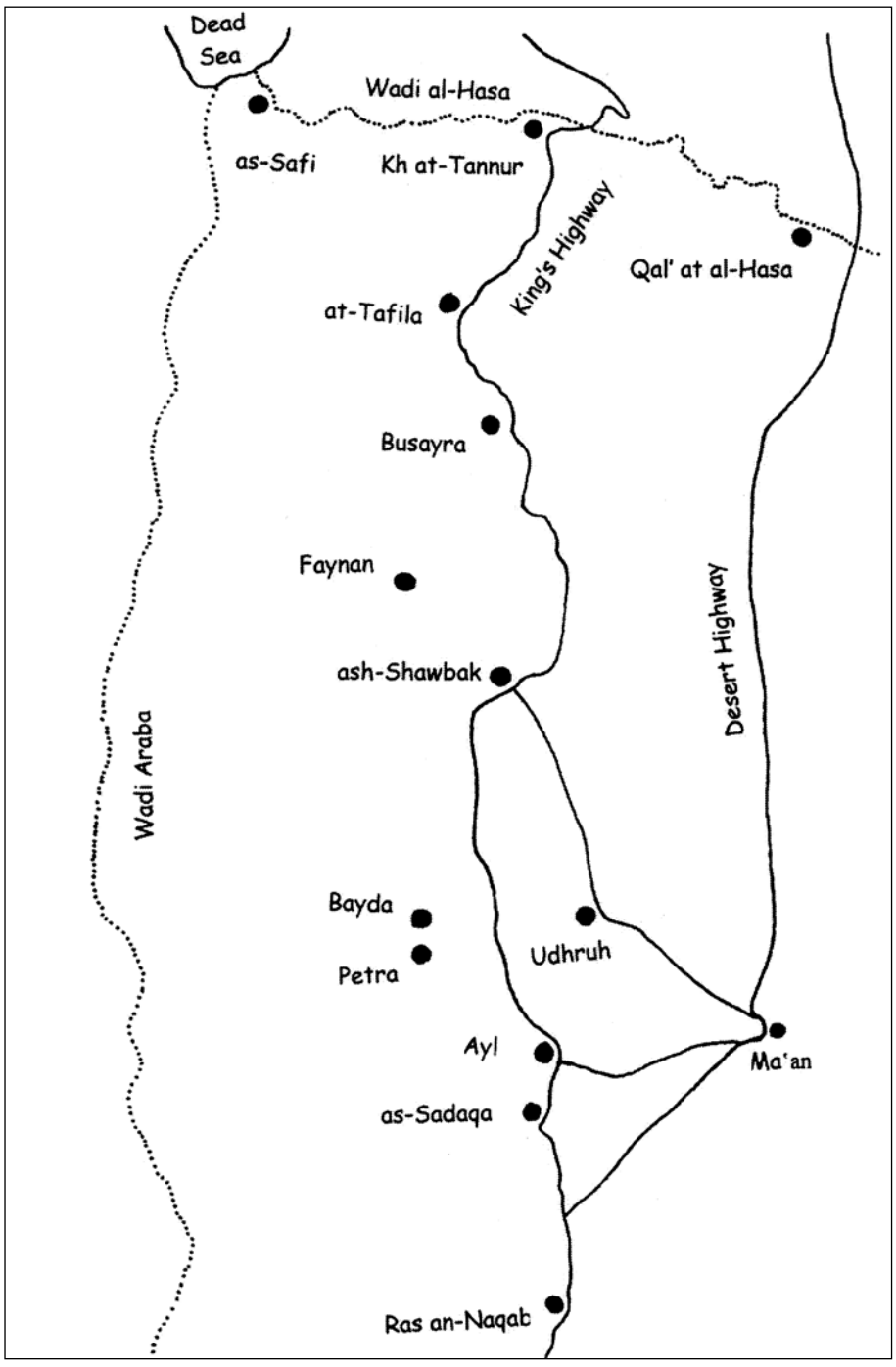
The area of interest is from Wādī al-Ḥasā in the north to Rās an-Naqab in the south, a distance of ca. 90km (FIG. 1). West-to-east the distance is ca. 55km in the north to ca. 39km in the south. The west-to-east distance in the north includes that portion of the southern Ghawrs and northeast ʻArabah between the western end of Wādī al-Ḥasā at aṣ-Ṣāfī in the north to the area of Wādī Fīdān in the south. Thus, the distance from west-east is much greater in the north than in the south. The entire area thus includes the southern segment of the Highlands at the Eastern Rim of the Wādī ʻArabah-Jordan Graben and the northeast segment of Wādī ʻArabah or a central-eastern section of the Wādī ʻAraba-Dead Sea-Jordan Depression (Bender 1974, 1975) (FIG. 2).

Between 1979 and 2007, I directed three survey projects, namely, "The Wadi al-Hasa Archaeological Survey" (1979-1983) (WHAS) (MacDonald *et al*. 1988), "The Tafila-Busayra Archaeological Survey" (1999-2001) (TBAS) (MacDonald *et al*. 2004), and "The Ayl to Ras an-Naqab Archaeological Survey" (2005-2007) (ARNAS) (MacDonald *et al*. 2005; 2006), in the southern segment of the Highlands at the Eastern Rim of the Wādī ʻAraba-Jordan Graben (Bender 1974: 6-11) or in the area that is known as the Edomite Plateau, i.e., the area between Wādī al-Ḥasā in the north and Rās an-Naqab in the south. In addition, I directed a fourth project, namely, "The Southern Ghors and Northeast ʻAraba Archaeological Survey" (1985-1986) (SGNAS) (MacDonald *et al*. 1992), on the east side of the Wādī ʻAraba-Dead Sea-Jordan Depression (Bender 1974: 6-11), between aṣ-Ṣāfī and Wādī Fīdān, the territory which is immediately to the west of that covered by the first two of the three, above-listed surveys.

Many others have carried out archaeological survey work and excavations in this same region. The results of their work will be considered peripherally. However, it is so vast that to include it all would require a book-length report rather than an article for a publication such as this one.

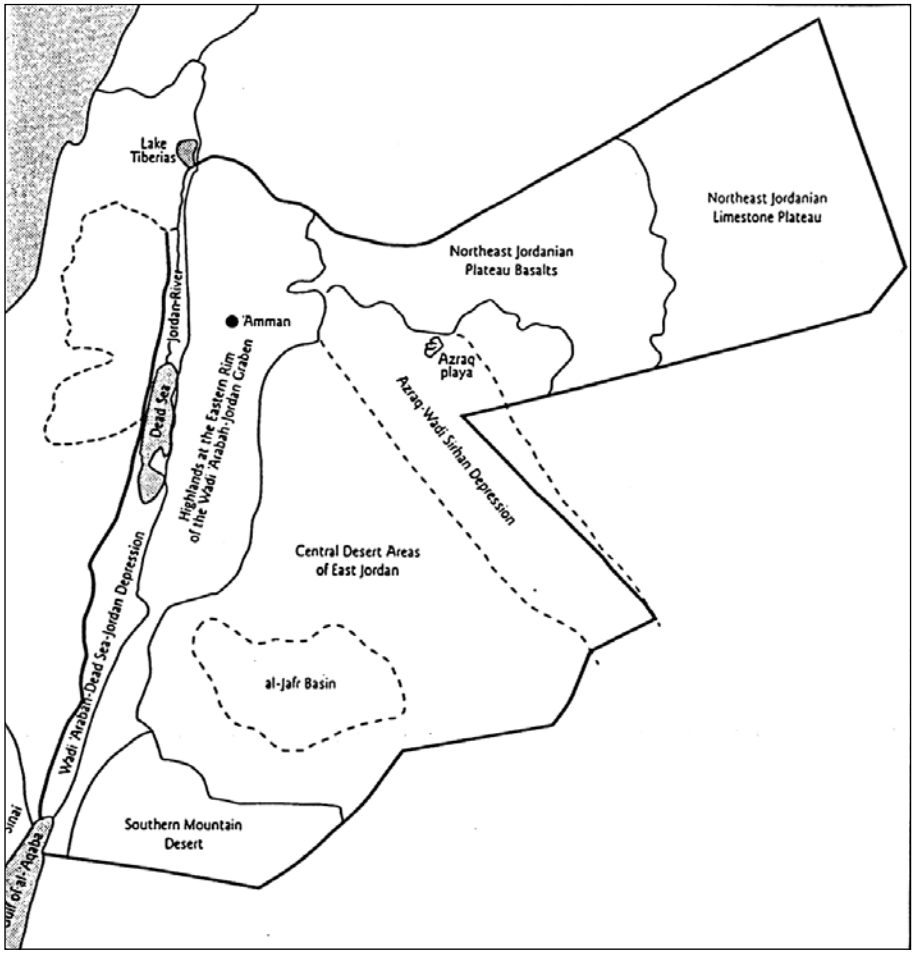
The intention is to say something about the evidence — literary and archaeological — for human presence/absence in the territory of interest for the periods from the Pottery Neolithic to the Modern period, i.e., from ca. 5500BC to the end of the Ottoman occupation of Jordan in AD 1917. The evidence for the earliest periods of that time span comes from archaeology. It is only in the last 4000 years that there is literary evidence for some of this long period of time.

The three plant geographical territories or regions of Jordan are present in the area of interest. They are the Mediterranean, the Irano-Turanian, and the Saharo-Sindian (FIG. 3). Each of these ter-



1. Area of Interest from Wādī al-Ḥasā to Rās an-Naqab.

ritories is characterized not only by its flora and vegetation but also by its climate and soils (Zohary 1962: 51). The Mediterranean territory is characterized by its sub-humid Mediterranean climate. Its average annual rainfall is 300mm or more. It is readily recognized by its flora and vegetation. It includes a long belt of the Highlands at the Eastern Rim of the Wādī ʻAraba-Jordan Graben. Its boundaries with the adjoining Irano-Turanian territory cannot be precisely drawn because the Mediterranean vegetation of the eastern and southern margins, which border on the steppes and deserts, has been subject to heavy human devastation. The Irano-Turanian territory encircles the Mediterranean from south, east and west. Its annual precipitation varies from 350 to 200mm. Agriculture in this territory is very poor, unstable, and almost entirely confined to plains and valleys (Zohary 1962: 51). The Saharo-Sindian territory includes areas in the east and south of the Transjordanian Plateau as well as a



2. Major Morphological Units.

narrow spur within Wādī ʻAraba, protruding northwards from the Gulf of al-ʻAqaba. The boundaries this territory shares with the Irano-Turanian territory are vague. The Saharo-Sindian has a typical desert climate with a short rainy season and a long, hot, dry summer. Annual precipitation varies from 25 to 200mm. Agriculture is altogether lacking except in oases or flooded wadis. Vegetation is extremely poor and mainly confined to depressions, wadis and runnels.

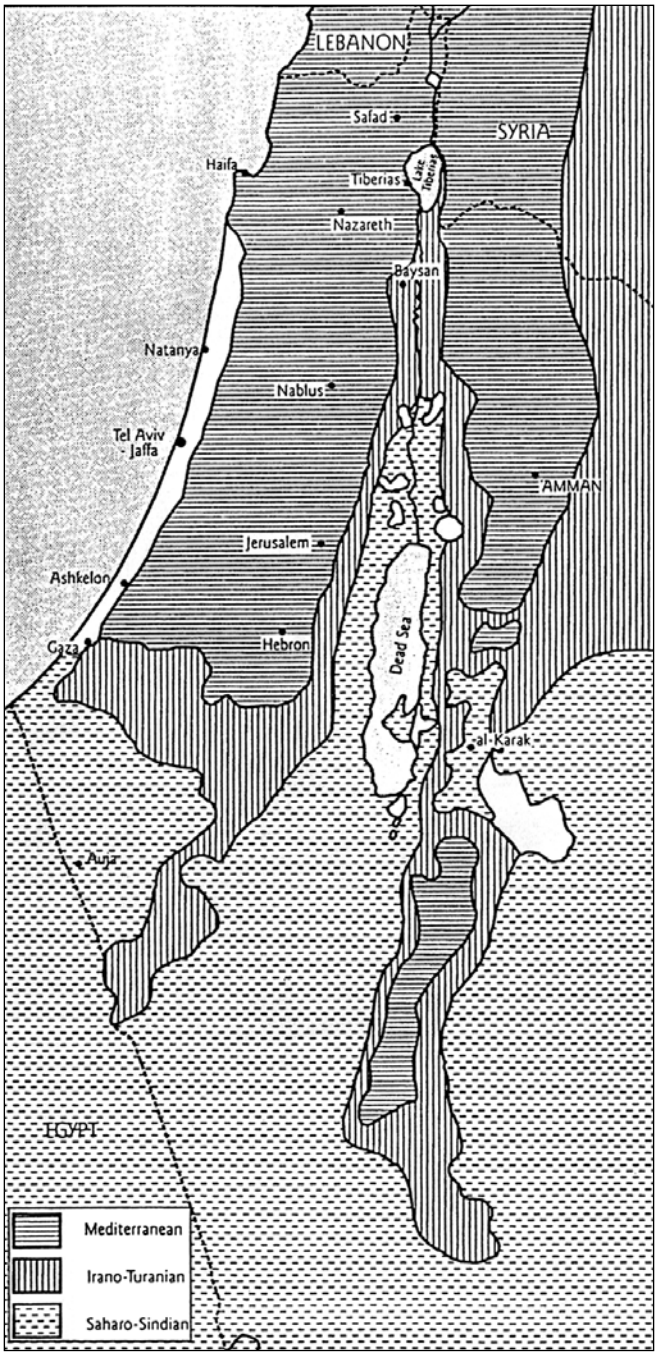
What must be noted relative to the above is that through time and with changes in climate there would have been shifts in the distribution of African vs. Asian biotypes. Thus, hunter-gathers, pastoralists, and farmers may have moved with these shifts in plant distribution.

If land use leads to degradation of resources such as arable soils, sites would be moved periodically to new areas with less-degraded resources (Hill 2006: 6). According to Kohler-Rollefson, it was landscape degradation that eventually led to the abandonment of ʻAyn Ghazāl in the Neolithic period (Kohler-Rollefson 1988; see also Rollefson and Kohler-Rollefson 1989, 1992).

Relative to Jordan as a whole, the area of interest is a peripheral one. And the findings of my various survey projects indicate this in the fact that "there were periods of 'filling up' and 'emptying out' in terms of human occupation" (Harlan 1988: 40). What we are probably witnessing today is what the area looks like when it is 'filled up' (Harlan 1988: 45). But as the archaeological evidence shows, there were certainly periods, and these will be also be highlighted, when this segment of southern Jordan was "emptying out".

Since the area of interest is one in which the natural resources are scarce, what is concluded about the presence and absence of human populations in it will not hold true for Jordan as a whole. As a result, the settlement patterns of the area for the various archaeological periods are not representative of the country.

A number of reasons/influences are generally set forth to explain shifting settlement patterns. These



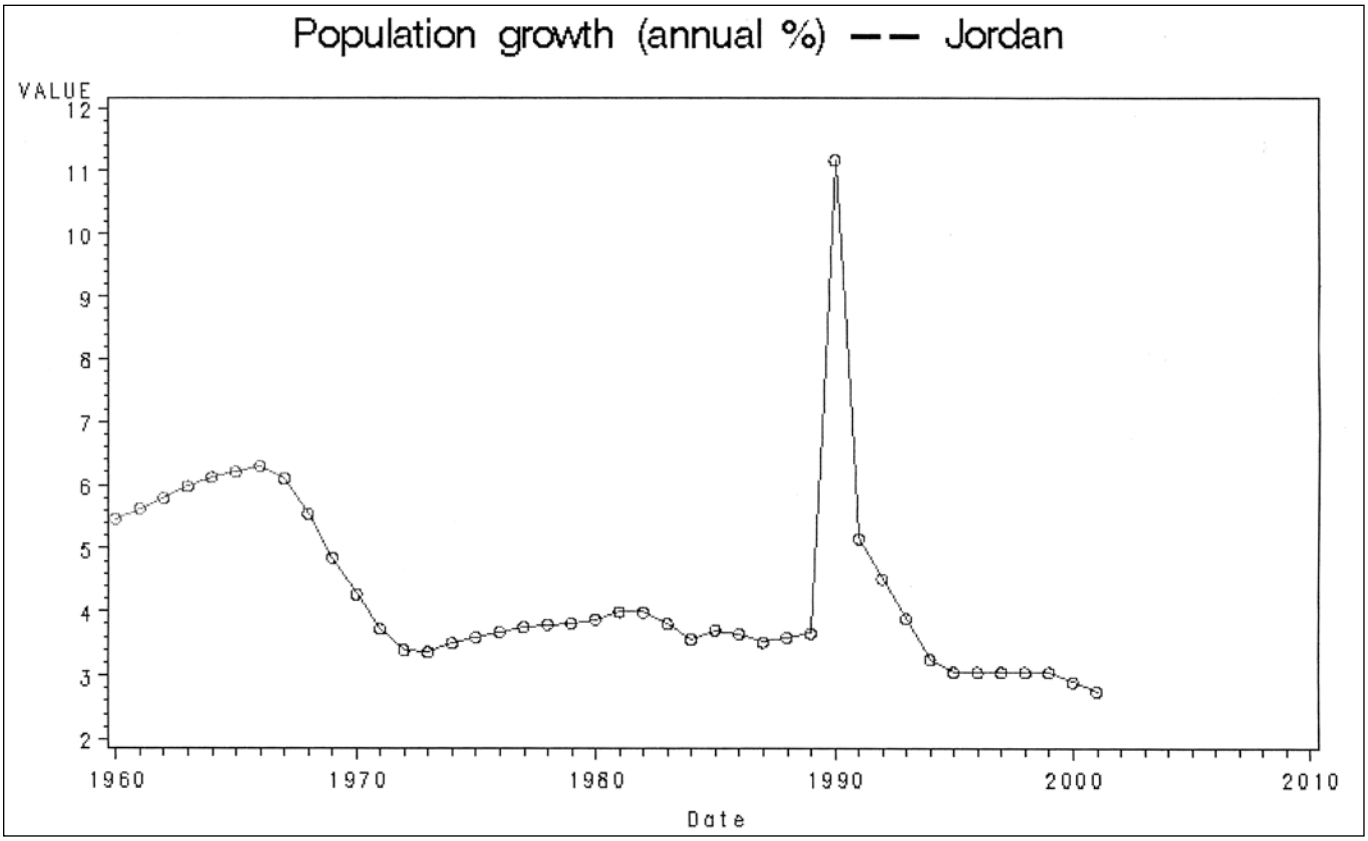
3. Plant Geographical Territories.

include climate, biotypes, changes in technologies, and availability or the lack of resources. However, other reasons/influences are also said to explain this shift. They include "attenuation of the socio-political organization", "commercialization", and "warfare" (Levy 1995: 241-43). Nevertheless, it was probably a combination of factors that led to periods of changes in human presence/absence in the area of interest.

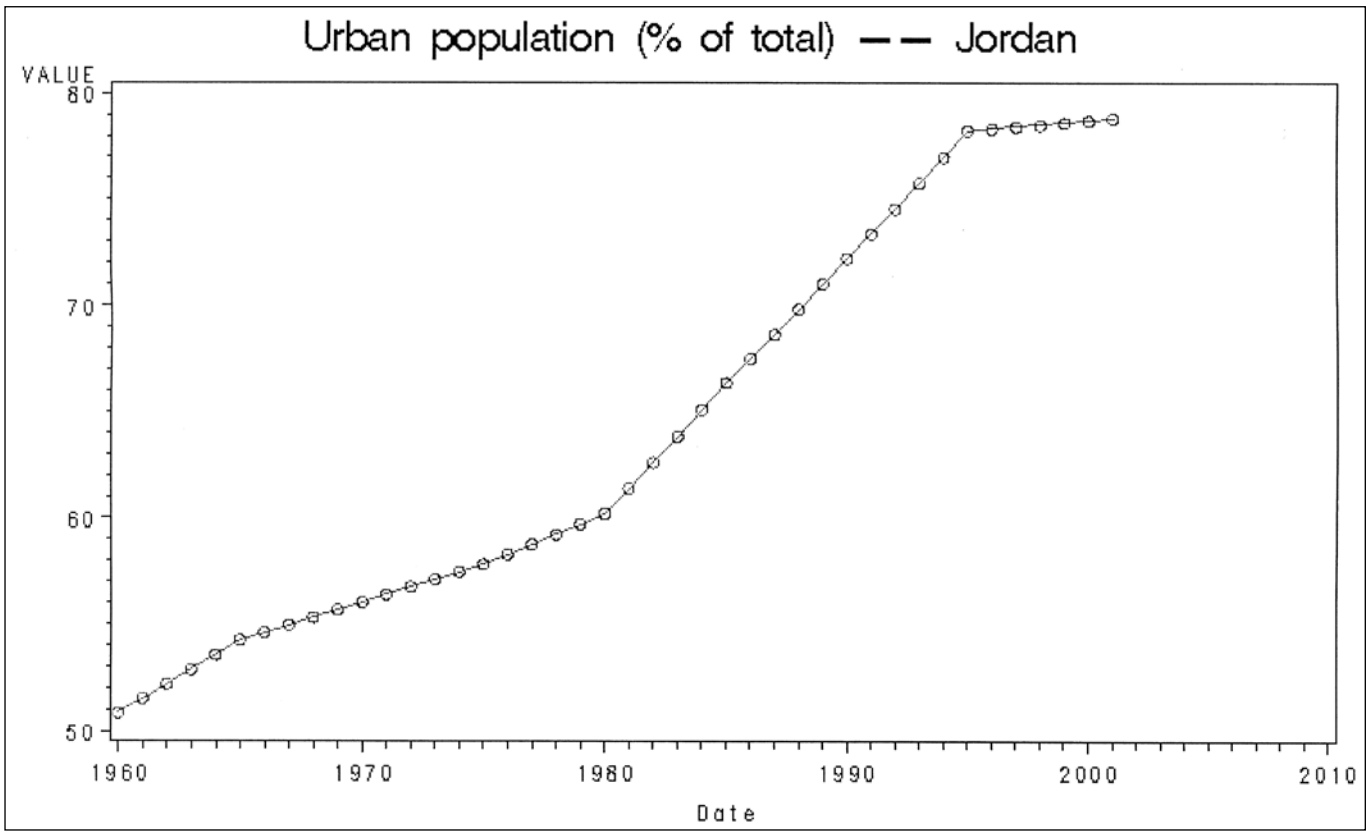
We may use the situation of the increase in population in Jordan over the past 200 plus years to help us understand why at certain times in the past there appears to have been an increase in population. For example, according to Kark (1984: 539, fig. 1.1), in the period from 1800-1914 the population of Salt increased from 10,000-19,990 while that of ʻAmmān from 5,000-9,990. Thus, the population in both places doubled in a period of a little more than 100 years. But the increase in Jordan's population in the last 100 years is even more dramatic. The population of Jordan was less than 400,000 in the 1920s (Salibi 1998) while the city of ʻAmmān, which was confined to two wadis in what is today the downtown area of the city, in 1914 had a population of ca. 10,000. In contrast, the population of Jordan is presently more than 6,000,000 while that of ʻAmmān is more than 2,500,000. These increases are due, to a large extent, to circumstances elsewhere. For example, the creation of the State of Israel in 1948 and the Six-Day War of June 1967 brought large numbers of refugees to Jordan. This increase in population continued with the civil wars in Lebanon in the 1970s and 1980s, the Iraq invasion of Kuwait in 1991, and the U.S.-led overthrow of Saddam Hussein in 2003 (FIGS. 4 and 5). Specifically, the number of refugees who came to Jordan in the period between 2003 and 2007 due to the situation in Iraq is estimated at 700,000-1,000,000. All these situations, outside the borders of Jordan and over which Jordan as a nation had little control, resulted in huge increases in population. Thus, in the recent past, the increase in Jordan's population is not due to improved environmental conditions, e.g., climate, improved technologies, and an increase in the availability of resources, but to other factors.

The Pottery Neolithic Period (ca. 5500-ca. 4500 BC)

For the Levant in general, the period of the Pottery Neolithic is a time when there is the re-establishment of population that had suffered a crisis at the end of the seventh and the beginning of the sixth millennium BC (example of ʻAyn Ghazāl; see, e.g., Kohler-Rollefson 1988; Rollefson and Kohler-Rollefson 1989, 1992). There appears to have been a slow recovery towards stability throughout the sixth and fifth millennia BC. The reason for this change does not appear to be climate alone since there is no evidence for a significant change in climate in the second half of the sixth and in the fifth millennia



4. Population growth (annual %) – Jordan (Source: World Bank World Development Indicators).



5. Urban population (% of total) – Jordan (Source: World Bank World Development Indicators).

BC. Gopher (1995: 221) sees the change due a restructuring of society in combination with external influences and local environmental conditions.

As for the area of the southern segment of the Transjordanian Plateau and the Southern Ghawrs and the northeast ʻAqaba, the Pottery Neolithic has so far been identified in the former just to the south of Wādī al-Ḥasā and in the latter region at Fīfā in the Southern Ghawrs and in the Wādī Fīdān region of the northeast ʻAqaba. But the evidence recovered to date cannot be said to be extremely impressive as far as an increase in population is concerned.

Chalcolithic Period (ca. 4500-3500 BC)

The substantial amount of Chalcolithic alleviation in the Western Negev points to wetter conditions about 6000 to 7000 years ago (Goldberg 1987). Although there are no specific studies on climate for the southern segment of the Transjordanian plateau for the Chalcolithic, it may be that wetter conditions also prevailed there as well (for a contrary position see Hill 2006: 38).

The Chalcolithic presence in the area is characterized by the presence of so-called "circular enclosures" (Hill 2006). These features are located throughout southern Jordan (MacDonald *et al.* 1988, 1992, 2004, 2005). However, they are more frequently seen in both the western and eastern segments of the survey territories and specifically in what are today arid zones. Thus, they are encountered in both the Mediterranean and Irano-Turanian, plant-geographical territories. (Development could have destroyed such structures in the central segments of the Transjordanian Plateau). But, it must be noted, that none of these "circular enclosures" have been excavated and published. As a result, any comments about their date and purpose must be made with extreme caution and, in any event, are tentative. Thus, until further studies are carried out relative to the transition from the Chalcolithic to the Early Bronze period, little can be said. But, for the area of interest, there is no evidence of this Chalcolithic population in southern Jordan increasing dramatically and developing even villages let alone urban centers.

The archaeological evidence for the period seems to indicate pastoral activity and probably seasonal camps as herders moved from one area to another depending upon climate — hot-cold and wet-dry — and availability of water and pasturage for their flocks.

Chalcolithic/Early Bronze Period (ca. 3700-3500 BC)

There is evidence that the transition from the Chalcolithic to Early Bronze I corresponds with the onset of more arid conditions which approximate those of today (Rosen 1995). Correspondingly, occupation in the study area appears to have intensified during the Chalcolithic/Early Bronze period since survey-team members found evidence of human presence, in the form of both lithics and sherds, from Wādī al-Ḥasā in the north to Wādī Fīdān in the south. Many of the "circular enclosures" that team members of my four projects recorded may date to this time period. Moreover, it is also during this period that slag is associated, for the first time, with lithics and sherds in the Wādī Fīdān region.

Here again, as for the previous period, human presence in the area of interest seems to have been by pastoralists, miners, and metallurgists. If, indeed, there was an increase in population, climatic conditions were probably not the cause. However, interest in the copper resource of the area and the development of the technologies needed to mine and smelt it was probably factors in leading to an increase in population.

Early Bronze I-IV Period (ca. 3500-2000 BC)

EB I-III (3500-2350 BC) is generally recognized to have been the moistest period during the last 6000 years. During this time, there was increased precipitation throughout the Dead Sea basin. It was followed during the EB IV period (2350-2000 BC) by an arid climate that was similar to, or maybe even more arid than, the present one.

The EB IV period (ca. 2350-2000 BC) is generally recognized to have been a non-urban interlude between the first urban horizon in the third millennium BC and an urban renaissance in the Middle Bronze Age in the second millennium BC. This period saw the abandonment of talls, a population shift to rural areas, and "a change in socio-economic strategies from intensive agriculture, industry and trade to pastoralism and small-scale mixed agro-pastoralism" (Dever 1995: 282). In other words, there was a "collapse" from an urban to a rural and pastoral nomadic pattern of social organization (Dever 1995: 295).

In the territory of interest, however, the above does not hold true. No EB I-III urban centers have been identified. One must look to the north to the area of Bāb adh-Dhrāʻ, in the southeast plain of

the Dead Sea, and to al-Lajjūn, also in the north on the Transjordanian Plateau, for this phenomenon (Chesson *et al*. 2006). However, Early Bronze presence is found in the northeast ʻAqaba from Wādī al-Ḥasā to Wādī Fīdān. Specifically, Early Bronze I-III period evidence is especially evident in the Southern Ghawrs. There are EB I-III cemeteries in the area, specifically at aṣ-Ṣāfī and Fīfā, as well as vast EB IV cemeteries in the Wādī Khunayzīr-Wādī al-Nukhbār region at the limits of the Southern Ghawrs and the beginning of the northeast ʻAqaba (MacDonald *et al*. 1992: 66-69). In addition, there is evidence of metal working in the Wādī Fīdān region during this period. On the Transjordanian Plateau, immediately south of Wādī al-Ḥasā, both EB I-III and EB IV sherds have been found. However, there is nothing about their presence that would indicate more than probable pastoral presence. In fact, team members of both the TBAS and the ARNAS projects identified not one EB IV sherd during six years (1999-2001 and 2005-2007) of infield work.

In Wādī Faynān, Wright *et al*. (1998) documented a large, late fourth millennium or EB I site suggesting domestic activities, including metallurgical activities. Moreover, in the same area, there is evidence of metal production from the Early Bronze Age (Hauptmann and Weisgerber 1987, 1992; Hauptmann 2000; Levy *et al*. 2004; Grattan *et al*. 2007).

An improved climate may have played a role in the increase in population, especially in the southern Ghawrs and northeast ʻAqaba, evidenced by the cemeteries dating to the Early Bronze period. Moreover, improved technologies for extracting and smelting the copper ore may have been a factor. In addition, the development of urban centres to the north and west of the area of interest may also have been a factor in interest in the resources of the area and a consequent increase in population.

Middle and Late Bronze Periods (ca. 2000-1200 BC)

It is thought by some that a warm, dry period, similar to the present climate, perhaps even more arid, contributed around 2000 BC to the collapse of the empires of the Middle East (Weiss *et al*. 1993; Issar 1995: 354). This climatic situation continued until ca. 1200 BC and was probably one of the contributing factors to the end of the Late Bronze Age.

Kitchen finds evidence from the Middle Bronze period for the presence of mainly nomadic pastoralists in what later became the land of Edom. This evidence comes from the story of Sinuhe (ca. 1900 BC) and from the Brussels series of Egyptian "Execration Texts" (ca. 1800 BC). In the texts, Kitchen sees reference to "chiefs" of clans of (the territory) of Kushu (Kushan), that is, the territory south of Wādī al-Ḥasā and east of Wādī ʻAraba (1992: 21-23; 2003: 473).

Egyptian literary evidence from Tall al-ʻAmarna (early 14th century BC) refers to the "lands of Seir" (Pritchard 1969: 488). Thus, the Egyptian scribes knew of a land of "Seir" at this early date (Kitchen 2003: 473).

The term "Edom" appears for the first time in Egyptian literary texts during the time of Merneptah (1236-1223 BC) in Papyrus Anastasi VI (British Museum 10245) in a group of letters, which served as models for schoolboys. One communication presents the form in which an official on the eastern frontier of Egypt might report the passage of Asiatic tribes into the better pasturage of the Delta. Specifically, the text indicates that "the Bedouin tribes of Edom" are permitted to pass the fortress of Merneptah "to keep them alive and to keep their cattle alive" (Pritchard 1969: 259). The picture is one of pastoralists with their livestock (Kitchen 1992: 27, 2003: 474).

Thus, according to the Egyptian literary evidence, there is some evidence for an inhabited Edom/Seir and at least intermittent relations with Egypt from the early Middle Bronze and into the Late Bronze period (Kitchen 1992: 21-27, 2003: 473).

While the Hebrew Scriptures identify the land of Seir with Edom (Gen 32.3; 36.8-9, 21; Num 24.18; etc.), we have no certainty as to just what territory the Egyptian writers had in mind when referring to both "Mount Seir" and "Edom". Are they one and the same territory? Is it the same region as the biblical writers had in mind? Is it the one that is traditionally designated as the "lands of Seir" and the "land of Edom", that is, territory to the east of Wādī ʻAraba and south of Wādī al-Ḥasā?

Archaeological evidence for both Middle and Late Bronze occupation/settlement in southern Jordan is lacking. One must go north of Wādī al-Ḥasā in the Southern Ghawrs at and in the area of Dayr ʻAyn ʻAbāṭa to find even evidence for Middle Bronze tombs (Politis 1993: 505-06, 518, Pl. VI.1-2, 1995: 483-89, 1997: 342, 344-47). Several

sherds from the WHAS were identified as both Middle and Late Bronze. However, they came from sherd scatters and were not associated with architectural remains. As a result, the best that can be said, on the basis of the Egyptian texts, is that pastoralists were in the area during at least some of this time-span of around 800 years.

Was a deteriorating climate responsible, at least in part, for the decrease in population in the southern part of Jordan? Moreover, was the breakdown of international trade and commerce at the end of the Late Bronze Age also a factor?

The Iron Age (1200-539 BC)

Around 1300-1000 BC there is evidence of a series of narrow tree rings, indicating poor growing conditions and a change from Mediterranean to Saharan vegetation. This suggests a shift from a relatively moist to a much drier climate. In Gratten *et al.*'s (2007: 89) words, the first millennium BC was characterized by "a grass-dominated steppe … essentially the modern climate and geomorphic regime". Danin's (1995) study of the Dead Sea sediment levels indicated that this body of water dropped to -400m asl. In addition, Rosen (1995) points to the extinction of oak in Galilee as indicating dryness during the Iron Age period. This trend continued since studies indicate a slightly drier climate during the tenth and seventh centuries BC relative to preceding ones (see, for example, Goodfriend 1990 and Goldberg 1995).

There does not seem to be a correlation between improved climatic conditions and "filling up" during the Iron II period. The indications are that the period was one during which a dry climate prevailed. However, as we shall see below, the region "filled up" rather than "emptied out" under these less favorable climatic conditions. Thus, we must look for factors other than an improved climate to explain the situation in Edom during the Iron II period.

At the beginning of the period, Ramesses III (1198-1166 BC) claims: "I destroyed the people of Seir among the Bedouin tribes. I razed their tents: their people, their property, and their cattle as well, without number, pinioned and carried away in captivity, as the tribute to Egypt. I gave them to the Ennead of the gods, as slaves for their houses" (Pritchard 1969: 262).

Here again, as for the earlier Egyptian literary evidence for the end of the Late Bronze Age, there is evidence for an inhabited Seir — at least by pastoralists — and at least intermittent relations with Egypt at the beginning of the period (Kitchen 2003: 474). But the question must again be asked as to where was the geographical area that the Egyptians had in mind when they used the terms "Seir" and "Edom". The answer to this question is relevant since the area generally referred to as "Idumea" of New Testament times (Mark 3.8) is not generally identified with the traditional homeland of the "Edomites".

Assyrian and Babylonian texts refer frequently to Edom. First the Assyrian and then the Babylonian ones are considered.

Adad-Nirari III (810-783 BC), relative to an expedition to Palestine, claims to have subdued the land of Edom, along with other lands, and imposed tax and tribute upon it (Hallo and Younger 2000: 276; similarly Pritchard 1969: 281).

In a text, which was likely composed in or shortly after his 17th regnal year, Tiglath-Pileser III (744-727 BC) claims, relative to campaigns against Syria and Palestine, to have received the tribute of Qaušmalaka, the Edomite (Hallo and Younger 2000: 289; Pritchard 1969: 282). Sargon II (722-705 BC) makes a similar claim without naming the ruler of Edom (Pritchard 1969: 287).

A cuneiform text summarizes the campaign of Sennacherib's (704-681 BC) siege of Jerusalem in 701 BC. In it, Sennacherib claims that Ayarammu of Edom brought him sumptuous presents as his abundant audience-gift … and kissed his feet (Hallo and Younger 2000: 302-03). This indicates that the ruler of Edom visited the Assyrian ruler.

Relative to his Syro-Palestinian campaign, Esarhaddon (680-669 BC) claims that he called up a number of kings, among them Qaushgabri, king of Edom (Pritchard 1969: 291). The same Edomite king is also found in a list of kings from the time of Ashurbanipal (669-633 BC) (Pritchard 1969: 294). (The king's name also appears on a bulla found in the excavations of Umm al-Biyāra, within Petra [Hallo and Younger 2000: 201]).

In Ashurbanipal's campaign against the Arabs, the ruler states that he inflicted countless routs on, among other towns, those of Edom (Pritchard 1969: 297-98). Finally, from the time of the same ruler there is a record of receipt of tribute from Palestine: "Two minas of gold ….; [… mi]nas of silver from the inhabitants of [Edom] (*mat* [*U-du-ma*]-*a-a*)…." (Pritchard 1969: 301).

It is evident from the texts that the Assyrians knew of the land of Edom and its kings and had entered into a relationship with them — that of master to servant. The Assyrians claim to have subdued the land of Edom, imposed tax, and received tribute from it. Specific Edomite kings are named who brought sumptuous presents to and kissed the feet of their overlords.

Nabonidus (556-539 BC), the last Babylonian king, laid siege to the "town of Edom" (Pritchard 1969: 305), probably Buṣayra, the Edomite capital. He probably captured it in the third year of his reign. In the same vein, a Babylonian stela, located high in the cliffs as one begins the climb to the top of as-Sal‘, an Edomite place of refuge to the northwest of Buṣayra, probably alludes to the same event. The person depicted on the relief appears to be Nabonidus, who, as indicated above, is believed to have besieged Busayra and annexed Edom on his way to Tayma in Arabia (Dalley and Goguel 1997; Zayadine 1999).

The biblical writers are aware of inhabitants in the land of Edom. They trace the ancestry of these people, i.e., the Edomites, to Esau, the son of Isaac and the elder-twin brother of Jacob. They have them settled, at an early date, in the hill country of Mount Seir (Gen 36.9; Deut 2.4, 5, 8, 12), which is identified with the country of Edom (Gen 32.3; Judg 5.4).

The Edomites are said to have caused problems for the Israelites on their way from the land of Egypt to the land of Canaan (Num 20.18-21) — traditionally dated to the end of the Late Bronze/ beginning of the Iron Age period. From then on, the biblical writers generally depict the people of the land of Edom as the enemies of the Israelites (see, for example, 2 Sam 8.11-12; 1 Kings 11.15; 2 Kings 8.20-22; 14.7). Thus, throughout the period of the Old Testament, the land of Edom appears to have been populated by enough people to have cause a threat to Israel.

Relative to the early Iron Age, there is archaeological evidence for human presence in the northwest extremity of the WHAS territory (MacDonald *et al*. 1988: 171-78). Similarly, in the Southern Ghawrs and northeast ‘Aqaba, there is evidence for Iron I presence (MacDonald *et al*. 1992: 73-76). Specifically, Iron I period presence appears to be associated with mining and smelting activities in the Wādī Faynān region, especially at Khirbat an-Nuḥās (Levy *et al*. 2004). Farther south, and on the plateau, Iron I sherds have been identified in the northwest segment of the TBAS territory (MacDonald *et al*. 2004: 56-58).

There appears to have been an increase in population in all of the territory of interest during the Iron II period (1000-539 BC). In fact, this period, is in third place in the four survey projects that the writer carried out relative to the number of sites from which team members collected sherds from a particular period. Moreover, the majority of Iron Age sites, for example, Ghurayra (Hart 1988), Ṭawīlān (Bennett and Bienkowski 1995), Busayra (Bienkowski 2002), Umm al-Biyāra (Bennett 1966), Khirbat ad-Dabbah (Whiting 2005) that have been excavated in the area all date to the Iron II period, specifically the eight-sixth centuries BC. Moreover, the extensive survey work that Lindner carried out in the southern part of Jordan over the past 25 years identified a number of mountain-top and other types of "Edomite" sites, e.g., , Ba‘ja III, Jabal al-Quṣayr, Khirbat al-Mu‘allaq, as-Sal‘, Umm al-‘Ala, and Umm al-Biyāra (Lindner 1992; Lindner *et al*. 1996a-b). In addition, Levy *et al*. (1999) excavated a tenth-ninth century BC cemetery in Wādī Fīdān.

The excavations, surveys on the part of Hart (1987a-b; 1988; see also Hart and Falkner 1985) and Lindner (1992) as well as the work that I have done in the area all indicate the large number of agricultural villages, hamlets, and farms in the area of the southern Transjordanian Plateau during the Iron II period. The precise dating of these sites within the period needs to be made specific by way of excavations.

There is the possibility that there were a number of fortresses and/or watchtowers in the area during Iron II and there are indications of increased mining and smelting activity in Wādī Fīdān/Faynān at this time. The date of Levy's fortress at Khirbat an-Nuḥās is still a matter of dispute (Levy *et al*. 2004; Finkelstein 2005). However, the work of Fritz (1994; 1996) at Barqat al-Ḥuṭayya, close to Wādī Fīdān, and north of Wādī Fīdān at Khirbat an-Nuḥās indicates a probable Iron II date.

The present evidence favors a change from mainly pastoralism to a combination of pastoral/ agricultural activity as one goes from the early Iron Age into the Iron II period. Of course, the Iron II period, sedentary way of life would have been supported by the Assyrian control, beginning with Adad-Nirari III's (810-783) "Expedition to Pales-

tine" where Edom is mentioned as one of the areas conquered.

The Iron II period, as noted above, in southern Jordan appears to be a time of "filling up". And the best explanation for this phenomenon would be the movement of people into the area. With increases of population in areas to the north and west, this peripheral region would become one where a surplus population would have settled. Knauf sees this increase as the result of the migration of Canaanite agriculturalists that fled their homeland after the collapse of the Late Bronze Age Canaanite city-state system. He equates these newcomers with the Horite tribes of Genesis 36 (1992: 49). These newcomers would have intermingled/intermarried with those — probably pastoralists — already in the area. In Bartlett's (1989: 64, 65) and LaBianca and Younker's view (1995: 402, 406), however, the increase in population on the highland plateau of Transjordan is to be sought in the preexisting population. I do not think that the increase in population can be explained by an exceptionally high birth rate during the time period from Iron I to Iron II.

The Edomites were undoubtedly involved in the mining and smelting of copper since it was one of the most important metal resources of the Ancient World. Control of this mineral resource was important and it would have fallen within the economic and political control of both the Edomites and, at times, their overlords the Assyrians during the Iron II period (Grattan *et al*. 2005: 654).

Furthermore, the Edomites were also involved in the spice trade, the caravans of which would have passed through their land on their way to both Damascus in Syria and to Gaza on the Mediterranean (Singer-Avitz 1999; Bienkowski and van der Steen 2001: 24). The domestication of the camel would have been important for this activity on the part of the Edomites.

Miners, metallurgists, and traders require services. Those so involved would have looked to the population of the country in which they worked, and/or passed through for water, food, security, and so forth. Thus, entrepreneurs would have been attracted to the area to provide these needs. The providing of these services would have also required greater agricultural production and thus more people would have been employed in this service industry and this too would have led to an increase in population. Involved in this would have been new technological advances such as the development of agricultural terraces (Hill 2006: 46) and the expansion of plow agriculture (LaBianca and Younker 1995: 399). Moreover, the Assyrians brought peace to the area and a stable political situation would have resulted in an increase in population since such a situation attracts people to an area.

Thus, a number of factors appear to have been responsible for the increase in population in Edom during the Iron Age. These factors include mining and smelting, the caravan trade, technological advances such as agricultural terraces and plow agriculture, a stable political situation, and the need for a service industry. It appears that the Iron II period was the first one in prehistory and history in which the Edomite plateau would have been "filled up".

Persian (539-332 BC) and Hellenistic (332-63 BC) Periods

The climate became colder between 300-200 BC. However, this does not appear to have had an immediate effect on increased population in the area. In fact, on the basis of our present understanding of the archaeological evidence, it can be posited that this period witnessed a decline in human population in the southern part of Jordan.

Frumkin *et al.*'s (1991; see also Frumkin 1997) comprehensive climate record for the Holocene, derived from the salt caves of Mount Sedom near the southwestern boundary of the Dead Sea, indicates that an arid climate characterized the third century BC as the average Dead Sea level stood at ca. -400 metres. In their opinion, a change towards increased humidity began at the beginning of the second century BC.

Both the Persian and Hellenistic periods are poorly represented in the territory of interest. Nevertheless, in the first cuneiform tablet, which is dated to the accession year of one of the Achaemenid kings named Darius (Darius I [521 BC], Darius II [423 BC], or Darius III [335 BC]), ever found in Jordan, the name and patronymic of the man who writes about the sale of two rams are compounded with the name of the Edomite god Qos (Bienkowski 1997:157). The tablet, which is a legal document from Harran in Syria, indicates some activity and, thus, inhabitants, in Ṭawīlān, where the tablet was found, during the Persian period (Bienkowski 1997:158).

There also appears to have been occupation of Buṣayra during the Persian and possibly the Hellenistic periods. The evidence comes from pottery

sherds that date to the fourth and third centuries BC (Bienkowski 2002: 477). Moreover, there is evidence for the extraction of bitumen from the Dead Sea during the Hellenistic period (Hammond 1959; MacDonald *et al*. 1992: 20; MacDonald 2006: 78).

Was this period of "emptying out" due to a deteriorating climate and/or to the fact that following the destruction of Jerusalem and the Babylonians' deportation of Judeans from their homeland better land resources became available to the northwest and thus a migration on the part of the population of southern Jordan there? There is ample evidence for Edomite-speaking people in the Negev beginning in the seventh century BC (MacDonald 2005: 234).

Roman (and Nabataean) Period (63 BC-AD 324)

As indicated above, a change towards increased humidity began at the beginning of the second century BC. This trend continued during the first half of the Roman period. Thus, in the southern Levant, the Early Roman period (63 BC-AD 135) coincided with a relatively wet phase (Frumkin *et al*. 1991: fig. 12; Frumkin 1997: 244), which reached its average peak ca. AD 90. In the second century AD, the climate began its drier trend (Frumkin *et al*. 1994: fig. 6; Frumkin 1997: fig. 22-4).

There is a substantial increase in both the literary and archaeological evidence for this period. For example, Diodorus (in 312 BC) reports about an Arab tribe — Nabataeans who appeared in Edom and established its centre in Petra (Rosenthal-Heginbottom 2003: 15).

The evidence from work within and in the Petra area are a support for this position. The Roman road /*Via Nova Traiana*, connecting Bostra in southern Syria to al-'Aqaba on the Red Sea, was built in AD 111-114. It cuts through the territory of interest and many forts and watchtowers are associated with it, e.g., Rujum al-Farādiyyah (MacDonald *et al*. 1988: 226-28); Khirbat at-Tuwānah (MacDonald *et al*. 2004: 348-54); Udhruḥ (Parker 1986: 94-98; Killich 1989); and to its east such structures as Umm 'Ubtulah (MacDonald 1984; Kennedy and Bewley 2004: 92-93); ar-Ruwayḥī (MacDonald *et al*. 1988: 210-12); Jurf ad-Darāwīsh, a *castellum*, and Qaṣr al-Bint, a watchtower, nearby (Parker 1986: 91-93; MacDonald *et al*. 2004: 284-85); ad-Da'jāniyah, a *castellum* (Parker 2006); etc.

In the Southern Ghawrs and northeast 'Aqaba there is ample evidence for occupation / settlement during this period. For example, a fort high in the hills to the southeast off aṣ-Ṣāfī, Umm aṭ-Ṭawābīn (MacDonald *et al*. 1992: 86-87), and farther to the south Rujm 'Umruq (MacDonald *et al*. 1992: 89) and Khirbat aṭ-Ṭilāḥ (MacDonald *et al*. 1992: 89, 91-93). Even father to the south, Khirbat Faynān appears to have been the only community existing in the wadi in the later Roman period and seems to have been inhabited almost totally by slaves and Christians sent to work the mines (Freeman and McEwan 1998: 68).

During the Roman period there was an increased emphasis on agriculture, especially irrigation agriculture (Hill 2006: 50). A large foreign power affected settlement location and types as well as production demands (Hill 2006: 52). There was an interest in maintaining the flow of Arabian trade in eastern commodities that was developed by the Nabataeans (Hill 2006: 53).

Moreover, there is evidence for numerous agricultural villages/hamlets and farmsteads dating to the period as evidenced from the work of the WHAS (MacDonald *et al*. 1988), SGNAS (MacDonald *et al*. 1992), and TBAS (MacDonald *et al*. 2004) projects that I carried out on the plateau. All these would be necessary to feed the increased population in the south of Jordan and especially the metropolis of Petra and its involvement in the caravan trade.

When the direction of the incense trade shifted to Egypt — the first century BC-early first century AD — the Nabataeans lost their monopoly of this trade and became agriculturalists. Both Aretas IV and Rabbel II were enthusiastic supporters of agricultural development and water-supply systems. Rome annexed Nabataea in AD 106 and the inhabitants of the area accepted Christianity in the fourth and fifth centuries AD (Rosenthal-Heginbottom 2003).

After an "emptying out" at the end of the Iron II period, which continued throughout the Persian and Hellenistic ones, the Roman (and Nabataean) period was one when the southern segment of the Transjordanian plateau was again "filling up". A number of factors are responsible for this. Among them would have been an improvement in climate, improved technologies for the mining and smelting of the available ore and in the field of hydraulic engineering, continued interest in and promotion of

the spice trade and agriculture, and a stable imperial power.

Byzantine Period (AD 324-640)

The Byzantine period is considered to be a time in the Levant when there was maximum settlement or a period of "filling up". There was continuity with the previous one, an expansion of settlement, a peak of population and desert agriculture, a shift in the local economy from international exchange and caravan traffic towards agriculture and local exchange, and diminishing importance of the Arabian trade network (Hill 2006: 53-54; see also Hirschfeld 2004: 133). This period, like the one before it, was marked by technological ability, especially in the field of hydraulic engineering and by a high level of organization (Hirschfeld 2004: 144).

Issar sees climatic change as the main factor in the expansion of settlement (1995. 1998; Issar and Govrin 1991; Issar and Makover-Levin 1995). A second position minimizes the influence of climatic change and emphasizes the role of human abilities as the main agent of the expansion of settlement in this period (Hirschfeld 2004: 133). For example, Frumkin *et al*. (1994: 323, fig. 6) see the beginning of the Byzantine period as one in which the climate was significantly drier than during the first century BC and the first century AD. In their opinion, the climate became more and more arid in the course of the period (Frumkin *et al*. 1994: 323, fig. 6; Frumkin 1997: 240, fig. 22-4).

Patrich (1995: 473) is of the opinion that the prosperity and density of the Negev settlements, in the area to the west of the territory of interest, should be attributed more to state encouragement and human labor, than to major climatic factors. He thinks that if a climatic change did occur, it was on a minor scale — perhaps increasing the average yearly precipitation by not more than 50mm and increasing only slightly the number of rainy days per annum (Patrich 1995: 473).

During 1979-1983, WHAS project team members collected Byzantine period sherds from 125 sites. At 52 of these sites, Byzantine sherds were predominant (MacDonald *et al*. 1988: 232-38, and 239, fig. 60). In addition, what we read as Late Roman-Byzantine, Byzantine-Umayyad, and Byzantine/Mamluk sherds were collected at a number of additional sites (MacDonald *et al*. 1988: 232-49).

On the TBAS project, where random squares as well as sites were investigated, team members collected Byzantine ceramics at the majority of the squares in Zones Busayra, 1, and 2 (MacDonald *et al*. 2004: 61-62). In addition, they collected sherds from the same period at slightly more than 50 percent of the 290 sites investigated (MacDonald *et al*. 2004: 61-62, and fig. 25).

The situation is similar farther south in the territory of the ARNAS project. Here again, Byzantine sites are a common occurrence (MacDonald *et al*. 2005: 288, 2006: 116-17). And the Byzantine sites in this area, like those in the areas of both the WHAS and the TBAS, are, for the most part, agricultural villages/hamlets.

Finally, Byzantine period sites are by far the most common within the SGNAS territory. This evidence does not come only from the collections of the SGNAS project (MacDonald *et al*. 1992: 97-112) but from the work of Politis *et al*. in the Southern Ghawrs (see, for example, Meimaris and Kritikakou-Nikolaropoulou 2005).

While the Southern Ghaws is noted for its Christian importance, there is evidence for churches throughout the territory of interest. For example, a hermitage in Wādī ʻAfrā (MacDonald 1980; MacDonald *et al*. 1988: 243-44), recycled Greek inscriptions, at both aṭ-Ṭafīlah and Buṣayra (Gagos 2004: 421-22), which probably came from churches, and toponyms with the name Dayr probably testify to such presence.

Once again, as for the Iron II period, there does not appear to be a correlation between good climatic conditions and the high population that is evidenced not only in this area but throughout the Levant during the Byzantine period. Here, again, the "filling up" may be due to increased populations elsewhere or, as Patrich indicates "state encouragement and human labor" (1995: 473). This necessitated the use of a peripheral area to "house" this increase. The people involved, during both the Roman (Nabataean) and Byzantine periods, would probably have been those who had been there all along plus newly-arrived immigrants.

The Islamic Period (AD 640-1917)

I will begin with the Islamic period in general. Then I will zero in on the Early, Middle, and Late divisions of this larger period. At the outset, it must be stated that there is not general agreement among Islamic scholars relative to the divisions within the period.

During the seventh and eighth centuries the Um-

ayyads established the Ḥajj Route — Syrian Hajj route (*Darb al-Ḥajj al-Shamī*) — as the principal road connecting Makkah with their capital in Damascus (Petersen 2001: 685). At the beginning, the route in Jordan followed a westerly track along the King's Highway in the Highlands at the Eastern Rim of the Wādī ʻAraba-Jordan Graben. During the Middle Islamic period the three fortresses of ʻAjlūn, al-Karak and ash-Shawbak protected this route in Transjordan. In the 16th century, the Ottomans made the Ḥajj Route part of a direct route between Makkah and the imperial capital at Constantinople (Petersen 2001: 685). The route was then changed so that it now lay along the edge of the desert. Part of the reason for this was the fact that a more easterly route was more accessible during all periods of the year. It, unlike the direction of the previous one, would not be so affected by the flooding of the wadis in their western extremities. This route is the one now followed, in part, by the modern Desert Highway.

While southern Jordan was under the influence of Damascus during the Umayyad period, it was Egypt who exerted influence during the Ayyubid and Mamluk periods. During the Ottoman period, the Turkish sultans from Constantinople were the dominating power. It was only for a short period of time, between AD 1099 and 1187 that the Crusaders were in control. It was the Ayyubid period that marked the return of Muslim control to the area.

Relative to the climate during the Islamic period, palaeoclimatic research points to two additional humid intervals that occurred in our area of interest after the Byzantine period. They are the Mamluk period (12th-14th centuries) and the late Ottoman period (the 19th and early 20th twentieth centuries) (Issar 1998: 125).

Early Islamic Period (AD 640-1099)

Evidence for Early Islamic presence is sparse on the Transjordanian Plateau between Wādī al-Ḥasā and Rās an-Naqab. However, in the Southern Ghawrs the situation is somewhat different. There appears to have been human presence in the Southern Ghawrs throughout the Islamic period. Here, the inhabitants were engaged, during the late Early and Middle Islamic periods, in the growing and processing of indigo and sugar cane, especially in the area of aṣ-Ṣāfī (Whitcomb 1992: 116-17). In addition, occupation at Dayr ʻAyn ʻAbāṭa, just to the north of Wādī al-Ḥasā in the Southern Ghawrs, continued into the Early Islamic period (Politis 1995: 486, 1997: 47).

How can one explain the drastic shift in the territory of interest from numerous sites during the Byzantine period to relatively few during the succeeding period? Climate? Change in religion?

Middle Islamic (Crusader [AD 1099-1187]; Ayyubid [AD 1187-1250]; Mamluk [AD 1250-1517]) Period

The Crusader armies arrived in the Levant in AD 1099. They built a series of forts in the territory of interest that included aṭ-Ṭafīla, ash-Shawbak, Wuʻayra — just outside Petra, and al-Ḥabīs — within it. These Crusader-controller installations all impeded Islamic communications between Egypt and Syria (Milwright 2006: 4).

The castle at aṭ-Ṭafīla, generally dated to the Ottoman period, may well be the site of the Frankish fortress mentioned in a Latin document dated AD 1239 that lists the castles of Outrejourdain. It seems likely that the castle occupied the same site as the present rectangular one (Johns 1937: 96; Pringle 1997: 98, no. 214, 2001: 680; MacDonald *et al*. 2004: 300-02).

A castle called al-Salʻ was captured from the Franks in Ramadan 584 H/AD 1188-89 by the Ayyubid amir along with al-Karak and ash-Shawbak. A Latin list of castles in Muslim hands around 1239 refers to it as *Celle*. Salʻ is listed in the territories of Karak in ca. 1300. It is not stated whether it was still functioning as a fort by this time (the account may, however, contains anachronistic data) (Milwright 2006: 10). Khirbat as-Silʻ, a natural rock castle some 10 km south of aṭ-Ṭafīla, is sometimes attested as its location. Here, medieval occupation is attested by surface finds of pottery (Zayadine 1985: 164-66, fig. 9; Lindner 1992: 145-46, note 1; Pringle 2001: 680; however, see MacDonald *et al*. 2004: 276 where no Islamic pottery is reported).

In 1115 Baldwin I founded the castle of ash-Shawbak, or 'Mount Royal', to protect the southern approaches to Palestine, control the desert route, and to act as a center for Frankish settlements. It stood on one of the main routes between Cairo and Damascus. Moreover, it threatened the free traffic of Syrian pilgrims making the annul ḥajj to the Holy Cities of Makkah and al-Medina. As such, Baldwin was able to extract payments from merchants and pilgrims passing through Jordan via the King's Highway (*darb al-malik*, and also *darb al-sulṭan*

and *ṭarīq ar*-Raṣīf) and other routes farther east (Milwright 2006: 3-4). The castle contains the remnants of two churches — one is dated to AD 1116 according to Milwright (2006: 3), 1118 according to Pringle (2001: 678).

Two other Frankish castles in the area of interest are that of al-Wu'ayra, northeast of Petra on the north side of Wādī Mūsā, and al-Ḥabīs, within Petra. The former probably dates from the 1140s and its Christian nature is demonstrated by the existence of a chapel (Pringle 2001: 681). The latter dates to the period AD 1116 to ca. 1188 (Hammond 1970: 35). The castle of al-Wu'ayra declined in status under Ayyubid rule, which indicates that it was of greater strategic significance to the Latins of Oultrejourdain (Milwright 2006: 26). The fort of al-Ḥabīs appears to have been abandoned close to the end of the 12th century (Hammond 1970: 35).

Ṣalāḥ al-Dīn, an Ayyubid leader, defeated the Crusaders in the Battle of Ḥiṭṭīn in July 1187. In 1187-88 the Crusader castles of Outrejourdain fell to his armies. Finally, the Latin Kingdom ended in Syria-Palestine by 1291. By this time, the Mamluks (AD 1250-1517) had replaced the Ayyubids as the dominant power.

During the Ayyubid and Mamluk periods, with the exception of ash-Shawbak and the Southern Ghawrs, the area south of the Wādī al-Ḥasā appears to have been the least economically developed part of Jordan (Milwright 2006: 20). The most economically significant crop, it appears, was the sugar cane grown in the Dead Sea Ghawr (Whitcomb 1992: 116-17) and the Jordan valley.

Except for a brief period, the Islamic population of southern Jordan did not appear to have an interest in the copper resources of the Wādī Fīdān/ Faynān region (Grattan *et al*. 2007). The interest that was shown could have taken place at the end of the Mamluk or the beginning of the Ottoman period (see Grattan 2007; Grattan *et al*. 2007). The main interest of the Islamic rulers in the south was that of safe passage for the pilgrims on their way to Makkah and al-Medina.

Late Islamic (Turkish-Ottoman [AD 1517-1917]) Period

A more arid phase begins at least around AD 1400, if not earlier, in late Mamluk times (Ghawanmeh 1995). This continues until Modern times.

The early Ottoman period was one of prosperity and a time of renewed stability and investment in the Wādī al-Ḥasā area and in Jordan in general. This was due to the fact that the area was included in a great and well-governed empire (Hütteroth and Abdulfattah 1977: 7). Much of the interest in the Wādī al-Ḥasā area had to do with the defense of religious pilgrims on their way to Makkah. These improvements in stability and the extension of cultivation have led Hütteroth and Abdulfattah (1977; see also Hütteroth 1975) to call this the golden age of the Ottoman Empire (Hill 2006: 60). However, there was a 40-50 % change in the density of population between 1596/97 and ca. 1880 AD. The reason is the general decline of the administrative and fiscal organization of the state, which began at the end of the 16th century (Hütteroth and Abdulfattah 1977: 56-58). The picture of the country in the late 16th century is similar to that of the late 19th century when migrations into the country on the part of the Druze, Armenians, and Circassians began.

It was during the reign of Suleiman the Magnificent (AD 1494-1566) that the route to Makkah was changed so that it now lay along the edge of the desert. The WHAS found evidence of this route in the form of a bridge and segments of a paved road in the eastern segment of Wādī al-Ḥasā (MacDonald *et al*. 1988: 280). These structures would have been important especially during the rainy months of the year. Members of the TBAS project found remnants of milestones at Jurf ad-Darāwīsh (MacDonald *et al*. 2004: 385) and probably a watchtower, Rujm al-Ḥajj, just north of Jurf ad-Darāwīsh (MacDonald *et al*. 2004: 386). In addition, there were other Ottoman routes through the territory. For example, the *Darb ar-Rasīf* went from Ma'ān on the plateau to Garandal in the central Wādī 'Araba.

During the Ottoman period, within the area of interest, forts and watchtowers along this route included Qal'at al-Ḥasā (18th century [1757-74]), Qal'at al-'Unayza (late 16th century [1576] and Qal'at Ma'ān (16th century [1531]). As an oasis, Ma'ān was the largest settlement on the Ḥajj route (in Jordan) and pilgrims spent two days there resting and buying supplies for the next stage of the journey (Petersen 2001: fig. 28.1, p. 687 and p. 690-91).

To the west, as mentioned previously, there is an Ottoman fort at aṭ-Ṭafīla (Johns 1937: 96; Pringle 1997: 98, no. 214, 2001: 680; MacDonald *et al*. 2004: 300-02).

Late in the Ottoman period the Hejaz Railway was built. The initial plan was that the railway

would go from Damascus to Makkah and ultimately to the Yemen. However, it never got farther than al-Medina (1,789km from Damascus to al-Medina) largely because of local political objections. A primary concern in building the route was to bring pilgrims to the holy cities of Makkah and al-Medina. However, military and commercial ambitions were not far behind. The line would follow the centuries old Ḥajj route well away from the coast and the whole enterprise was entirely Turkish funded and largely built by the Turkish army Railway Battalions of conscript labor. The railway reached Ma'ān in 1904 and its terminus at al-Medina in 1908. Passenger traffic accounted for about half the total revenue generated by the railway, though in fact this was largely concentrated to the north. Within the Hejaz proper, most traffic comprised pilgrims and troop movements. T. E. Lawrence (1935) was regarded as the "principal expert" on it. The railway was subject to allied intelligence as early as 1915. The harassment of the line, designed to keep the Turks bottled up in the Hejaz, is well known. In southern Jordan the railway continues to provide: rails are now used as roof beams and sleepers as fence posts.

Within the territory of interest, Ottoman railway stations are located at al-Ḥasā, Jurf ad-Darāwīsh, and Ma'ān.

There are also many Ottoman period villages and towns in the territory of interest in the southern segment of the Transjordanian Plateau (see MacDonald *et al.* 1988, 1992, 2004, 2005). These settlements would have provided provisions for those who first worked on building the roads, the railway, and its stations. In addition, all would have to be manned and maintained. Once the routes and railway were established, there would be the need for providing for those who traveled along them. Towards this end, the farmers and pastoralists of the region would have provided wheat, fruit, vegetables, goats, sheep, and their byproducts.

In the Southern Ghawrs there were Ottoman period village at Fīfā (MacDonald *et al.* 1992: 123). This is attested not only by archaeology but by the visitors to the area in the 19th century. Furthermore, the aqueduct in Wādī Khunayzīr probably dates to the period (MacDonald *et al.* 1992: 178 [Photo 32], 261 [Site 112]).

There is record of Turkish taxation of the area (see Hütteroth 1975; Hütteroth and Abdulfattah 1977, 1978).

Conclusions

The Iron II, Roman (and Nabataean), Byzantine, and the very end of the Late Islamic Age were times when the southern segment of the Transjordanian Plateau was "filling up". During these periods, there is ample evidence for towns, villages, hamlets, farms, and seasonal camping sites. Conversely, the Pottery Neolithic, the Early-Late Bronze, the Persian-Hellenistic, and the Early Islamic — with the exception of the Southern Ghawrs — periods were ones in which there seems to have been little in the way of human presence in the area. During these latter periods, times of "emptying out", pastoralism appears to have been the primary mode of subsistence.

No one factor can be seen as responsible for the rise and fall of population numbers in the region from Wādī al-Ḥasā to Rās an-Naqab. Climate, certainly, must be taken into consideration in an attempt to understand the dynamics of the "filling-up" and "emptying-out" of the area. However, other factors must also be considered.

For people to settle in an area, there is the need for water and arable land to grow the crops that are needed by both humans and beasts, whether domestic or wild. Moreover, both would have to develop adaptive strategies to content with changes in climate, deterioration of land resources, and natural occurrences.

Other important resources in the area would have been copper, manganese, bitumen, and salt. But in order to "harvest" these resources there would have been the need for appropriate technologies. Moreover, these would have to be improved and developed through time. For example, developments such as the plow and terracing would have increased food production. Moreover, new technologies needed to be developed relative to the extraction of copper, its smelting on site, and/or its "shipping" elsewhere for processing.

In order for all the above to succeed, there would have been the need of a stable government by such as the Assyrians, Romans, Byzantines, and Ottomans. It would have been advantageous for these governments to insure that conditions were conducive to new developments in hydrology, food production, the extraction of minerals, and that the trade routes were both secure and that needed services were available along them.

Stable governments would have seen that traders would be provided with information relative to

which routes were passable or not at certain times of the year, and whether or not the required services would be provided along the desired route. Relative to the needs of pilgrims on their way to Makkah and al-Medina, there would be the need again for security and the services that pilgrims require in the form of water, food, places for rest, animals, etc.

In conclusion, it appears that a number of factors have to be taken into consideration when attempting to understand the dynamics involved in understanding why there were periods of "filling up" and "emptying out" as far as human presence/absence in the area between Wādī al-Ḥasā and Rās an-Naqab is concerned. No one factor can explain the ebb and flow of human presence/absence in the region.

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"Reconstructing" Mamluk 'Ajlūn: The 728/1328 Flood Report as a Source on Architectural Patronage

"Crossing Jordan", the conference title for the Tenth International Conference on the History and Archaeology of Jordan, might seem to encapsulate the Mamluk relationship with the land of Jordan, at least with its northern part, which fell within the administrative province of Damascus. No longer the contested space that it had been in earlier centuries, this region now assumed the role of geographic link between the imperial capital, Cairo, and the Syrian provincial capital, Damascus. The Mamluks "crossed" the land of Jordan on their *barīd*, the equestrian postal route for official communications and delegations (Sauvaget 1941). Carrier pigeons and fire signals bore messages across the land of Jordan, from one mountain station to another (Sauvaget 1941: 31-40). Pilgrims "crossed" Jordan, as did merchants and trade caravans (Tresse 1937; Peters 1994; Petersen 1991, 1994; Majali *et al.* 1987; Sauvaget 1940). Scholars and sufis moved from town to town in pursuit of knowledge and enlightenment, and Mamluk deputies and functionaries came and went in the course of their peripatetic careers (Petry 1985). Chronicles of the Mamluk period, generally written for and sometimes by members of the ruling class, document these "crossings" — the established routes and changes to them; the fords and bridges taken; the stopping places and their amenities; and the official, academic and religious posts assigned there. However, as several recent research projects have demonstrated, the Mamluk presence in this region was not only characterized by "crossings". It also involved ownership, development, diplomacy, administration and architectural patronage. This paper will consider some of these aspects of the Mamluk role in the land of Jordan, with particular emphasis on the last, in light of one particular historical event: the great 'Ajlūn flood of 728/1328.

In 728/1328, a violent storm passed through the region around 'Ajlūn, causing devastating flooding and mudslides. The destruction from this storm to the town and its hinterlands was described in an official document prepared for the Mamluk government shortly after the event and summarized in contemporary chronicles. These reports provide valuable details about 'Ajlūn's architecture and institutions in the early Mamluk period. Simply by listing the houses, *sūq* (s), baths, madrasas and mosques damaged or destroyed in the flood, they record the existence of a wide variety of buildings, many of which would have been undocumented otherwise. Aside from the neighboring citadel, the town's congregational mosque, and a few later structures, no standing medieval buildings are preserved in 'Ajlūn. The geographies, local histories, and travel accounts for the Bilād ash-Shām provide at best only general impressions of the place, but nothing in the way of a topographical description. In this respect, 'Ajlūn is not alone – the architecture and layouts of other towns in the southern Bilād ash-Shām of comparable stature are similarly passed over in historical topographies. For the most part, the research interests of nineteenth-century and early twentieth-century archaeologists and explorer/travelers working on Jordan were concentrated on pre-Islamic periods of history, with little attention given to its late medieval architecture (Walmsley 2001; Whitcombe 1997). The best impression of official Mamluk architectural patronage in these towns is due to the efforts of the epigrapher, Max van Berchem, working at the end of the nineteenth century (van Berchem 1903). By combining information from the 'Ajlūn flood report with the evidence available from extant architecture, epigraphic remains, and historical chronicles, an image of the town before the flood can be "reconstructed".

In contradistinction to the general dearth of both standing architecture and literary description, is a wealth of information about the Jordanian part of the "Province of Damascus" emerging recently from archaeological excavations and surveys. Yusuf Ghawanimah published several studies integrating historical and documentary source material with archaeological and architectural survey of the region in the 1980's, and his research has generated a number of related theses at Yarmouk University (Ghawanimah 1982 and 1986). These studies, together with research such as Alan Walmsley's publications on Faḥl (Pella) and its surroundings (Walmsley 1997-1998), Neil MacKenzie's area surveys of the 'Ajlūn region in 2000 and 2002 (MacKenzie 2002 and 2003), and Bethany Walker's on-going "Northern Jordan Project" (Walker 2005), mesh to convey a sense of an widely settled local population flourishing in the area during the early phase of Mamluk history. Nevertheless, considering the generally scant evidentiary situation from literary and documentary sources on 'Ajlūn and the poor preservation of its medieval phase, a vague impression might have been all that could be gleaned on the city, had it not been for a fluke natural disaster, the "Great Flood" of 728/1328. This flood nearly destroyed the town and necessitating an official damage report that survives in several versions. By piecing together the pre-flood town descriptions, the accounts of the flood and the damage it inflicted, and additional references to 'Ajlūn, this paper represents an effort to "reconstruct" the medieval town and, more broadly, to contribute to the study of architectural patronage in the southern Bilād ash-Shām.

The town of 'Ajlūn stretches along the foot a hill, north of the Jordan River tributary, Wādī Kafranjah (Sourdel 1960: 208). It is situated at the confluence of two wadi(s) that converge at its center, and then flow southwestward to Wādī Kafranjah. Surmounting the hill and looming over the town, is the Ayyubid fortress, Qal'at ar-Rabaḍ (Johns 1932; Minnis and Bader 1988; al-Qudah 1993; Yovitchitch 2001). Evidently founded in the Ayyubid period, it was, by the beginning of the fourteenth century, a flourishing regional center praised by Dimashqi (ca. 699/1299-1300) for its running water, the variety of its fruits and its plentiful provisions (Le Strange 1965: 388). Ibn Battuta came through 'Ajlūn, en route from Gaza to Damascus, in 1326. His travel memoir, composed decades later, describes 'Ajlūn as "a fine town, possessing a large number of markets and an imposing castle, and traversed by a river of sweet water" (Le Strange 1965: 389). Al-'Uthmanī, writing in the 774-78/1372-76, at least conveys a more personal note to the record, quoting the rhymed verse of a *qāḍī* in Ṣafad relating his fondness for 'Ajlūn and its people, and his reluctance to leave it for his new post (Lewis 1953: 480).

Without the flood reports, only a few of the Mamluk architectural commissions that were carried out in the town of 'Ajlūn and its vicinity would be known. One of the earliest of these commissions was the erection of the minaret at the congregational mosque of 'Ajlūn during the reign of Sultan Baybars by the *Amīr* Sanjar al-Shayzarī 662/1263-4 (RCEA #4528). An inscription found on a displaced limestone slab re-used to cover a cistern on the "right hand side of the road leading to the Castle of Ajlun" documents the restoration of an unspecified mosque in 686/1287 by the *Amīr* Rukn ad-Dīn Mankuwīrish al-Fāruqānī, the governor of 'Ajlūn during the reign of Sultan Qalāwūn (Mayer 1953: 155). Not far from the town, the Mashhad of Shaykh 'Alī was restored in 687/1288 by the commander of 'Ajlūn, 'Izz ad-Dīn Aybak al-Mukhtaṣ (van Berchem 1903: 61f; Meinecke 1992: II, 66). At another site near 'Ajlūn, Riḥāb, an unidentified building was erected in 692/1292-3 for Sultan Ashraf Khalīl (*RCEA* #4966; Meinecke 1992: II, 74).

According to Ibn Kathīr, Tankiz al-Nāṣirī, the long-serving *nā'ib* ash-Shām (r. 712/1312 – 741/1340) erected *a jāmi'* there (Ibn Kathir: XIV, 187). This building is no longer extant, and we have no information about its location within the town or its subsequent history. The *jāmi'* of Tankiz is not mentioned in the flood report, suggesting either that — if it was already in existence in 728/1328 — it was not damaged, or that it had not been constructed by that date. Ibn Taghribirdi also mentions 'Ajlūn among the sites endowed by Tankiz, but provides no further specifics (Ibn Taghribirdi: IX, 158). Ibn *Qāḍī* Shuhba mentions a pious sufi from 'Ajlūn who died in 779 in "Khānqāh al-Mujāhidīyya" (Ibn Qadi Shuhba: III, 561). Although this might look at first like evidence of another religious institution in the town, more likely it is a reference to the famous Mujāhidīyya in Damascus (Nu'aymi: II, 169; 'Ilmawi: 151; Sauvaire: VIII, 287; Badran: 285). It has been proposed that an anepigraphic

building southwest of the congregational mosque, known popularly as Maqām Sidī Badr, belonged to a Mamluk Khānqāh (Ghawanimah 1986: 71-82). If this building does predate the flood of 728/1328, its elevated, hillside location suggests how it might have escaped destruction. However, no solid proof that it is either Mamluk or a Khānqāh is available.

After the great flood of 728/1328, a detailed official document was prepared describing the event, cataloging the damage it caused and assessing the losses incurred. The report was apparently ordered by Tankiz, *nā'ib* ash-Shām. It was drafted by the *wālī al-wulā*, of the Southern "section" of the province (*al-ṣaqifat al-qiblīya*), an individual named 'Alam ad-Dīn Sanjar *al-Ṭarqashī*. Drawn up only two days after the storm, the report was signed at the bottom by witnesses and at the top by the *ḥākim*, and was sent to Tankiz in Damascus and to the other *wālī(*s) of the southern district. It was summarized in the historical chronicles of at least five contemporaries. Shams ad-Dīn Muhammad al-Jazarī (d. 1338) and 'Alam ad-Dīn al-Qasim al-Birzalī (d. 1339) give very similar accounts, although not identical. A third chronicler, al-Nuwayri (d. 1333) directly quotes and attributes al-Jazari's and al-Birzali's accounts back-to-back in his history (al-Nuwayri 30, 266-70; Ghawanimah 1982: 286-89). A fourth chronicler flourishing at the same time, Mufaḍḍal ibn Abi'l Faḍā'il, writes a synopsis of the flood report (Kortantamer 1973: 23f/136f). Finally, the history of Ibn al-Wardī (d. 1349) contains a very abridged account (Ibn al-Wardi: 413-4). All of these individuals were well situated to have close knowledge of the report: for example, al-Nuwayri was employed in the Mamluk administration at a high level (Little 1970: 31; Chapoutot-Remadi 1995: 156-160; Amitai 2001). There are numerous inconsistencies between these various transcriptions — a few appear to be straightforward scribal errors, others may be the result of omissions from the original, and some are unexplained.

All of the versions provide the exact day of the flood, Wednesday the 22nd of Dhul-Qi'da in the *Hijrī* year 728, which converts to the 28th of September 1328. Part of the shock generated by the event may well have stemmed from the fact that it was early in the season for heavy rainfall, let alone a deluge on the scale described (The Hashemite Kingdom of Jordan, Ministry of Transport and Meteorological Department 1971: 4). Al-Jazarī tracks the storm from its start the day before, as it moved over the al-Beqa', drenching Ba'albek, descending to the area of Ṣafad, and then reaching Jerusalem, Hebron and the Hauran region — where, he mentions, it filled reservoirs of the area that were empty after the dry season. Evidently, by the time the storm reached 'Aljūn, it had strengthened considerably, to take on the force described in the accounts. The fury of the storm — its torrential downpours, wailing winds, "heart-cracking" thunder, and flashing lightening — evoked apocalyptic visions in the terrified inhabitants. Ten people were killed.

The reports specify that it was only 'Ajlūn that suffered so significantly from this flood. The natural contours of the town played a large part in this high degree of destruction. As mentioned above, not only is 'Ajlūn located at the foot of a hill, but also at the confluence of two *wadi*s – Wādī Jawd, running from the north, and Wādī Jannān, running from the east. The rain was so heavy that even before the two *wadi*s converged, buildings on their flanks were swept away. The point of convergence would have been right in the center of the modern town, north of the congregational mosque. From there, the waters raged southward down the canyon, "taking with them whatever was in their path" – houses, *sūq*(s) and *qaysāriyyas*, mills and orchards.

The reports then go on to specify the particular buildings lost and damaged. At the congregational mosque itself, the eastern gate and the southern *riwāq* were destroyed, the ablutions-place swept away, and the prayer-hall interior filled with mud and debris. Not only did the mosque suffer physical damage: it also lost its *waqf* — although unfortunately the reports do not specify what specifically that *waqf* was. At least one madrasa was destroyed: the problem here is that each of three of the versions mention one madrasa, but each by a different name: it is "Madrasa al-Nafīsa" in one text, "Madrasa al-Naqībiyya" in another and "Madrasa al-Yuqayniyya" in a third. One source says that a hospital (*māristān*) was ruined. Two bath-houses are mentioned: one is referred to as "Ḥammām aṣ-Ṣaliḥī, known as *Amīr* Mūsa," and the other is called "Ḥammām as-Sulṭānī". Also swept away were aqueducts and bridges that were used to cross the wadis when they were flowing.

Most of the buildings in the inventories are related to commerce or manufacture. They list bakeries (*al-farānīn*), butchers (*al-laḥḥamīn)*, fodder-venders (*al-'allāfin*), mat-weavers, a dye-works

(*al-maṣbagha*), a slaughter-house, the shops of the cooks *(ḥawānīt aṭ-ṭabbākhīn*), and the shops of the bakers. Also damaged or destroyed were the *sūq*s of the leather-workers (*al-ādamiyīn*), the cotton-merchants (*sūq al-qaṭṭānīn)*, the hat-makers (*sūq al-qabbā'īn*), the gold-smiths (*sūq aṣ-Ṣagha*), and the rag-sellers (*al-saqaṭiyin*), as well as *sūq al-bazz,* a building known as *Sūq* al-Fāmiyya (or: al-Nāmiyya), and another called simply "*al-qaysāriyya al-qadīma"* – the old *qaysāriyya*. Among the commercial buildings listed is one with the curious moniker: Dār al-Ta'ām. The precise purpose of this entity is unclear. In Damascus, a *wikāla* by this name hosted and monitored the activities of merchants from Cairo (Ghawanimah 1987).

A few of the commercial buildings are identified by personal names. Of course, such identification would not necessarily mean that a building was erected by the individual whose name it carried. Sometimes it simply indicates an association through past or current ownership, residence or dedication. But in this most of these cases, al-Jazarī explicitly states that these buildings were "known to have been constructed by" the individuals named. There was a *sūq* constructed by an *Amīr,* Rukn ad-Dīn who had been a *nā'ib* at the 'Ajlūn citadel, most probably identifiable as Rukn ad-Dīn Mankuwīrish al-Fāruqānī, whose name and titles (*jam*dār *al-manṣūrī, al-nā'ib bi-*'Aljūn) appear in an inscription commemorating the above-mentioned restoration of a *masjid* in 686/1287 (Mayer 1953: 155-156). In two versions, the report lists a slaughterhouse "known as Ibn Ma'abad", while another mentions a "*sūq* of 'Um Ma'abad": were there two such buildings, or is this a transcription error? The inventory also mentions shops serving as *waqf* of the *qāḍī* Fakhr ad-Dīn *nādhir al-juyūsh*, endowed on his madrasa, the "Fakhriyya" in Nablus. This is doubtless Fakhr ad-Dīn Ibn *al-Qibṭī*, a Coptic convert to Islam who served as head of the army bureau from 1312 until his death twenty years later, and was a prolific patron with foundations in Cairo, Jerusalem, Hebron and elsewhere (Burgoyne 1987: 259).

Two different buildings are attributed in two different versions to the *Amīr* Sayf ad-Dīn Baktamur al-Ḥusāmī, one a *sūq* (*sūq al-khalī'*) and the other called *Qaysāriyya* al-Tijāra / al-Tujār. Not to be confused with the more famous Baktamur al-Sāqi, this individual also had a high profile in the Mamluk arena between 1310 and his death in 1324, holding posts such as *nā'ib* of Gaza, then *ḥājib* of Damascus, and *nā'ib* of Alexandria. Another *qaysāriyya* severely damaged in the flood was that erected by the *nā'ib* ash-Shām Tankiz and endowed on the *bimaristān* (hospital) that he built in Ṣafad. The flood carried off twenty of the shops from this *qaysāriyya*, destroyed its doors, and left the remaining walls unstable.

Only a couple of times does the inventory give a topographical point of reference that identifies approximate locations for the buildings listed. We can situate a neighborhood called "Ḥarat al-Mushāraqa" in the north of the town next to Wādī Jawd, since the report specifically attributes the destruction of some of its buildings to the rising waters in this wadi before it converged with the other. The *Sūq* al-Fāmiyya is said to be "near the spring" – so this would situate it in the vicinity of the congregational mosque, which is also near the spring.

Is it possible to trace the course of the flood waters, based on the contours of the *wadi*s, and extrapolate the approximate topographic locations of the buildings that were "swept away"? In the very broadest sense, the buildings described in the inventory would have been those in the low-lying areas of town, the *wadi* banks and beds. Of the types of buildings listed in the flood report, many of them (such as tanneries, mills, and slaughterhouses) would have required a location near running water or on the outskirts of town, because of the nature of their activities. The heavy concentration of *sūq*(s) and *qaysāriyya*(s) in the list is consistent with the idea that such commercial buildings tended to be co-located, and frequently were situated near the congregational mosque of a town.

Related to this, is another key question: is the organization of the buildings listed in the report topographical? Clearly, it is not typological. Likewise, it is evident that the buildings are not listed in order of how badly they were damaged, nor is their order based on the relative importance of the buildings. Can we learn anything from the order of the telling? This requires further clarification, especially since there are variations between the different versions of the report. However, there appears to be a general north-to-south flow to the description, as if it follows the course of the flood's path down the *wadi*s, to the point of their convergence and then beyond. If this can be verified, it may be possible to plot out the mentioned buildings, at least in a general way.

Obviously, the report only catalogs what was lost or damaged. Possibly, a good deal survived. The physical contours of the town are very hilly, even within the small area of its town center. Buildings situated on the more elevated sites around town could have weathered the storm with minimal damage. Certainly, the official Mamluk administration of 'Ajlūn, which operated out of the citadel, would not have suffered directly.

The flood report had been drawn up merely two days after the storm, and presumably was submitted to the authorities in Damascus promptly thereafter. What happened then? Ideally, our chroniclers would have followed up this notice in their annals for the subsequent months or years, describing the response of the Mamluk authorities to the destruction in 'Ajlūn. Unfortunately, I have not found any such references. This does not necessarily indicate that no reconstruction aid was delivered, however. Rather, it might suggest that the follow-up was simply less newsworthy than the flood itself and was overshadowed by subsequent events unfolding in other places.

It should be noted that the flood struck 'Ajlūn at a time of relative stability in the region, and the empire. However destructive, this disaster does not belong in the same category with the later chain of events – that included locusts, plague, draught, earthquake and Timur's invasion – whose cumulative effects arguably contributed to economic decline in Northern Jordan. What were the after-effects of the 'Ajlūn flood destruction in the short and long term? It was evidently the commercial sector that suffered most heavily. From the Ibn Battuta's description cited above, there had been a healthy economic life flourishing in the town before the flood. One version of the flood report provides an estimate of the loss of goods to be 500,000 *dirham*s, apart from crops, livestock, gardens and mills outside the city. Did 'Ajlūn reconstruct its markets and restore its economic vitality, reclaiming its role as regional trade center and income source for religious and charitable institutions in town and elsewhere?

At any rate, it is Tankiz *nā'ib* ash-Shām who is credited by modern historians with ordering the restoration of 'Ajlūn and its Friday mosque in the aftermath of the flood, although the historical sources I have found so far do not specifically make this attribution. Meinecke, assuming that this flood damage would have been repaired immediately, asserts that the mosque "wurde vermutlich im Auftrag des Gouverneurs von Damaskus Tankiz restauriert" (Meinecke 1992: II, 150). At the time the flood report reached Damascus, Tankiz was midway through his posting there. Early in his career, he would have witnessed the great earthquake that struck Egypt and the wider region in 1303, and the long-term program of reconstruction that that event set in motion. During his tenure as governor in Syria, damage caused by violent storms in Damascus in 1317, 1319 and 1326 may have spurred a number of his many architectural and urban commissions there. At the end of his career, a great fire around the Umayyad Mosque and his response are described in detail in historical sources. His urban re-development programs in Damascus and Jerusalem were in full swing at the time of the 'Ajlūn disaster (Kenney 2004).

In any case, it is clear that restorations were done at the 'Ajlūn *jāmi'*: the *qibla* riwāq and ṭahāra in the court preceding the prayer hall were reconstructed and survived until just a few decades ago (Ghawanimah 1986: 213f). Furthermore, according to an inscription no longer *in situ*, the east portal was rebuilt in 732/1332: "Bismallah, [Quran 9:18], this blessed door was renewed in the days of our lord *Qāḍī* al-Quḍāa 'Alam al-Din al-Ikhnā'ī of Damascus the well-guarded, under the direction of our master al-*Qāḍī* Tāj ad-Dīn Muḥammad al-Ikhnā'ī, the magistrate (*al-hākim*) at 'Ajlūn in … 732… (1332)" (RCEA #5618). The extended al-Ikhnā'ī family figured prominently both in Cairo and Damascus, with representatives filling the post of chief Mālikī *qāḍī* in Cairo almost continually from 718/1318 to 779/1377 (Escovitz 1983: 152-3). In an unusual deviation from the epigraphic norm, it is not the sultan's or the *nā'ib*'s name that follows the formulaic phrase "in the days of…" and the term *mawlana* (our lord) of this inscription, but rather the *qāḍī* al-Quḍāa of Damascus, 'Alam ad-Dīn al-Ikhnā'ī. The inscription goes on to say that the project was carried out under the *ḥākim* at 'Ajlūn, *Qāḍī* Tāj ad-Dīn Muḥammad al-Ikhnā'ī – perhaps the same individual who would later take up the post of chief Mālikī *qāḍī* in Cairo in 750/1349.

Although Tankiz is not named in this text, the Damascus *qāḍī* mentioned here, 'Alam ad-Dīn al-Ikhnā'ī, is closely associated with him: it was he who consulted with Tankiz on the subject of restoring the Umayyad Mosque in Damascus, and who accompanied Tankiz two years earlier to set up the

nā'ib's madrasa-complex in Jerusalem (Ibn Kathir: XIV, 148). It may be that Tankiz delegated to this *qāḍī* some of the oversight of the restorations in ʻAjlūn. Another building that must have been rebuilt after the flood is the *Qaysāriyya* of Tankiz, which had reportedly lost twenty of its shops, as well as its doors, and whose remaining walls were destabilized. A 1341 inventory of the properties confiscated from Tankiz after his arrest, lists "a *qaysāriyya* at ʻAjlūn" valued at 120,000 *dirham*s (Al-Safadi: X, 429).

Ironically, it is the reporting of the near destruction of ʻAljūn that has preserved the most extensive record of its buildings and institutions – much more informative than the appreciative accounts of visitors in happier times. In addition to providing the basis for a sketchy reconstruction of Mamluk ʻAjlūn and an inventory of some of its amenities, the flood report also gives a picture of high level Mamluk architectural patronage there, offering a helpful supplement to the epigraphic evidence, which is the main source of information about building patronage in the provinces.

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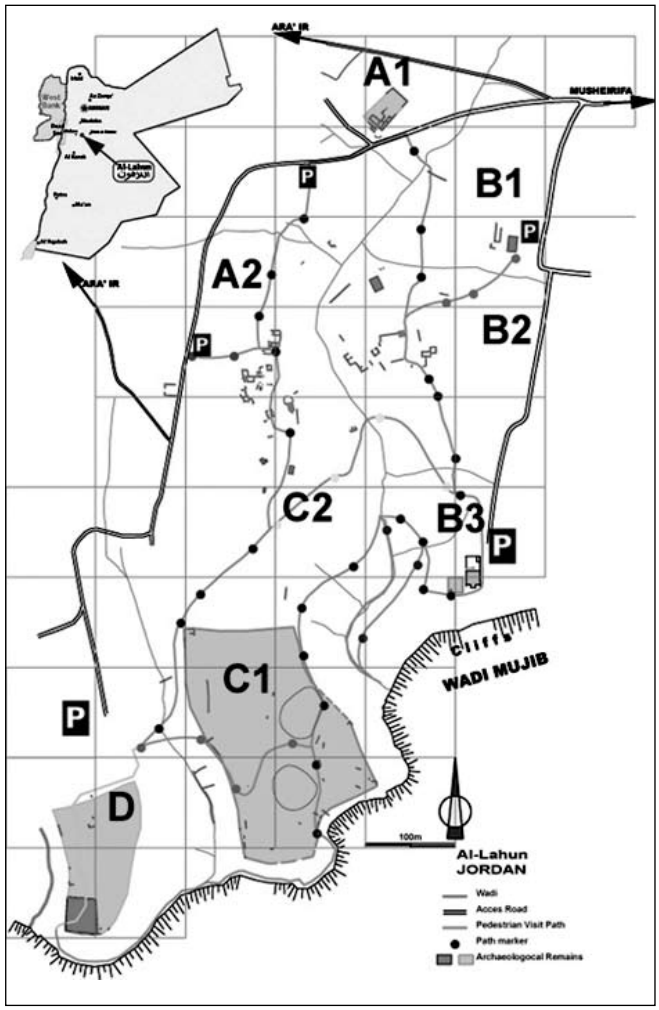
Archaeological Past and Tourist Future of Al-Lāhūn: A Geoarchaeological Park and Museums

Location (FIG. 1)
Al-Lāhūn, also referred to as al-Lāhūn or Khirbat al-Lāhūn in some publications, is located in central Jordan, 82km. south of 'Ammān and nearly 30km. south-east of Mādabā and the Dead Sea [1]. Its strategic location near the Kings' Highway, on an isolated spur dominating the broad panorama of the Wādī al-Mūjib — ancient Arnon (FIG. 2) — explains why the site has been continuously inhabited from prehistoric times until the modern day. Historically, it is part of the ancient Moabite kingdom, an important region in the history of Jordan.

Presentation
At the start of the al-Lāhūn excavations in 1977, it was decided, by mutual agreement between the Department of Antiquities [2] and the Belgian Committee of Excavations in Jordan that a dig house would be built with common funds. The excavation team was to live in the house until the year 2000, when it would be converted into a regional Museum (FIG. 3) with convenient parking and footpaths to the site. In this way, the archaeological work would not be lost to future generations. The excavations, conducted between 1978 and 2000, extend over an area of 66 ha. on a hilly plateau[3]. The site is divided north — south by the Wādī al-Lāhūn and east — west by other seasonal streams, thereby separating the area into four natural sectors (labelled A to D on the map) which influenced the choice of settlement by the ancient inhabitants (FIG. 1).



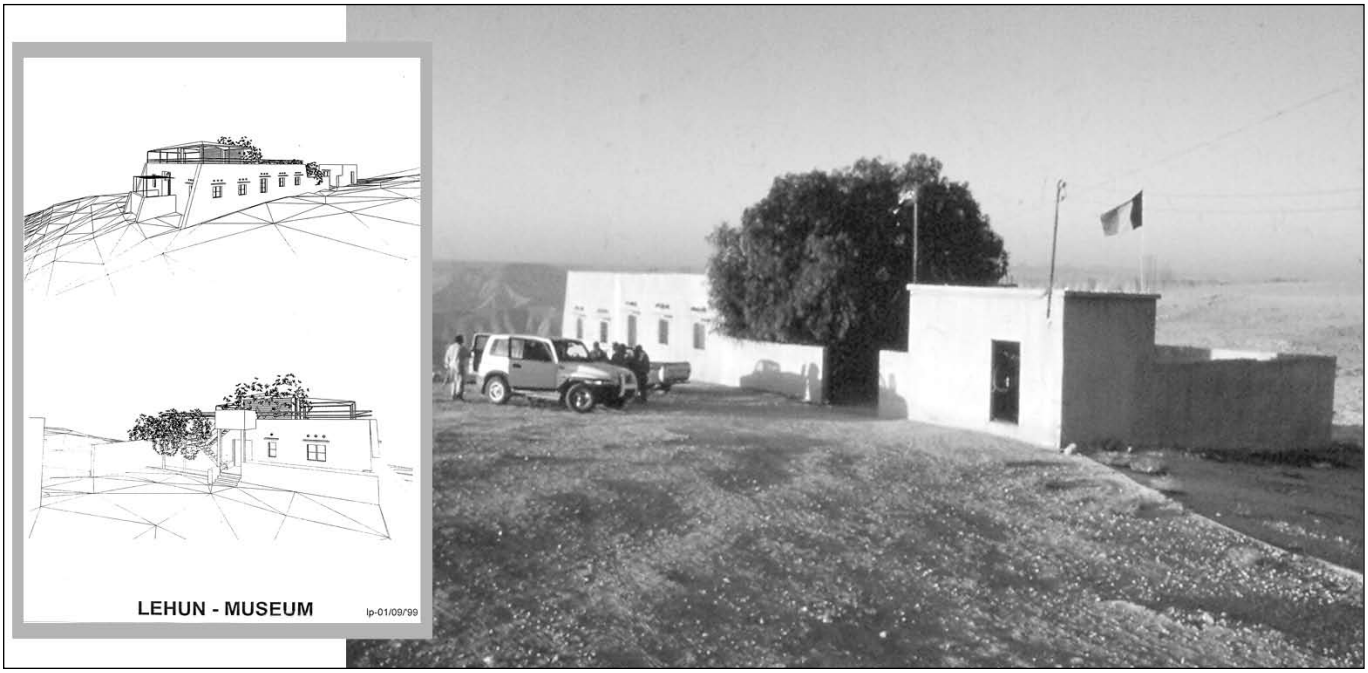
1. Al-Lāhūn, location of the site and its different sectors (A to D).

[1] Al-Lāhūn can easily be reached by the King's Highway (the historical north-south axe between Arabia and Syria), from *Dhībān* (ancient Dhibôn) or by the modern Desert Highway, direction Umm ar-Raṣāṣ (3,5km east of the site), turning to the south at Mushayrifah (see the new road-panels).

[2] We are very grateful to Dr Adnan Hadidi, former General Director of the Department of Antiquities, who suggested to build this future Museum, as well as for the support he gave us during our work. May his successors, Dr. Safuan Tell, Dr. Ghazi Bisheh and Dr. Fawwaz al-Khraysheh be thanked here also specially for all the help and encouragements we received during our different excavation seasons.

[3] The altitude ranges between 748 to 714m according to the official Jordanian survey (Aqaba).

2. Panoramic view to the southern Moabite plateau and Wādī al-Mūjib from the terrace of the archaeological museum.



3. The Belgian dig house and the project of transforming it into an archaeological museum.

It is obvious that in Antiquity, the southern part of al-Lāhūn, which is naturally protected by the steep cliffs of the Wādī al-Mūjib, was inhabited in periods of war or upheaval. In the Early Bronze Age[4], a large fortified town covering nearly 6 ha. was built, with its necropolis on the opposite side of the Wādī al-Lāhūn[5], which allowed for observation of the valley and southern Moabite plateau. In the Late Bronze Age / Iron Age I transitional period [6], a well-strengthened village was built, overlooking the whole area (FIG. 2). In Iron Age II, a fortress (see FIG. 8) was constructed above the ancient vil-

[4] The Early Bronze II-III town (sector C1), built above Early Bronze I oval houses, was well protected by a wall of 5,5m thickness. Different houses, a street and two large water reservoirs were excavated.

[5] Belonging to the Early Bronze I Necropolis (sector B3), a family tomb (three women and a young child) has been excavated, next to the dighouse**.** More than 130, often well preserved vessels have been found.

[6] Temporarily abandoned, the southern plateau will be resettled around 1300-1200BC by an agricultural population. Contemporary with the trouble period when the Moabite kingdom was created, they planned their village very carefully: a double precinct wall, 33 houses and a cistern were excavated.

lage by the Moabite kings[7] to overlook and protect the region and, probably, to store grain harvested nearby for the royal troops living in barracks at Aroër and at the capital Dhibôn.

On the other hand, the northern part of the site — near the commercial roads — was favoured during times of peace. This is attested to by a Nabataean temple[8] (FIG. 5) and dam, a Byzantine[9] and Mamluk settlement[10] with a mosque dated to the 15th century AD, four Ottoman cave houses[11] and, most recently, the modern village. This multi-period site gives an overview of the history of Jordan.

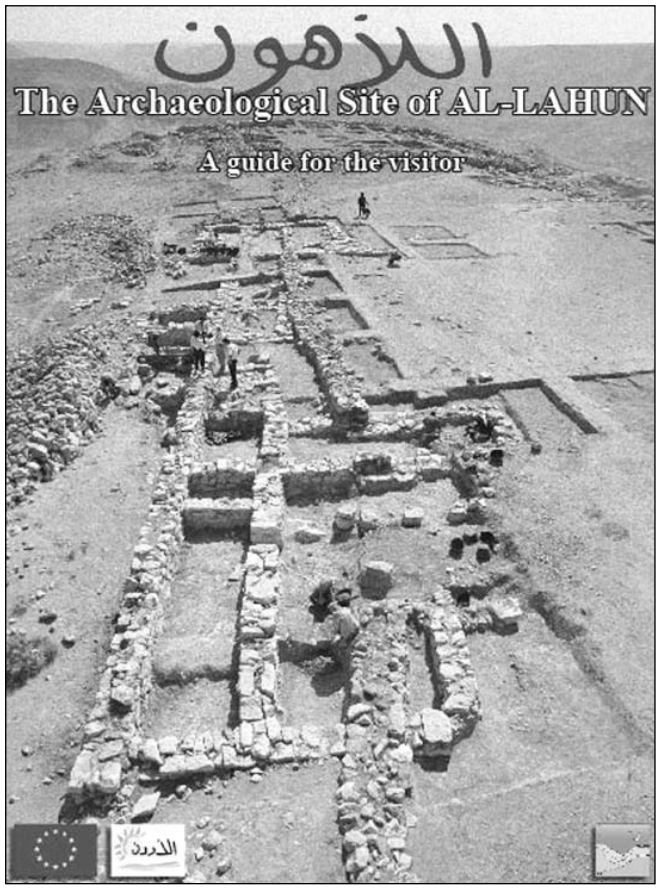
In 1994, a lecture on al-Lāhūn was delivered at the Royal Museums of Art and History in Brussels. One of those attending, Mr Cool — a member of the European Delegation [12] — became interested in the region and its heritage. He proposed to include al-Lāhūn into a Jordan — European Project.

The Pilot Project

Since the year 2000, al-Lāhūn has been part of a pilot project for the "Protection of cultural heritage in the Hashemite Kingdom of Jordan — archaeological and tourist promotion of the Mādabā region" [13], which has been run in association with the Umm ar-Raṣāṣ development. Al-Lāhūn and Umm ar-Raṣāṣ are located 3.5 km. apart. They complement each other, despite being very different. Historically, Umm ar-Raṣāṣ is a good example of urban and religious archaeology, well-known for its Byzantine and Umayyad remains on a wide plateau. Al-Lāhūn, in contrast, was alternately inhabited by nomads and city-dwellers, thereby illustrating the history of Jordan around the great canyon of the Wādī al-Mūjib. Linking both sites within one project enables the diversity and richness of Jordan's past to be presented.

When al-Lāhūn was discovered in 1977, the modern settlement consisted of just four houses, without a school, water, electricity or good access road. During the period of the excavations, al-Lāhūn grew tremendously. Now it is a village with more than 40 houses, two schools, good access roads, bus links with other villages and all modern comforts, including water and electricity.

The problem was now to transform this archaeological site, situated in an isolated place, into a tourist attraction. To make the site accessible and appealing to visitors, the European Commission sponsored the project in close collaboration with the Department of Antiquities of Jordan, who gave logistical assistance. The Belgian Committee was tasked with producing a detailed preliminary design for the physical works to be done at



4. Cover page of the "Guide for the visitor": Al-Lāhūn, sector D (fortified village and Iron Age fortress).

[7] Possibily by King Mesha' when rebuilt Aroër and made the highway at the Arnon (Jackson K.P., The Language of the Mesha' Inscription = DEARMAN A., *Studies in the Mesha Inscription and Moab*, Atlanta, Scholars Press, 1989.

[8] During this period of international trade, Lahun must have been a prosperous village. A temple, a dam and a tomb were found.

[9] The Byzantine period is represented by Late Roman/Byzantine pottery and perhaps a church

[10] A Mamluk settlement comprises a "caravanserai", a dam near the Nabataean one, and a church (see photograph, for restorations).

[11] Four Ottoman cave houses, used as granary are now restored.

[12] We want to express our thanks to the European Union and specially to Mr Cool, and H.E. J. Moran and all the members of the European Union who helped us in this project.

[13] D. HOMÈS-FREDERICQ, *Lehun (Al-Lehun) Site subproject. Commitment NR S 12-100240- Preliminary design, Brussels 2002, Final Report*, Brussels 2002 (112 p. 44, figs. 27 drawings, plans and Annexes). This report gives all the information for the transformation and restoration for the Archaeo-Geological Park and the Museums.

5. The Nabataean temple.

al-Lāhūn[14], as well as the plans required to transform the site into a National Geoarchaeological Park, with a regional archaeological museum, folklore museum and handicraft centre. Special footpaths through the excavations had to be designed. Trails along the more dangerous cliffs of the canyon were also planned for hikers and nature enthusiasts, leading to the Wādī al-Mūjib and newly constructed dam. A handy Arabic and English guide[15], edited by the European Union, has been produced, explaining the excavations, National Park and museums (FIG. 4). Leaflets and handouts are provided for schoolchildren, as well specially facilities for the visually and physically handicapped.

In order to transform the archaeological site into a National Park, the following infrastructure had to be taken in consideration to permit a comfortable and safe visit to the archaeological remains of the different sectors. Easy circulation around the site is a primary necessity so good access roads for cars are required as well as convenient parking which allows disabled people to visit the archaeological remains. Footpaths (FIG. 7), orientation arrows and explanatory panels (FIGS. 6 and 7) had to been designed, taking also in account maintenance costs, future adaptations and the need to periodically update the text on the panels.

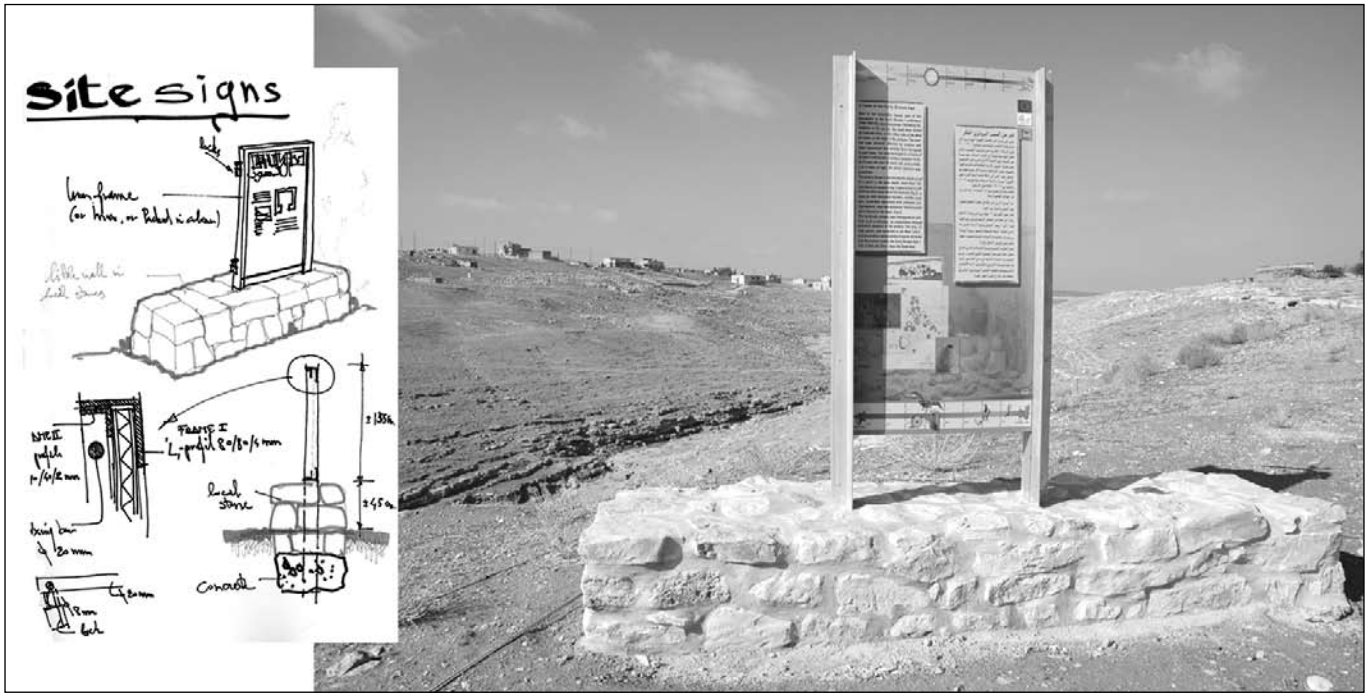
It is impossible to discuss all of the different aspects we had to look into here: we only give a few examples. The existing access roads have been repaired and upgraded to allow easy access to the museum and archaeological remains. We have suggested that the roads and car parking are constructed of permeable, compacted and stabilised limestone gravel, as asphalt is not recommended owing to the high temperatures experienced in the region.

Circulation arrows have been placed along the footpaths, especially at main junctions in order to guide visitors towards the different sectors. All over the site, large orientation panels (FIGS. 6 and 7)[16], measuring 120 x 90cm., have been erected at each of the main archaeological features, giving detailed information in Arabic and English, with plans, drawings and photos to explaining the chronological and general significance of the remains. The centuries are indicated by numbers on the upper part of the panel for the adults, whereas for youngsters a timeline is found on the lower part of the panel. Chronological dates have been replaced with objects familiar to children, such as a flint for prehistory, a wheel and vase for the beginning of history, a camel for Nabataean trade and a Mobile phone for the modern period. The back of the panel (FIG. 7) provides a global plan of the site, with the locations of the different sectors (A to D) and their archaeological remains, footpaths, site facilities

[14] The plans and the technical work have been realised by Architect Luc Paul, I would like to take this opportunity to thank him for his collaboration and valuable suggestions.

[15] D. HOMÈS-FREDERICQ, *The Archaeological Site of al-Lehun. A guide for the visitor,* Amman (in press).

[16] These panels have been placed near the Islamic farmstead/caravanserai (sector A 1), the Mamluk settlement and Mosque (sector B2), the Folklore Museum (sector B1), the Nabataean Temple (sector B2), near the archaeological Museum (sector B3), the Early Bronze settlement (sector C1), the Handicraft House (sector C2), a parking lot (sector D), the Iron Age I village (sector D) and the Iron Age II fortress (sector D).



6. Explanatory panel at the site.

7. Rear of the explanatory panels, showing location of car parking, roads and footpaths, plus chronology, drawings and photos.

and car parking, as well as the opening hours of the museum and the names of sponsors. The panels are placed approximately 6m. from the archaeological remains, and have a bench upon which tired visitors, children or disabled visitors can rest. Trees will be planted to provide some shade.

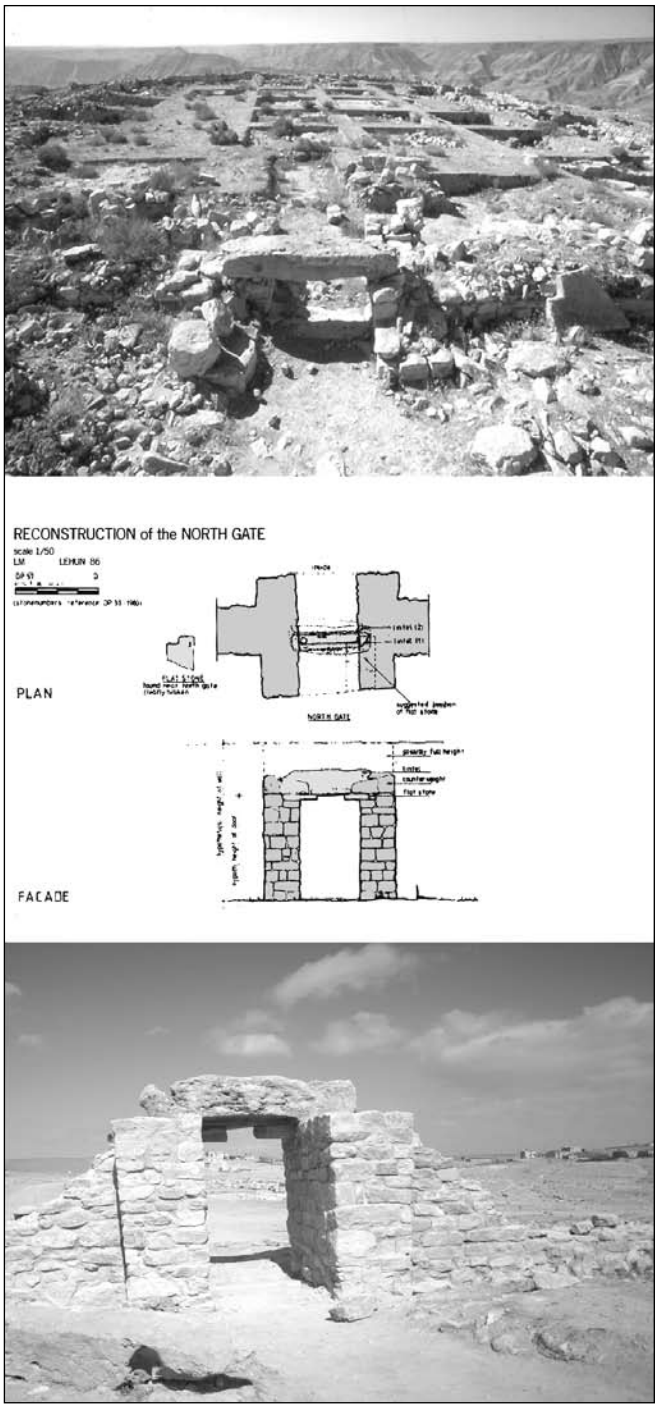
All the footpaths have been integrated into the existing village and its natural environment. Most of them correspond with existing ones used by the villagers and their herds, as we did not want to change the traditional way of life in this quiet village. Each walk is marked with coloured numerals, corresponding to a circuit of particular duration or related to the specific interest(s) of the visitor. Different types of visit are proposed: for example, it is possible to go from the dig house to the folklore museum by car (blue markers), or via the footpaths, first visiting the Nabataean temple (green markers). The explanatory panels use the same colour coding and specify the length of time required to complete the circuit.

Protection of Some Areas

To minimise destruction by wind, erosion or human agency, we restored and consolidated the excavated areas each season. However, the most important monuments need further protection, for which a fence is suggested. It would make no sense to en-

close the entire site of al-Lāhūn as has been done elsewhere. The site is too extensive and the village still growing. The local inhabitants regularly make their way across the site with their herds or when visiting relatives. Fortunately, the cliffs of the Wādī al-Mūjib provide natural protection to the southern part of the excavations. It was therefore decided to fence only the most sensitive locations: the Nabataean temple (sector B2), Mamluk mosque (sector C2) and Early Bronze Age settlement (sector B3).

Some other areas had to be consolidated and / or reconstructed. Taking sector D as an example, near one of the explanatory panels, a metal bridge to the Iron Age ruins allows the excavated houses to be seen from above. It is also the best place to explain the architecture and complexity of Moabite history to the visitor. The monumental gate (FIG. 8) at the north of the Iron Age II fortress has also been reconstructed, giving a good impression of a Moabite fort in central Jordan. In the same area, near the "scarab house", digging methods are illustrated for children, showing the progress of an excavation. Metal pegs and red ropes delineate 5 x 5m. squares; blue ropes define the 1m. benches — used to ease the circulation of workers and wheelbarrows — along the southern and eastern sides. Six stages of excavation are visible: (1) the natural surface before the dig, (2) after removing plants and topsoil, (3) the first excavated layer, (4) emerging walls, (5) excavated walls and (6) soundings and sondages.

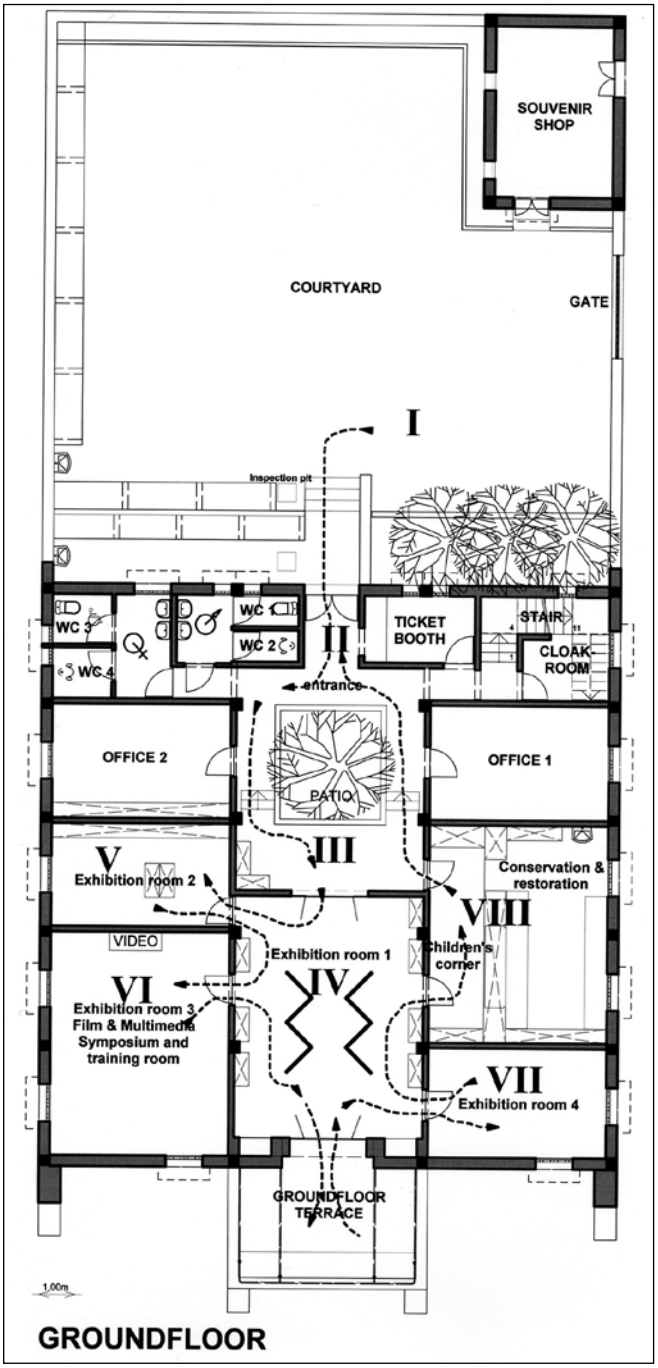


8. Iron Age fortress after excavation, artist's reconstruction of the monumental gate and its present reconstruction.

The Archaeological Museum: Transformation and Future

As mentioned above, when planning the dig house back in 1978, every space was designed with a dual purpose in mind: practical for the dig and functional for the future museum. The transformation of the dig house into a museum, which is easy for children, the blind or the handicapped to visit and enjoy is nearly complete. The building is also conceived as a regional centre in which to display excavated objects from Al-Lāhūn, Umm ar-Raṣāṣ and other sites in the region. Several issues had to be taken in consideration whilst transforming the dig house into a museum.

Major changes (FIG. 9) included the conversion of the tool shed into a souvenir shop and the paved courtyard, with its garden and benches where pottery was washed, into a cafeteria and rest area. The former kitchen, dining room and architects' rooms have been transformed into a ticket booth, offices for the curators and exhibition rooms. The pottery room became a conservation lab., which can be used by the Mādabā museum conservators or by excavation teams to show their work to visitors on open days. A children's corner, where youngsters can learn how to restore vessels, is also included.



9. Plan of the interior of the archaeological museum.

The former office and two small sleeping rooms have been combined to create a large multi-functional space, which can be used as a symposium or exhibition room, with photographs showing the progress of a dig. Other activities can also take place here, including films, multimedia presentations, video, archaeological computer games and a small library for children. The educational programme is well-developed.

Last but not least, the ground floor terrace, which has a beautiful view of the Wādī al-Mūjib, is to be shaded with vines to provide some protection from the heat. On the roof, from where the view of the landscape is an unforgettable experience, a panoramic relief map designed with children and the disabled in mind points the way to the most important towns, villages and rivers of the region. Both traditional and braille writing are used here, as is indeed the case throughout the museums.

Layout of the museum

For this purpose, we can only suggest the following items, which were tried out at the "Discover al-Lāhūn and the King's Highway" [17] exhibition held in ʻAmmān in October 2002 [18].

1. White-painted, standardised panels in wood with iron frames, displaying significant photographs, reconstruction drawings, plans and explanatory texts (FIG. 10) [19].
2. Objects excavated at or around al-Lāhūn to be exhibited in showcases, which can be opened. These items can be touched by children or the handicapped under the supervision of a Museum guide [20].
3. Two casts, one of the site and the other of the Nabataean temple, complete the exhibition material that was given to the future museum of al-Lāhūn by the Belgian Committee of Excavations.
4. An overview map of Jordan should be placed at the entrance of the museum, to show the strate-

[17] D. Homès-Fredericq, *al-Lahun and the King's Highway. Exhibition under the protection of Her Majesty Queen Rania Al-Abdullah,* Amman 2002. (Manuscript at the Registration, Department of Antiquities in Amman). A publication in French and Dutch has been published when the exhibition took place in Brussels between 1997 and 2000. D. Homès-Fredericq, *Lehun et la voie royale. les fouilles belges en Jordanie / Lehun en de Kooningsweg. De Belgische opgravingen in Jordanië*, Brussels 1997.

[18] The exhibition was organised in the City Hall, Municipality of Greater ʻAmmān, in the centre of the town. It was inaugurated by Her Majesty Queen Rania al-Abdullah on October 13th 2000. It was visited by many private and governmental schools.

[19] The Belgian excavations have given the archaeological material, now in the Museum of Mādabā, comprising ore than 250 beautiful excavation photographs, plans, maps, casts of the principal monuments, texts and labels in Arabic and English. The objects are for the moment stored partially in the Mādabā Museum and the ʻAmmān storerooms of the Department of Antiquties.

[20] E-muze (stichting voor erfgoededucatie), specialised in Museology and activities for blinds and handicaps in the Royal Museums of Art and History, Brussels, have made a special circuit for them, something not know untill now in Jordan. We thank especially Mrs Greet van Deuren and Ans Behring who are responsible for this aspect of the al-Lāhūn Museum.

10. Possible layout of the interior of the al-Lāhūn museum as suggested in the exhibition "Al-Lāhūn and the Kings' Highway", City Hall, 'Ammān, 2002.

11. Educational programme for the exhibition "al-Lāhūn and the Kings' Highway", City Hall, 'Ammān, 2002.

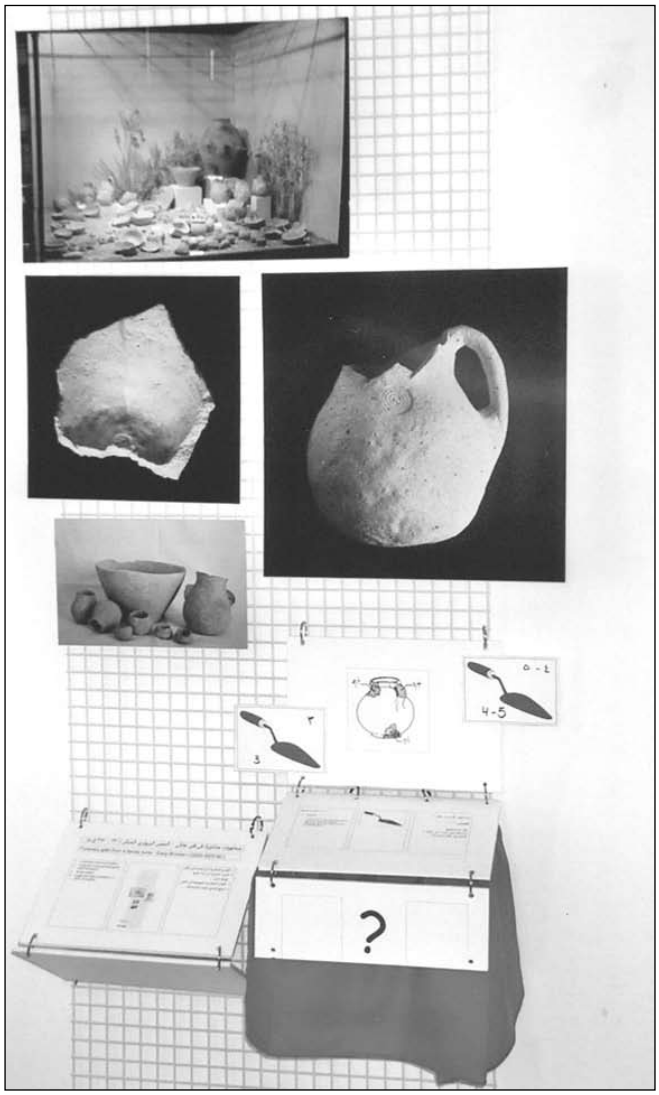
gic position of al-Lāhūn along the ancient caravan and military routes, thereby locating the site in its geographical and archaeological contexts.

5. Educational programme — as children are the future of the country, special educational programmes with various activities have been conceived. Some were tested at the 'Ammān exhibition, whilst others are innovations for Al-Lāhūn. They are always indicated by a drawing of a trowel on the panels (FIG. 12).

Excavation square: although it is possible to visualise the different stages of an excavation in the field, it is necessary to have an "excavation square" in either the museum or courtyard, where schoolchildren can make their own experiences. The equipment used during the dig should be at their disposal: brushes, trowels, field book, pencils etc.. Replicas of walls, pottery, coins, flints or objects they can see in the showcases are put in the sand. The children enjoy pretending to be real archaeologists, playing the role of director, architect, photographer or archaeologist, noting their finds, taking measurements and discussing the results with the guide.

Do-it-yourself station: the visitor, whether young or old, can walk through the museum and experiment at his own pace with activities such as filling in a booklet with small, amusing activities, pictures or drawings (FIG. 11); different activities take place in the different rooms.

Guides are essential in a museum: They have to be active, adjusting themselves to the needs of their group and interacting with the teachers. They have to play with the children to catch their attention [21].



12. Example of "mystery box" relating to an Early Bronze Age tomb, as used at the exhibition "al-Lāhūn and the Kings' Highway", City Hall, 'Ammān, 2002.

The guides have Edu-cars (FIG. 13) — *educational cars* [22]: which are special boxes on wheels containing modern replicas of the archaeological objects in the showcases, e.g. flint, pottery, dagger, cosmetic palettes etc.. Made of the same material as the original artefacts, children and the visually-impaired will therefore experience the same feeling as having the originals in their hands.

Educational leaflets: (A4-format) for "young detective-archaeologists at the site of al-Lāhūn" are provided to children aged between 9 and 13 years, in order to introduce them to the fascinating archaeological work being undertaken in Jordan and to invite them to hone their sense of observation. They have to answer questions about daily life in Antiquity, examine objects in the museum and discover answers to the "mystery boxes" (see below). Many other games can be invented, such as colouring in outline drawings of artefacts, which is appreciated by both young and old (FIG. 11).

"Mystery boxes": or closed boxes containing material to be touched and, with the help of drawings, identified as, for example, a juglet (FIG. 12). Experiences can also be made with smell; for example, a small hidden flask containing oil or perfume has to be identified by the children.

Jigsaws are always a success: reconstructing a platter or trying to put the work of a dig into the right order can be amusing for parents as well as for children. Having answered the various questions contained in the booklet, the young visitors can be congratulated by being asked to put their names and drawings on a special panel and by signing the visitors' book.

6. A film and computer corner [23], with video games, are envisaged, as well as a small library where children from the village of Al-Lāhūn and visitors alike can consult educational material. All texts will be available in Arabic and English.

Many other ideas have been developed as part of our project, but space precludes us from describing them all.

13. "Edu-car"; all objects in the drawers are replicas of real artefacts (Velzeke Museum, Belgium).

The Folklore Museum

A typical old village house, close to the Nabataean temple and archaeological museum has been restored (FIG. 14) and converted into a folklore museum. Its architecture is representative of the region as a whole and is important in showing younger people, especially those coming from the cities, how the agricultural and nomadic population were living fifty years ago. It is devoted to the popular traditions of the region, including home furnishings, agrarian tools, musical instruments and oral and intangible traditions dating back to the 19th and 20th century. Three mannequins illustrate the daily life of this village of the Saleitha tribe [24]. Here too an educational program is planned and the

14. Folklore Museum during restoration works.

[21] Once the children have seen the guide making fire with flints they want to try by themselves and will never forget this experience.

[22] We have projects with the Ename and the Velzeke Museums in Belgium, where the curator P. van der Plaetsen has conceived these Edu (catioan)-cars.

[23] In the 'Ammān exhibition, a multi Media corner was made possible thanks to the generosity of H.R.H. Ptincess Sumayya who has lent a computer allowing to visit the web-site of al-Lāhūn (www.lehun-excavations.be) and give more information about the site.

[24] To have more information about the tribe of al-Lāhūn, see the article of R. Abujaber, *al-Salaitah clan of the Beni Sakhr Tribe,*in the Newsletter 1 (2002), of the website www.lehun-excavations.be

guide can help visitors to try on local clothes or to play music instruments.

The Handicraft House
This is intended to sell products made by the villagers. Some of the older women can demonstrate the work of spinning, weaving etc. using traditional techniques and can market their work; tourists are always eager to buy local products.

We have still many other projects in hand, but I will conclude by recommending the Lāhūn website (HYPERLINK "http://www.Lehun-excavations.be" www.Lehun-excavations.be) [25], the hike (FIG. 15) to the new al-Mūjib dam and the discovery of the daily life of the village, plants, stones, fantastic landscape and kindness of the Jordanian people and their rich heritage. We hope many visitors will come and enjoy their visit, as we have enjoyed excavating the site and preparing its future.

15. For hikers: the possibility of walking to the Wādī al-Mūjib and new al-Mūjib dam.

Photography: mainly by W. De Lauwer and members of the team; thanks also to M. Duff, J. Demeulemeester, M. Haobbsh and E. Montchamp for permission to publish their photographs.

Illustrations

[25] Webmaster: I. Swinnen.

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Monumental Tomb and Simple Pit-Graves at Khirbat adh-Dharīḥ (Nabataean Period, Jordan): An Archaeo-Anthropological Study

Introduction

The site of Khirbat adh-Dharīḥ is located in south-western Jordan, ca. 100 km north of Petra. It was found in 1818 and explored several times during the twenty century. The excavations directed by F. Villeneuve and Z. Al-Muheisen (from 1984) has shown that the site included a village and a sanctuary dating from the 1st to fourth centuries AD; it was abandoned around the time of the major 363AD earthquake and reoccupied during the sixth-eighth centuries AD. Two cemeteries were discovered on the slopes to the east of the village and temple. The elements excavated in the Southern cemetery are three: a monumental tomb (Tomb C1), a small shaft-tomb (Tomb C3) and eight simple pit-graves (Sounding C2). In the Northern cemetery (NC) nine graves were excavated (FIG. 1) (Al-Muheisen and Villeneuve 1994; Lenoble *et al*. 2001; Villeneuve and Al-Muheisen 1988, 2000). That of course represents only a very small part of both cemeteries, but the detailed survey of the whole area (without geophysical survey, but with the «help» of systematic clandestine excavations earlier than the project) makes probable that C1 was the only monumental tomb.

The upper part of the monumental tomb C1 has been almost completely destroyed but the buried part, which measures about 6,6 x 6,6m, was preserved. It is composed of six shafts divided up into two contiguous sets of three, placed side by side. The shafts are arranged according to a roughly west-east axis. Each shaft has five ledges on each side and contains five superposed graves. The number of graves is thus thirty, of which only five were found intact. The C1 tomb was built around 100-110AD and was in use until the time of the 363AD earthquake (Lenoble *et al*. 2001) (FIGS. 2 and 3).

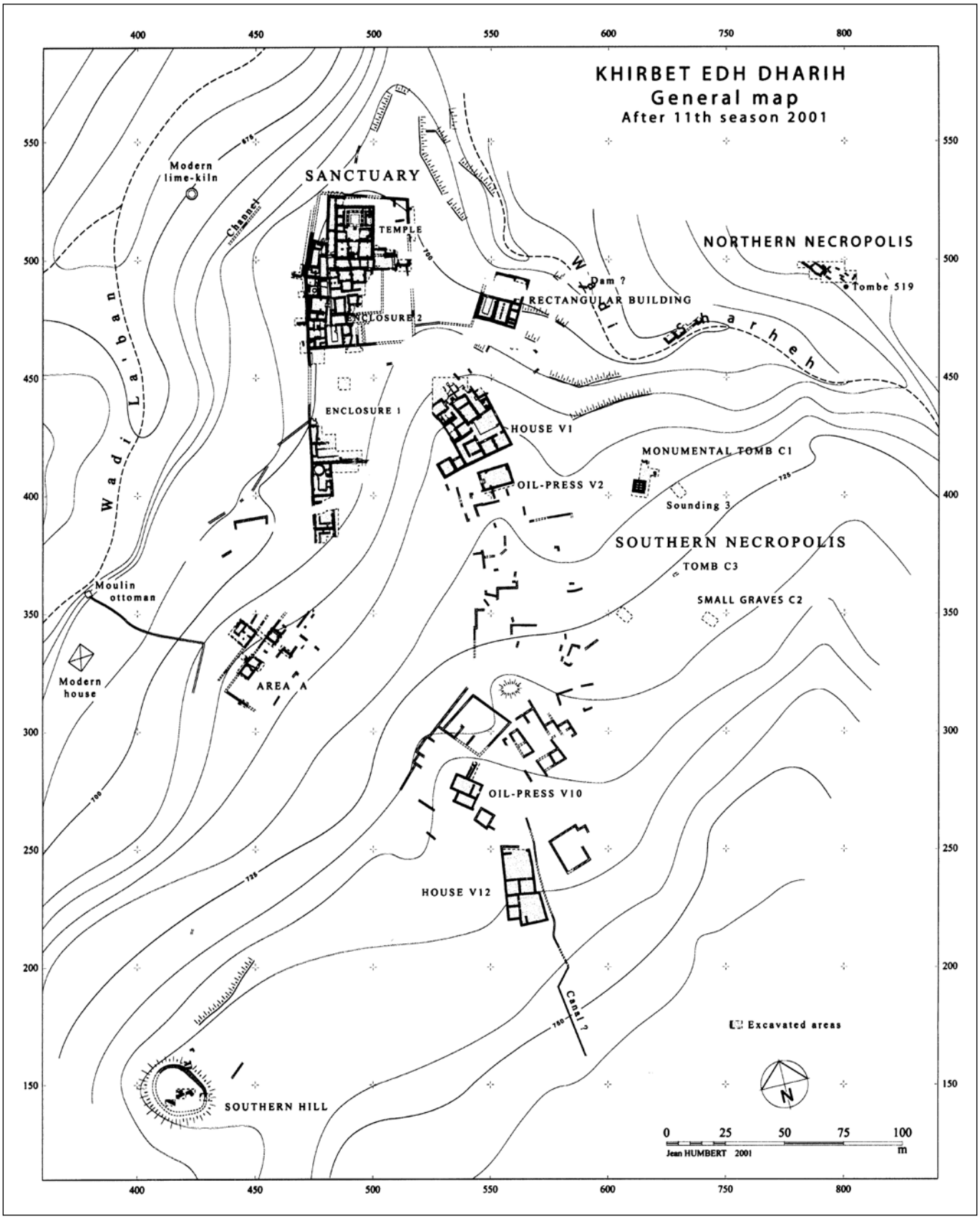
No material or bone remains were discovered in the small shaft-tomb C3 that was completely plundered. This tomb, located south of the monumental tomb C1, might have contained two superposed graves (Lenoble *et al*. 2001).

The graves C2 were discovered at the time of a test pit (FIG. 4). They are simple pits delimited by blocks and covered with stone slabs. These graves are difficult to date. According to Lenoble *et al*. (2001), the similarities in the funerary practices between the C1 monumental tomb and those simple graves (same orientation, same position of the bodies, and same standard of furniture) makes it possible to think that they also belong to the Nabataean period. However, one glass vessel, among the very few artefacts discovered in these graves, is now considered to be clearly Early Islamic, eighth or ninth century (Dussart 2007: 216, fig. 11.8), thus suggesting that at least one of these graves, grave F, should be dated in Early Islam.

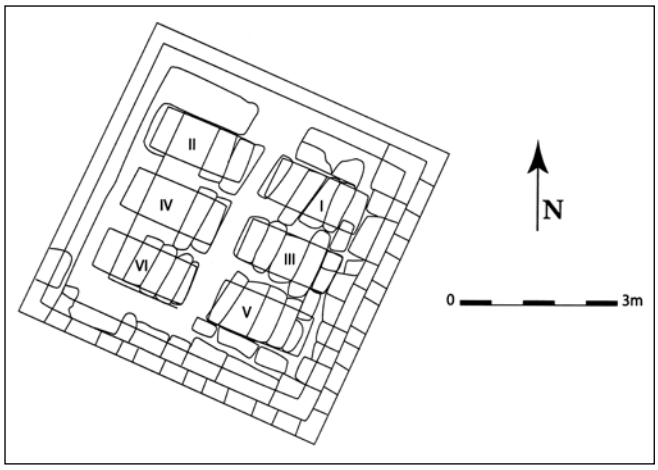
Finally, in the Northern cemetery, the tombs are similar to the C2 graves (FIGS. 5 and 6). They are simple pits delimited and covered by stone slabs, directed east west except for one. They could be dated thanks to the discovery of a drachma of Trajan struck between 102 and 117AD in one of the tomb (Al-Muheisen and Villeneuve 1994).

Methods

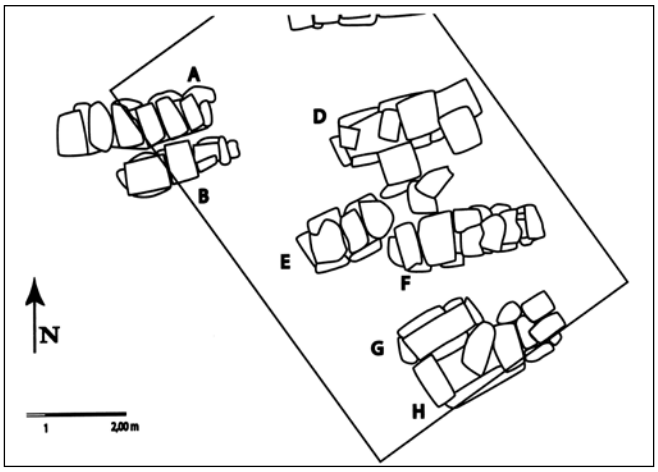
F. Le Mort has previously done a preliminary study of the anthropological sample from the Southern cemetery in the late eighties (Lenoble *et al*. 2001). The present study attempts to complete this investigation by further description of anatomic variations



1. Plan of Khirbat adh-Dharīḥ (Lenoble *et al*. 2001).



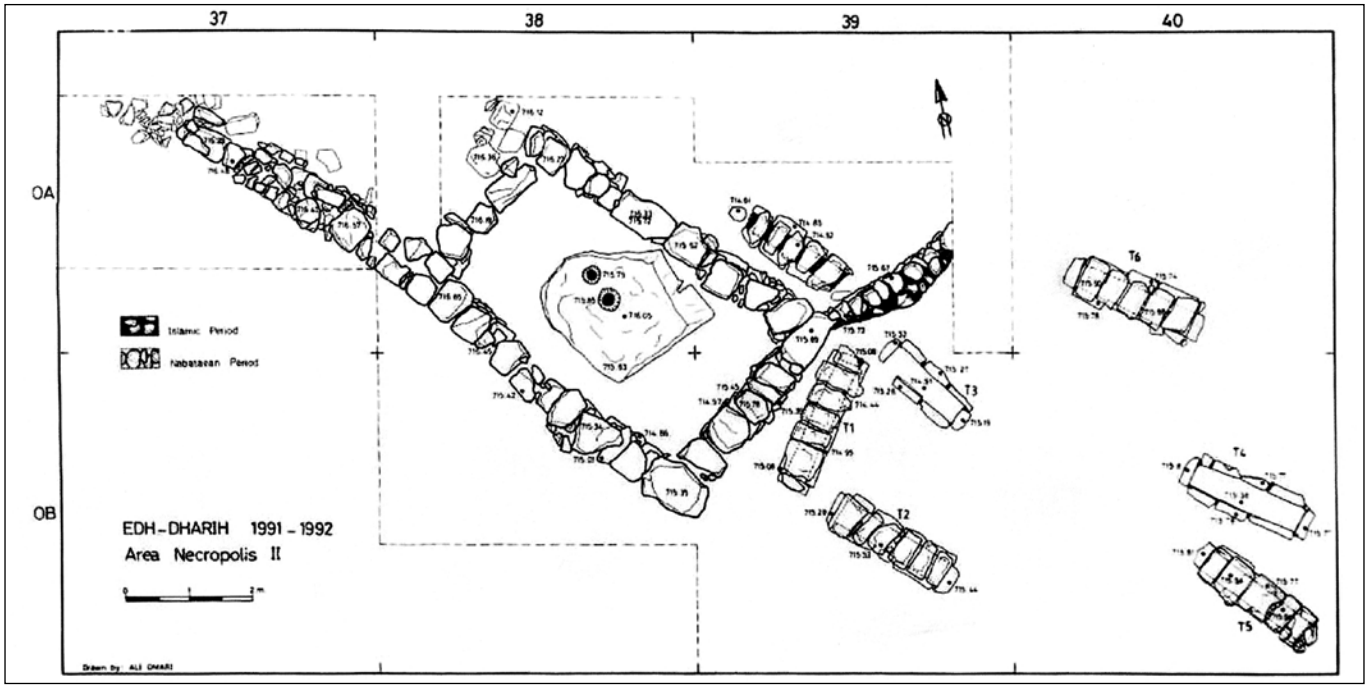
2. Plan of tomb C1.



4. Plan of graves C2 (Lenoble *et al*. 2001).

3. Tomb C1 (French-Jordanian mission of adh-Dharīḥ).

6. Sounding in Northern cemetery (French-Jordanian mission of adh-Dharīḥ).



5. Plan of sounding in Northern cemetery (French-Jordanian mission of adh-Dharīḥ).

and metric data, and additional remarks on the funerary assemblages.

A-Understanding the Bone Deposits from Field Archives

In the last two decades, methods and operational procedures have been developed on the field in order to understand the circumstances of body deposition and to reconstruct mortuary practises. The multiplication of the observations during the excavation is an essential approach to the archaeological analysis of burial architecture, the understanding of both the circumstances of body decomposition and relationships between the grave architecture and the deceased (Duday 2005, 2006).

At Khirbat adh-Dharīḥ the excavation of the burials was conducted in the eighties and nineties and field observations on the position of the respective skeletal elements, for instance, were not accurately recorded. Thus, our approach of the funerary deposits relies on the excavation's archives.

For this purpose we employed black and white photographs and layouts made during the excavation of the tombs C1, C2 and NC. Using the methods of field anthropology, we attempt to identify the conditions of body deposits, funeral structures, burial orientations, position of individuals and grave goods, in order to enrich our knowledge of the funeral assemblages recovered from Khirbat adh-Dharīḥ.

B-Biological Identity of the Deceased

Measurements were collected on the skull, the infra-cranial skeleton and teeth following standard osteometric techniques applied to adult and immature skeletons (Bräuer 1988; Duday *et al*. 1995; Fazekás and Kósa 1978).

In the study of funeral assemblages, from a technical point of view, accurate anthropological methods are employed to estimate the age at death of the deceased (immature and adult individuals) and the sex. A second step consists of searching indicators that might reveal non-specific stress episodes during growth, pathological alterations and traumatic lesions. Such observations are useful to address the question of growth disturbance during childhood and to investigate the health status of the individuals buried. We present here observations regarding biological aspects; the interpretation of bone and tooth defects and diseases will require further analysis.

- *Age and Sex Estimation*: Age estimation of child skeletal remains is based on different reference standards deriving from the dental maturation and development (Moorrees *et al*. 1963a; Moorrees *et al*. 1963b), bone maturation using ossification points and secondary fusion (Scheuer and Black 2000). In the case of infant skeletal remains (less than 1 year) additional elements on bone maturation are brought by bone lengths themselves (Fazekás and Kósa 1978; Scheuer and Black 2000). It is widely accepted that there are no reliable techniques to assign a sex to a child skeleton of unknown identity (Bruzek *et al*. 2005).

Estimates of age on adult skeletal remains rely on bone maturation. However, between 20 and 30 years old, two bones are still regarded as immature: the clavicle and hipbone. Indeed, the iliac crest fuses between 20 and 25 years old and the sternal end of the clavicle begins to fuse at 25 (Owings Webb and Suchey 1985). In some situations, we were able to use a method based on the auricular surface configuration of hip bone (Schmitt 2005). This method was employed to distinguish three adult categories: 20-29, 30-59, 60 and over, with more than 80% of reliability

Sex assessment of adult individuals can be made through the data collected on the hip bone, by morphological (Bruzek 1991, 2002) and probabilistic methods (Murail *et al*. 2005), that allow to reach the greatest reliability possible. Sex determination from skull morphology remains more problematic in the lack of accurate population data.

- *The search for anatomic variations in dentition and skeletal remains:* Anatomic variations that are not related to pathology allow comparative studies between members of the same group (family traits) or between distinct populations. They can be found on the skull, the dentition as well as on the infra-cranial skeleton (Hauser and De Stefano 1989; Ossenberg 1976; Scott and Turner 1997).

Finally, in a demographical perspective, a comparison of the mortality profiles between the monumental tomb C1 and the simple pit-graves C2 and reference to the profile of theoretical mortality (Ledermann 1969) were attempted, in order to see whether the population discovered in the Southern cemetery reflected a natural population or not (Sellier 1996).

Results

A-Study of Graphic Documents

Type of burial: The burials, which could be ana-

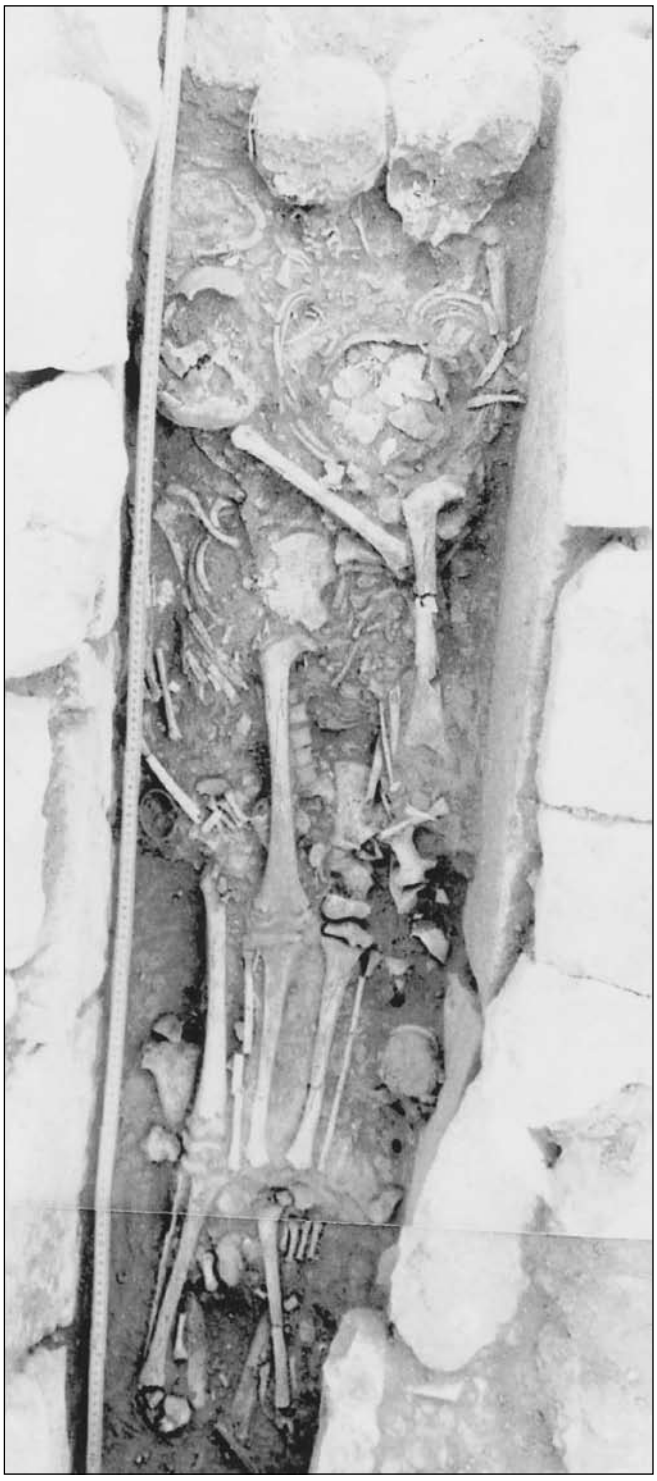
lyzed, are primary. They may be individual, consecutive (deposits were spaced over time), contemporary (the dead were buried simultaneously), or multiple (it is not possible to define the sequence of deposits) (TABLE 1).

For the tomb C1, thirteen graves were revealed containing a single individual: one teenager (I-4) and twelve adults (II-2, II-3, II-4, II-5, IV-4, IV-5, V-1, V-3, V-4, V-5, VI-3 and 4). We can note that the majority of individual burials were discovered in the inferior graves of the monumental tomb. Five of these graves were still sealed with their slabs stone (II-4, II-5, IV-5, V-4, V-5). We also noticed that children are always buried with other individuals. The grave, which has received most individuals, is the II-1 grave with seven adults, two teenagers and three other children. It is not possible to distinguish between consecutive or contemporary burials due to the upheaval caused by looters who have smashed open the graves. Indeed, to distinguish these two types of graves it is necessary to observe the extent of displacement of the bones.

Of the eight graves in the sounding C2 containing bones, three have revealed one individual: two adults (A and E) and a child (G). It is interesting to note that grave G, which contains a child, is smaller compared to the others (FIG. 4). It is the only grave, which contains a child alone (Lenoble *et al*. 2001). The grave that had received the most individuals is grave F with an adult, the first person deposited, and five children (FIG. 7). It is therefore a collective burial. Indeed, the introduction of new individuals has disrupted the other skeletons.

For the North cemetery, the study is not complete but, according to the available documents, all individuals are adults. The graphic documentation is available for six graves of the nine graves of the cemetery. Three graves are individual; two are consecutive, with two to three individuals at most in a single tomb, and a contemporary grave where two individuals were discovered in the same coffin (FIGS. 8a and 8b).

Funeral structure: Signs of the presence of shrouds represented by pieces of leather, and traces of a



7. Grave F (Sounding C2)with one adult and five children (French-Jordanian mission of adh-Dharīḥ).

TABLE 1. The different types of burials discovered at adh-Dharīḥ (MNI=Minimum Number of Individuals).

Tombs	MNI	Number of tombs	Individual	Contemporary	Consecutive	Multiple
C1	62	30	13	-	-	14
C2	19	8	3	-	3	1
NC	7	6	3	1	-	2

coffin documented by amorphous fragments and fittings such as iron nails (Lenoble *et al.* 2001), were discovered in the tomb C1. The study of the graphic material enabled us to suggest that individuals in the unspoiled graves (II-4, II-5, IV-5, V-4 and V-5) were buried in shrouds. For the individual V-5, no fragment of shroud was found but the study of graphic material enabled us to assert the presence of a container. Indeed, we noticed lateral restraining effects (illustrated by constriction of the shoulders and "vertical" clavicles, humerus appearing on their lateral side, alignment of arm bone and left pelvis, and finally no collapsing of the pelvis), which are not induced by the grave but by a container (FIG. 9). Such observations allow us to infer the presence of a funeral shroud or a tight coffin. We noticed that pieces of leather are located in the lower grave and traces of coffins are mainly in the upper graves.

Regarding the graves C2, there is no indication of any leather or pieces of wood, which would suggest the presence of a coffin or shroud. However, the study of graphic material leads us to assume the presence of a shroud or a coffin for the individual in the tomb A, Indeed, as we noted for the individual V-5 from the tomb C1, the clavicle is in a vertical orientation, and the same observation can be made for one of the children of the burial F.

For the North cemetery, individuals were found in coffins (graves 1 and 2) and shrouds (graves 4 and 6).

Orientation of the deceased and body position: All individuals, with the exception of one in the in the North cemetery, are oriented east west, with the head to the west. They were buried in a similar position, a dorsal position, and the lower limbs in extension while the position of hands are variable: on the pubis, the abdomen, along the thighs. The corpse of individual II-5 from the tomb C1 lies on its left side. This position can be attributed to movements during transport in the shroud but on condition that the shroud is not too tight.

B- Biological Identity of the Deceased

State of preservation: The bones from the graves in C1 and C2 are fragmented, very fragile and the skeletons were incomplete. The state of bone preservation can be explained by "weathering", i.e. deterioration of bones after desiccation and temperature changes (Lyman 1994). However, bones from the North cemetery are better preserved.

Minimum Number of Individuals (MNI): The minimum number of individuals in tomb C1 graves C2 and from the Northern cemetery was estimated (TABLE 2). In the tomb C1, 62 individuals were counted and 19 individuals in the graves C2. For the Northern cemetery, according to the documents, at least 14 individuals were buried in this necropolis, but only seven skeletons could be studied.

Age at death: The distribution of age of the deceased can determine if there was a selection of buried individuals according to age. The age assessment of the individuals in each area is given in TABLE 3.

Of all the cemeteries in adh-Dharīḥ, the age of 11 adults has been clarified (TABLE 4).

TABLE 2. Minimum Number of Individuals in tomb C1, graves C2 and Northern cemetery.

Tombs	MNI	Adults	Immature
C1	62	36	26
C2	19	8	11
NC	7[1]	7	-

[1] Number of individuals available for present study.

TABLE 3. Distribution of individuals by age group in C1, C2, NC.

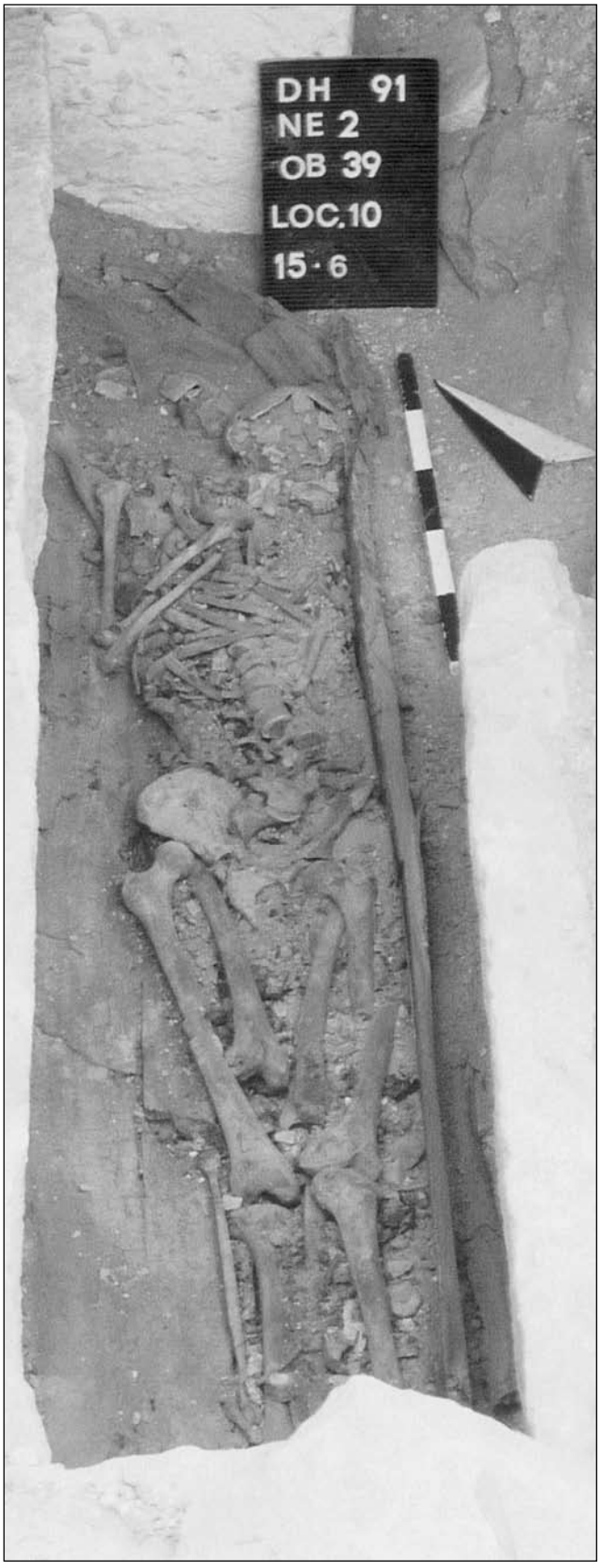
Age group	C1	C2	NC
0	6	0	0
1-4	9	4	0
5-9	4	4	0
10-14	2	1	0
15-19	5	2	0
≥ 20	36	8	7
Total	62	19	7

TABLE 4. Distribution of adults by age group in C1, C2, NC.

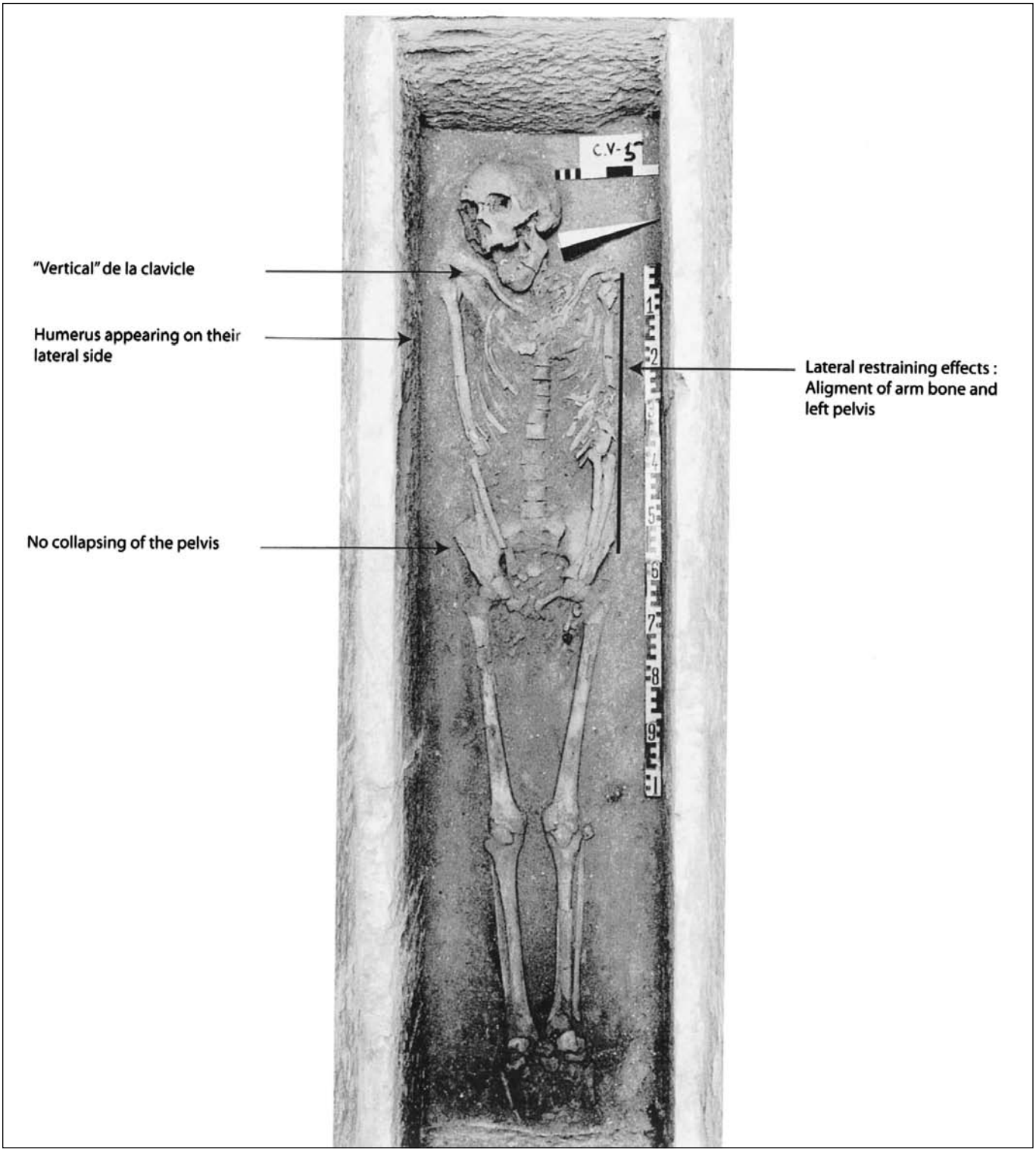
Age group	C1	C2	NC
20-29	2	2	1
30-59	2	-	3
≥60	-	-	1

Sex: Sex determination was made on 11 individuals over the site in accordance with the criteria previously given (TABLE 5).

From the low number of individuals with as-



8a and 8b. Grave 1 (Northern cemetery) with two adults in coffin (French-Jordanian mission of adh-Dharīḥ).



9. Individual V-5 (Tomb C1): presence of a container (French-Jordanian mission of adh-Dharīḥ).

sessed sex no conclusion can be drawn about the sex ratio. However, we can point out that for the graves C2 and NC, the distribution between men and women is equal for the subjects whose sex has been determined.

Archaeological sample representation: We have thus to calculate the age-at-death of the individuals and to carry out a mortality profile for the graves in C1 and C2. In the Northern cemetery, the seven studied individuals are adults.

TABLE 5. Distribution of adults by sex in C1, C2, NC.

Tombs	Men	Female	Unknown	Number of individuals	% estimated
C1	5	0	31	36	13%
C2	1	1	6	8	25%
NC	2	2	3	7	57%
Dharih	8	3	40	51	21,5%

The curve of mortality of C1 and C2 shows demographic anomalies with regard to the dead children between the age of 0-5 and 5-9 for C2 only (FIG. 10). The quotients of the other age groups correspond to a natural mortality and follow the curve of mortality of the antique populations.

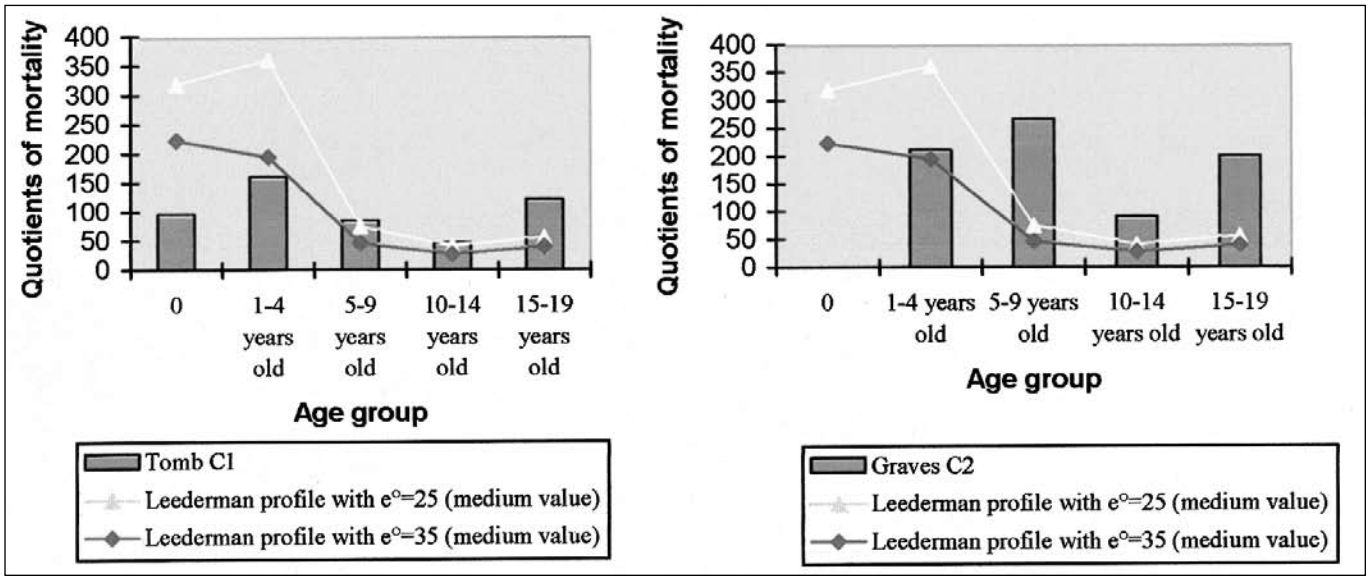
In order to evaluate the importance of the deficit noted in the first age group, we calculated what should be the theoretical distribution of the immature ones. In the C1 tomb misses at least eight children of less than 1 year old and three from 1 to 4 years old. In the C2 tombs it misses at least four children of less than 1 year old (FIG. 11).

Discrete or non-metric traits: We chose to observe fifty-five discrete cranial traits (Hauser and De Stefano 1989), thirty-one sub-cranial (Ossenberg 1976) and sixteen on the dentition (Scott and Turner 1997) (TABLES 6, 7, 8 and 9).

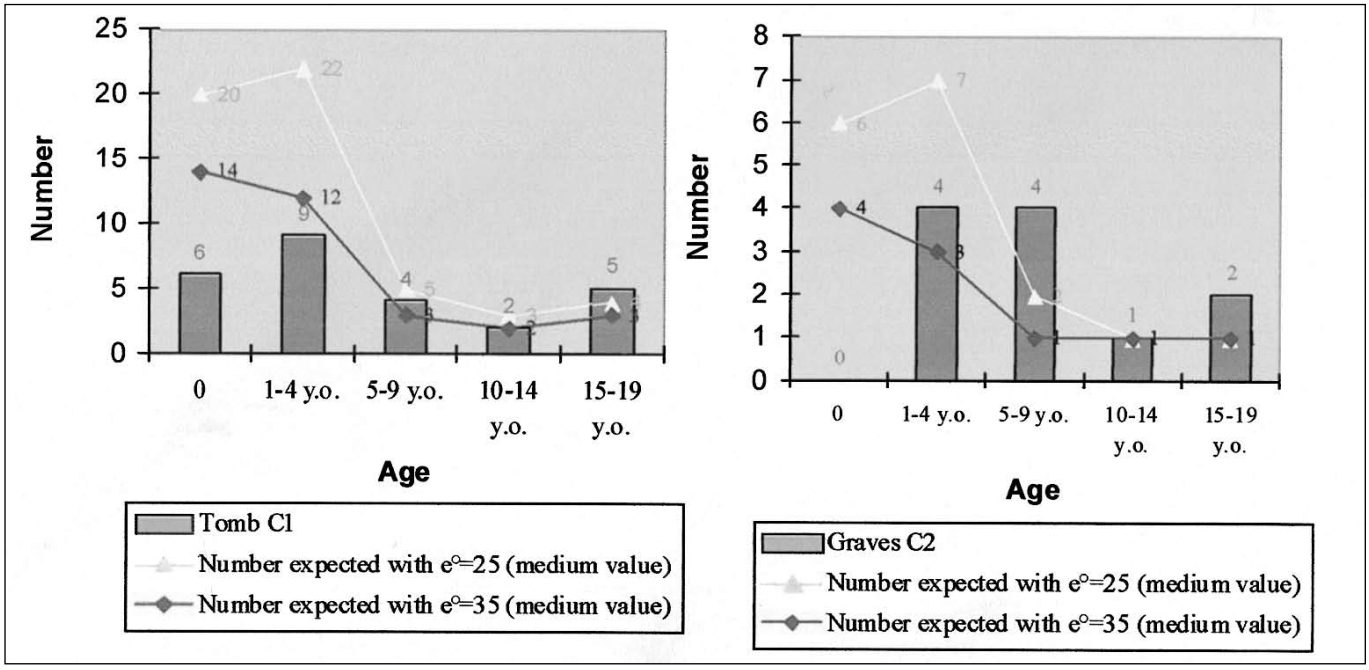
Several discrete traits are recurring in various necropolises (TABLES 10, 11 and 12). The prevalence of some traits, such as the notch of the patella or Carabelli's trait on upper molars, should be noticed in C1 and C2. In the sounding C2, two individuals in the same grave (grave C) shared several discrete traits (TABLE 11) that cannot be found elsewhere in the cemetery. In the same way, two individuals (grave 1) in the same coffin in the northern cemetery shared several discrete traits (TABLE 12). We also notice that individuals from the tomb C1 share a large number of discrete characters (TABLE 10).

Metric: Forty-nine measurements were collected on the skull and fifty-five on the infra-cranial adult skeletons. The data can be used to estimate the stature (Cleuvenot and Houët 1993) and calculate seven indexes. Here we present only the results for stature, estimated for 20 of 51 adults.

The stature of women, known for three individuals, varies from 1.45m to 1.60m, and for six men from 1.65 to 1.80m. We notice that on average men are taller (TABLE 13).



10. Comparison of the quotients of mortality of the age group 0 to 19 years old of tomb C1 and graves C2 with a reference to the profile of theoretical mortality (Ledermann 1969).



11. Comparison of deceased persons of tomb C1 and graves C2 with number expected (e°=25 years old and e°=35 years old).

Discussion

It should be noticed that individuals in the lower graves of the tomb C1 are only adult males. We can therefore assume that a change in burial practices took place with first a tomb reserved for men individually buried with shrouds, and later the same tomb re-used for the general population with the dead buried in the same grave as for the upper II-1 grave, and use of coffin.

It is more difficult to discuss the evolution for the graves of C2 and NC, as we are unable to determine the sequential use of graves. However, we can wonder whether, as in C1, there has not been a change in burial practices with the abandonment of shrouds to be replaced with wooden coffins in the Northern cemetery. We note indeed, that the wooden coffins were discovered in graves 1 and 2 and shrouds in the graves 4 and 6.

Taking into account the low number of sexed individuals we are unable to conclude on the distribution of individuals and to evaluate sex related funerary practises in the cemeteries.

We noticed that the burial practices in the tomb C1 and in the graves C2 and NC were homogeneous: same orientation of the body and quite similar positions. The difference of architecture of the tomb C1 and the graves C2 have led Lenoble *et al.* (2001) to assign the C1 tomb to the main family of the village and the simpler grave-pits to the poorer inhabitants of adh-Dharīḥ. The study of discrete traits seems to support such a hypothesis. We indeed noticed that some individuals from the C1 tomb might have family ties and also those for C2 and NC.

The lack of children for the two first age-classes (0 year and 1-4 years) allows us to conclude that there was probably an age-related selection for the children. It appears currently that young children can be buried in selected areas; however it is important to notice that in the sounding C2, one grave (G) was reserved for a child aged between 1 and 4 years and the real meaning of such an isolated case remains unknown.

Conclusions

In conclusion, we noticed that the burial practices in adh-Dharīḥ are homogeneous, with primary burials, individual or multiple. Despite the poor preservation of bones, the study conducted on the anthropological documentation brings new results on the Nabataean population in terms of biological aspects and age distribution. Indeed, there are few children buried in comparison to the adults, men and women. Additional data are collected on forensic anthropology and mortuary gestures.

The progress in the knowledge of burial practices allowed comparative studies throughout the Nabataean kingdom, and capital Petra, where re-

TABLE 6. Discrete cranial traits (L: left, R: right) in tomb C1, graves C2 and NC.

Discrete cranial traits	Side	C1		C2		NC		Dharih	
		Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable e	Present	Number of individuals observable
Ossicle at bregma		0	5	0	0	0	1	0	6
Lambdoid ossicles	L.	2	4	1	1	0	1	3	6
Lambdoid ossicles	R.	0	4	1	1	0	1	1	6
Ossicle at lambda		1	4	0	0	0	0	1	4
Inca bone		1	4	1	1	1	1	3	6
Ossicle at asterion	L.	0	3	0	0	0	1	0	4
Ossicle at asterion	R.	1	4	0	1	0	1	1	6
Occipito-matoid ossicle	L.	0	3	0	0	0	1	0	4
Occipito-matoid ossicle	R.	0	3	0	1	0	1	0	5
Coronal ossicle	L.	0	6	0	0	0	1	0	7
Coronal ossicle	R.	0	6	0	0	0	1	0	7
Sagittal ossicle		0	8	0	0	0	1	0	9
Parietal notch bone	L.	0	5	0	0	0	1	0	6
Parietal notch bone	R.	0	7	0	0	0	1	0	8
Parietal foramen	L.	0	7	0	0	0	1	0	8
Parietal foramen	R.	0	7	0	0	0	1	0	8
Symmetrical thinness of parietal bones	L.	0	11	0	1	0	2	0	14
Symmetrical thinness of parietal bones	R.	0	10	0	0	0	1	0	11
Condylar facet double	L.	0	10	0	4	1	1	1	15
Condylar facet double	R.	2	9	0	6	1	2	3	17
Pharyngeal fovois		2	11	1	5	1	1	4	17
Divided hypoglossal canal	L.	3	11	1	5	1	1	5	17
Divided hypoglossal canal	R.	3	9	2	5	0	1	5	15
Sutura Mendosa	L.	0	6	0	0	1	1	1	7
Sutura Mendosa	R.	1	7	0	1	1	1	2	9
condylar canal	L.	1	4	1	1	0	1	2	6
condylar canal	R.	2	5	2	2	0	1	4	8
Intermediate condylar canal	L.	0	5	0	1	0	0	0	6
Intermediate condylar canal	R.	0	5	0	1	0	0	0	6
Paracondylar process	L.	0	0	0	0	0	1	0	1
Paracondylar process	R.	0	0	0	0	0	1	0	1
Pharyngeal tubercle		3	11	0	5	0	1	3	17
Foramen of Huscke	L.	5	12	0	4	0	1	5	17
Foramen of Huscke	R.	3	14	1	5	0	1	4	20
Variations of the pterion	L.	0	0	0	0	0	0	0	0
Variations of the pterion	R.	0	0	0	0	0	0	0	0
Mastoid foramen	L.	2	5	0	2	0	0	2	7
Mastoid foramen	R.	5	6	0	1	0	0	5	7
Squamomestoid suture	L.	5	11	0	2	1	1	6	14
Squamomestoid suture	R.	4	11	0	9	1	1	5	21
Molar foramen	L.	0	7	0	3	0	0	0	10
Molar foramen	R.	4	12	0	3	0	0	4	15
Marginal tubercle	L.	0	8	0	1	0	0	0	9
Marginal tubercle	R.	0	7	0	1	0	0	0	8
Zygomaticofacial foramen	L.	0	9	0	1	0	0	0	10

Discrete cranial traits	Side	C1		C2		NC		Dharih	
		Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable e	Present	Number of individuals observable
Zygomaticofacial foramen	R.	0	9	1	3	0	0	1	12
Bipartite zygomatic bone	L.	0	4	0	1	0	0	0	5
Bipartite zygomatic bone	R.	0	4	0	0	0	0	0	4
Metopic suture		1	20	0	6	0	2	1	28
Trochlear spine	L.	0	4	0	1	0	1	0	6
Trochlear spine	R.	0	5	0	1	0	1	0	7
Canalis opticus accessorium	L.	0	3	0	0	0	0	0	3
Canalis opticus accessorium	R.	0	3	0	0	0	0	0	3
Oval foramen	L.	0	4	0	2	0	1	0	7
Oval foramen	R.	0	5	0	1	0	1	0	7
Spinous foramen	L.	0	4	0	2	0	1	0	7
Spinous foramen	R.	0	5	0	1	0	1	0	7
Foramen of Vesallus	L.	2	5	1	2	0	1	3	8
Foramen of Vesallus	R.	1	5	0	1	0	1	1	7
Pterygoalar spine	L.	0	4	1	1	0	0	1	5
Pterygoalar spine	R.	0	3	0	1	0	0	0	4
Pterygoalar bridge	L.	0	3	1	1	0	0	1	4
Pterygoalar bridge	R.	0	3	0	1	0	0	0	4
Pterygospinous spine	L.	1	3	0	1	0	0	1	4
Pterygospinous spine	R.	1	3	0	1	0	0	1	4
Pterygospinous bridge	L.	0	3	0	1	0	0	0	4
Pterygospinous bridge	R.	0	3	0	1	0	0	0	4
Accessory infraorbital foramen	L.	0	8	0	2	0	1	0	11
Accessory infraorbital foramen	R.	1	7	0	2	0	2	1	11
Divided infraorbital foramen	L.	0	8	0	1	0	1	0	10
Divided infraorbital foramen	R.	0	7	0	1	0	2	0	10
Palatine torus		4	11	0	2	0	2	4	15
Maxillary torus	L.	1	9	0	2	0	1	1	12
Maxillary torus	R.	1	11	0	2	0	2	1	15
Patent premaxillary suture		1	11	1	2	0	2	2	15
Infraorbital suture	L.	0	6	0	1	0	1	0	8
Infraorbital suture	R.	0	6	0	1	0	1	0	8
Mandibular torus	L.	0	11	0	2	0	1	0	14
Mandibular torus	R.	0	11	0	3	0	2	0	16
Mylohyoid bridge	L.	1	9	0	1	0	1	1	11
Mylohyoid bridge	R.	2	10	0	1	0	0	2	11
mentale foramen double	L.	0	13	0	3	0	1	0	17
mentale foramen double	R.	1	11	0	5	0	2	1	18
mentale foramen accessory	L.	1	13	0	2	0	1	1	16
mentale foramen accessory	R.	2	11	0	4	0	2	2	17
Retromolar foramen	L.	0	10	0	2	0	1	0	13
Retromolar foramen	R.	0	12	0	2	0	2	0	16
Robinson's foramen	L.	0	10	0	1	0	1	0	12
Robinson's foramen	R.	0	12	0	2	0	2	0	16

TABLE 7. discrete sub-cranial traits (L: Left, R: Right) in tomb C1, graves C2 and NC.

Discrete sub-cranial traits			C1		C2		NC		Total	Total
	Bones	Side	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable
Atlas facet form	Vertebrae	L.	4	18	1	4	1	4	6	26
Atlas facet form	Vertebrae	R.	3	15	2	4	1	5	6	24
Posterior bridge of the atlas.	Vertebrae	L.	0	13	0	2	0	4	0	19
Posterior bridge of the atlas.	Vertebrae	R.	0	11	0	2	0	4	0	17
Lateral bridge of the atlas	Vertebrae	L.	1	13	0	2	0	4	1	19
Lateral bridge of the atlas	Vertebrae	R.	1	11	0	2	0	4	1	17
Retroarticular bridge	Vertebrae	L.	0	8	1	2	0	4	1	14
Retroarticular bridge	Vertebrae	R.	0	6	1	2	0	4	1	12
Incomplete costal process	Vertebrae	L.	0	10	0	2	0	4	0	16
Incomplete costal process	Vertebrae	R.	0	10	0	2	0	4	0	16
Cervical transverse foramen double	Vertebrae	L.	0	11	0	2	0	4	0	17
Cervical transverse foramen double	Vertebrae	R.	0	10	0	2	0	4	0	16
Cervical transverse foramen double	Vertebrae	L.	1	11	2	4	0	3	3	18
Cervical transverse foramen double	Vertebrae	R.	2	11	2	3	0	3	4	17
Rhomboid pit development	Clavicle	L.	4	17	1	4	0	4	5	25
Rhomboid pit development	Clavicle	R.	7	11	2	3	1	5	10	19
Circumflex sulcus	Scapula	L.	1	1	0	1	1	1	2	3
Circumflex sulcus	Scapula	R.	0	3	0	1	0	0	0	4
Suprascapular foramen	Scapula	L.	0	4	0	1	0	2	0	7
Suprascapular foramen	Scapula	R.	0	5	0	1	0	0	0	6
Acromial bone	Scapula	L.	0	0	0	0	0	0	0	0
Acromial bone	Scapula	R.	0	0	0	0	0	0	0	0
Sternal aperture	Sternum		1	6	0	0	0	1	1	7
Sacralisation5VL	Sacrum		1	2	0	0	0	2	1	4
Perforation xyphoïde	Coccys		0	1	0	0	0	1	0	2
Septal aperture	Humerus	L.	2	21	1	2	1	4	4	27
Septal aperture	Humerus	R.	1	15	2	3	2	6	5	24
Supratrochlear spur	Humerus	L.	0	16	0	2	0	4	0	22
Supratrochlear spur	Humerus	R.	0	13	0	1	0	6	0	20
Pectoralis major and teres major fossa	Humerus	L.	0	13	0	4	0	4	0	21
Pectoralis major and teres major fossa	Humerus	R.	0	11	0	4	0	6	0	21
Acetabular mark	Pelvis	L.	0	5	0	2	2	4	2	11
Acetabular mark	Pelvis	R.	1	5	2	2	2	4	5	11
Allen's fossa	Femur	L.	1	9	0	3	0	3	1	15
Allen's fossa	Femur	R.	1	9	0	5	0	4	1	18
Poirier's facet	Femur	L.	0	5	1	4	0	3	1	12
Poirier's facet	Femur	R.	0	8	0	4	0	3	0	15
Third trochanter	Femur	L.	0	2	0	4	0	3	0	9
Third trochanter	Femur	R.	0	5	0	4	0	3	0	12
Hypotrochanteric fossa	Femur	L.	0	3	0	4	0	4	0	11
Hypotrochanteric fossa	Femur	R.	0	5	0	5	0	3	0	13
Lateral tibial squatting facet	Tibia	L.	8	10	0	1	1	3	9	14
Lateral tibial squatting facet	Tibia	R.	4	10	0	1	0	2	4	13
Medial tibial squatting facet	Tibia	L.	3	10	0	1	0	3	3	14
Medial tibial squatting facet	Tibia	R.	3	11	0	1	0	2	3	14
Vastus notch	Patella	L.	6	25	2	4	0	4	8	33
Vastus notch	Patella	R.	6	20	4	5	1	4	11	29

Discrete sub-cranial traits			C1		C2		NC		Total	Total
	Bones	Side	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable
Emarginate patella	Patella	L.	0	25	0	4	0	4	0	33
Emarginate patella	Patella	R.	0	19	0	4	0	4	0	27
Bipartite anterior calcaneal facet	Calcaneus	L.	5	16	2	4	3	3	10	23
Bipartite anterior calcaneal facet	Calcaneus	R.	6	17	1	3	3	4	10	24
Anterior-medium calcaneal notch	Calcaneus	L.	1	15	0	3	0	3	1	21
Anterior-medium calcaneal notch	Calcaneus	R.	2	16	0	2	0	3	2	21
Calcaneus emarginatus	Calcaneus	L.	0	3	0	0	0	3	0	6
Calcaneus emarginatus	Calcaneus	R.	1	5	0	0	0	3	1	8
Os trigonum	Talus	L.	9	25	2	6	0	3	11	34
Os trigonum	Talus	R.	7	27	1	2	0	5	8	34
Lateral talar facet	Talus	L.	3	17	0	3	1	3	4	23
Lateral talar facet	Talus	R.	5	20	0	3	1	4	6	27
Medial talar facet	Talus	L.	1	17	0	3	0	3	1	23
Medial talar facet	Talus	R.	2	18	0	2	0	4	2	24
Facet navicular-cuboid	Cuboid	L.	11	15	1	1	3	3	15	19
Facet navicular-cuboid	Cuboid	R.	10	11	1	1	4	4	15	16
Bipartite facet	Metatarsal	L.	1	9	0	4	0	3	1	16
Bipartite facet	Metatarsal	R.	0	12	0	4	0	2	0	18

cent excavations occurred in different sites: Wādī Farasa, Renaissance Tomb (Schmid and Barmasse 2006), Wādī Mūsā and Ridge Charch (Perry 1998, Perry 2002), and in Madā'in Ṣāliḥ — Hégra — (documenting the end of the Nabataean kingdom). At the stage of the field process, we can see similarities in funerary practises: individual and collective graves, primary burials, and under-representation of children under 5 years.

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TABLE 8. dental discrete traits (upper teeth) (L: left, R: right) in tomb C1, graves C2 and CN.

Teeth	Discrete traits		C1		C2		NC		Dharih	
		Side	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable	Présent	Number of individuals observable
I1	Incisor rotation	L	0	3	0	2	1	1	1	6
I1	Incisor rotation	R	0	2	0	2	1	1	1	5
I1	Shoveling	L	2	7	3	6	0	0	5	13
I1	Shoveling	R	2	8	1	4	0	2	3	14
I1	Double-shoveling	L	0	6	0	4	0	0	0	10
I1	Double-shoveling	R	0	6	0	3	0	2	0	11
I2	Incisor rotation	L	0	1	0	2	0	0	0	3
I2	Incisor rotation	R	0	1	0	2	0	1	0	4
I2	Shoveling	L	1	8	1	4	0	0	2	12
I2	Shoveling	R	1	6	1	4	0	1	2	11
I2	Double-shoveling	L	0	6	0	3	0	0	0	9
I2	Double-shoveling	R	0	4	0	3	0	1	0	8
I2	Lateral incisor variants	L	0	1	0	2	0	0	0	3
I2	Lateral incisor variants	R	1	3	0	2	0	1	1	6
PM1	Premolar odontomes	L	1	9	0	7	0	1	1	17
PM1	Premolar odontomes	R	0	5	0	8	0	2	0	15
PM1	Premolar accessory marginal tubercles	L	1	9	0	7	0	1	1	17
PM1	Premolar accessory marginal tubercles	R	0	5	0	7	0	2	0	14
PM2	Premolar odontomes	L	0	10	0	5	0	1	0	16
PM2	Premolar odontomes	R	0	2	0	5	0	2	0	9
PM2	Premolar accessory marginal tubercles	L	0	10	1	5	0	1	1	16
PM2	Premolar accessory marginal tubercles	R	0	2	0	6	0	2	0	10
M1	Cusp 5	L	0	12	1	8	0	2	1	22
M1	Cusp 5	R	1	15	1	10	0	1	2	26
M1	Carabelli's trait	L	1	11	8	10	0	2	9	23
M1	Carabelli's trait	R	7	16	7	10	0	1	14	27
M1	Enamel extensions	L	0	10	0	6	0	2	0	18
M1	Enamel extensions	R	0	10	0	5	0	1	0	16
M1	Mesial accessory tubercle	L	0	11	0	10	0	2	0	23
M1	Mesial accessory tubercle	R	0	13	0	11	0	1	0	25
M1	Paramolar tubercle	L	0	11	0	9	0	2	0	22
M1	Paramolar tubercle	R	0	14	0	10	0	1	0	25
M2	Cusp 5	L	0	8	0	7	0	1	0	16
M2	Cusp 5	R	0	6	0	7	0	1	0	14
M2	Carabelli's trait	L	0	8	0	8	0	1	0	17
M2	Carabelli's trait	R	0	6	0	7	0	1	0	14
M2	Enamel extensions	L	1	6	1	4	0	2	2	12
M2	Enamel extensions	R	1	5	0	6	0	2	1	13
M2	Mesial accessory tubercle	L	0	8	0	8	0	1	0	17
M2	Mesial accessory tubercle	R	0	6	0	6	0	1	0	13
M2	Paramolar tubercle	L	0	8	0	8	0	1	0	17
M2	Paramolar tubercle	R	0	5	0	7	0	1	0	13
M3	Cusp 5	L	0	6	0	5	0	2	0	13
M3	Cusp 5	R	0	3	0	3	0	1	0	7
M3	Carabelli's trait	L	0	7	0	4	0	2	0	13
M3	Carabelli's trait	R	0	3	0	3	0	1	0	7
M3	Enamel extensions	L	0	6	0	3	0	2	0	11
M3	Enamel extensions	R	0	3	0	2	0	1	0	6
M3	Mesial accessory tubercle	L	0	7	0	4	0	2	0	13
M3	Mesial accessory tubercle	R	0	3	0	3	0	1	0	7
M3	Paramolar tubercle	L	0	7	0	4	0	2	0	13
M3	Paramolar tubercle	R	0	3	0	3	0	1	0	7

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TABLE 9. dental discrete traits (lower teeth) (L: left, R: right) in tomb C1, graves C2 and CN.

Teeth	Discrete traits		C1		C2		NC		Dharih	
		Side	Present	Number of individuals observable	Present	Number of individuals observable	Present	Number of individuals observable	Présent	Number of individuals observable
I1	Shoveling	L	0	5	0	6	0	1	0	12
I1	Shoveling	R	0	7	0	5	0	2	0	14
I2	Shoveling	L	0	6	0	8	0	2	0	16
I2	Shoveling	R	0	8	0	8	0	2	0	18
PM1	Premolar odontomes	L	0	11	0	11	1	3	1	25
PM1	Premolar odontomes	R	3	12	0	7	1	2	4	21
PM1	Multiple lingual cusps	L	0	11	0	11	0	3	0	25
PM1	Multiple lingual cusps	R	3	12	0	7	0	2	3	21
PM2	Premolar odontomes	L	0	3	0	6	0	3	0	12
PM2	Premolar odontomes	R	0	8	0	8	0	1	0	17
PM2	Multiple lingual cusps	L	0	3	0	5	0	3	0	11
PM2	Multiple lingual cusps	R	1	8	0	7	0	1	1	16
M1	Protostylid	L	0	11	1	10	0	3	1	24
M1	Protostylid	R	0	12	1	6	0	1	1	19
M1	Cusp 6	L	0	9	0	9	0	3	0	21
M1	Cusp 6	R	0	12	0	7	0	1	0	20
M1	Cusp 7	L	0	9	0	10	0	3	0	22
M1	Cusp 7	R	0	12	0	7	0	1	0	20
M2	Protostylid	L	0	12	0	8	0	2	0	22
M2	Protostylid	R	0	11	0	9	0	1	0	21
M2	Cusp 6	L	0	9	0	7	0	2	0	18
M2	Cusp 6	R	0	8	0	9	0	1	0	18
M2	Cusp 7	L	0	9	0	8	0	2	0	19
M2	Cusp 7	R	0	8	0	9	0	1	0	18
M3	Protostylid	L	0	4	0	3	0	3	0	10
M3	Protostylid	R	0	7	0	4	0	2	0	13
M3	Cusp 6	L	0	3	1	3	0	3	1	9
M3	Cusp 6	R	0	6	1	3	0	2	1	11
M3	Cusp 7	L	0	4	0	3	0	3	0	10
M3	Cusp 7	R	0	6	0	3	0	2	0	11

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TABLE 10. Recurrent discrete traits in tomb C1.

Bones	Discrete traits	Number of bones observed	Number of variation observed	Individual with variation
Skull	Lambdoid ossicles	4	2	II-Pillage, VI-2
Skull	Pharyngeal fovois	11	2	V-5, II-1
Skull	Divided hypoglossal canal	11	3	II-4, II-a1, II-1
Skull	condylar canal	5	2	IV-5, V-4
Skull	Pharyngeal tubercle	11	3	IV-5, IV-4, II-1-a1
Skull	Foramen of Huscke	14	5	IV-5, I-5-a1, II-a1, II-a2, II-1
Skull	Squamomestoid suture	11	5	II-5, IV-5, V-4, V-5, II-1-PEa1
Skull	Molar foramen	12	4	IV-5, V-4, V-5, II-1-Pei2
Skull	Foramen of Vesallus	5	2	II-4, IV-5
Skull	Palatine torus	11	4	II-4, II-5, IV-5, V-4
Skull	Mylohyoid bridge	10	2	V-4, II-1-D,
Skull	mentale foramen accessory	11	2	II-5, V-5
Vertebrae	Atlas facet form	18	4	II-5, IV-5, V-5, II-2
Vertebrae	Cervical transverse foramen double	11	2	II-1-PEa1, II-1-PEa5
Clavicle	Rhomboid pit development	17	4	V-4, I-5-a2, I-5-a3, II-3
Humerus	Septal aperture	21	2	II-3, IV-1
Tibia	Tibial squatting facet	10	8	II-4, IV-5, V-5, II-Pa1, II-1-PEC, II-1-PEa1, II-1-PEa2
Patella	Vastus notch	25	8	II-4, II-5, IV-5, V-4, V-5, I-4, II-1-PEa1
Calcaneus	Bipartite anterior calcaneal facet	16	5	V-4, II-Pi1,III-PEa3,II-1Pei1,V-3
Calcaneus	Encoche antero-médiale calcanéenne	16	2	II-1-Pei1,V-4
Talus	Os trigonum	27	9	II-4, IV-5, V-4, I-5a1, II-Pa1,III-Pea1, III-Pei2, II-3, V-VI-a1
Talus	talar facet	20	5	II-4, V-5, II-1-Pea2, VI-2, VI-3
I1	Shoveling	8	2	V-5, II-1-Pei1
M1	Carabelli's trait	16	7	I1/2-i5, I-1/2i6, I-3-a1, I5-i2, II-Pa1, II-Pi5, II-1-D
PM1	Premolar odontomes	12	3	II-1-PEC, II-1-PEa1, II-1-PEa 3
PM1	Multiple lingual cusps	12	3	II-1-PEC, II-1-PEa1, II-1-PEa 3

TABLE 11. Recurrent discrete traits in tomb C2.

Bones	Discrete traits	Number of bones observed	Number of variation observed	Individualwith variation
Skull	Divided hypoglossal canal	2	5	C1-C2
Skull	Condylar canal	2	2	C1-C3
Vertebrae	Atlas facet form	2	4	C1-C2
Vertebrae	Cervical transverse foramen double	2	4	C1-C2
Humerus	Septal aperture	2	3	C1-C2
Pelvis	Acetabular mark	2	2	C1-D2
Patella	Vastus notch	4	5	A1-C2-E1-H1
Calcaneus	Bipartite anterior calcaneal facet	2	4	E1-H1
Talus	Os trigonum	2	6	C1-H1
I1	Shoveling	3	6	E1-F1-F3
M1 upper	Carabelli's trait	8	10	C1-C3-E1-F1-F3-F4-F6-H2

TABLE 12. Recurrent discrete traits in Northern cemetery.

Bones	Discrete traits	Number of bones observed	Number of variation observed	Individual with variation
Humerus	Septal aperture	2	6	T1-1, T1-2
Pelvis	Acetabular mark	2	4	T1-1, T6
Calcaneus	Bipartite anterior calcaneal facet	4	3	T1-1, T1-2, T6

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TABLE 13. Estimated of the stature for individuals of C1, C2 et NC (M: male, F: female, I: indeterminated).

Individual	Sex	Humerus L (±4,83cm)	Humerus R (±4,83cm)	Radius L (±5cm)	Radius R (±5 cm)	Ulna L (±5,09 cm)	Ulna R (±5,09cm)	Femur L (±4,13cm)	Femur R (±4,13cm)	Fibula L (±4,04cm)	Fibula R (±4,04cm)
C1-II-4	M	-	-	-	171,69	-	-	-	-	-	-
C1-II-5	M	-	178,78	-	-	-	-	-	-	-	-
C1-IV-5	M	-	-	-	-	-	178,15	-	-	-	-
C1-V-4	M	172,29	175,24	-	181,17	-	-	-	-	-	-
C1-I-4	I	-	-	-	-	-	-	163,46	-	-	-
C1-II-P-a3	I	144,93	-	-	158,57	-	-	-	-	-	-
C1-II-P-a4	I	-	-	142,67	-	-	-	-	-	-	-
C1-II-1-PEa1	I	-	-	-	-	-	-	-	-	-	163,73
C1-II-1-PO-a1	I	-	-	-	147,44	-	-	-	-	-	-
C1-II-3	I	-	-	158,57	-	-	-	-	-	-	-
C1-IV-1	I	-	-	175	-	-	-	-	-	-	-
C1-VI-2	I	-	166,66	-	-	-	-	-	-	-	-
C1-V-VIa1	I	-	-	161,75	-	163,644	-	-	-	-	-
C2-A1	I	-	-	155,39	158,57	-	-	-	-	-	-
C2-C1	F	158,01	160,94	161,40	160,80	160,087	157,27	152,02	151,74	158,27	157,24
NC-Tomb 6	M	168,95	165,41	167,47	-	167,302	170,40	168,62	167,48	-	-
NC-Tomb 5	F	-	-	159,60	162,00	-	160,65	-	-	-	-
NC-Tomb 1B	F	145,86	147,95	151,18	151,18	151,642	155,58	150,3	150,58	152,08	151,39
NC-Tomb 1A	I	-	149,67	150,62	149,56	150,694	-	154,05	-	155,44	-
NC-Tomb 7	M	-	164,63	-	-	-	-	-	-	-	-

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Rās al-Miyāh Fortresses: New Discoveries at One of the Gateways to the Iron Age Copper Production District of Faynān, Jordan

Introduction

The notion of 'Crossing Jordan' and all the anthropological, archaeological and historical meanings that it conveys was recent brought together in the book '*Crossing Jordan – North American Contributions to the Archaeology of Jordan*' (Levy *et al.* 2007). The study presented here is a microcosm of this theme in that it examines the role of two Iron Age fortresses near the crossroads of the lowlands and highlands of ancient Edom. The copper ore rich Faynān district of southern Jordan played a central role in the history of the Iron Age in this part of the southern Levant, located in the northern region known as both Seir and Edom in Egyptian and Biblical texts (Avishur 2007; Bartlett 1989; Edelman 1995). Since 2002, the University of California, San Diego (UCSD) — Department of Antiquities of Jordan (DoA) has carried out intensive surveys and excavations aimed specifically at examining the relationship between Iron Age settlement and the copper ore resources that are found in the lowland Faynān district of Edom (Higham *et al.* 2005; Levy 2004; Levy *et al.* 2003; Levy *et al.* 2004a; Levy *et al.* 2004b; Levy *et al.* 2005). After carrying out excavations at the large Iron Age fortress at Khirbat an-Nuḥās, to better understand the complexities of the Iron Age settlement pattern in the lowlands, we decided to carry out a selective survey in the Faynān district aimed at identifying additional fortresses. This paper summarizes this small satellite project in relation to the larger aims of the UCSD-DoA Edom Lowlands Regional Archaeology Project (ELRAP).

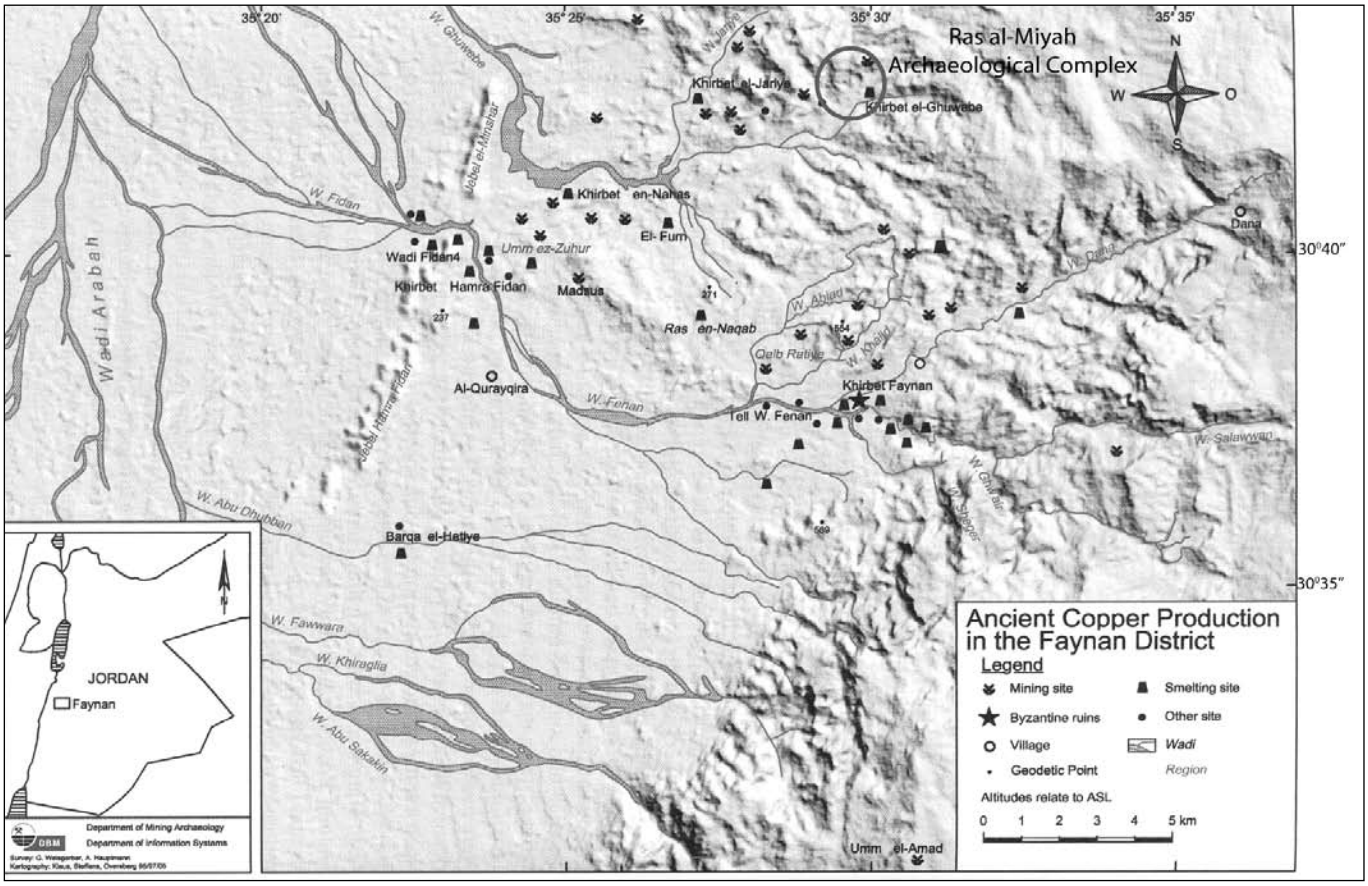
In the fall of 2006 and in the summer of 2007 we revisited the Iron Age archaeological complex of 'Ayn al-Ghuwayba, situated in the northeast edge of the copper production district of Faynān (FIG. 1) first noted by the German Mining Museum archaeometallurgy project in Faynān (Hauptmann 2000, 2007). The focus of our investigation was the two fortresses ('hill forts') mentioned briefly by Weisgerber (2006: 13) and Hauptmann (2007: 132) and the copper mines in their close vicinity. The local (Bedouin) name of these fortresses was unknown to us, thus we used the Arabic name of the region for a reference — "Rās al-Miyāh", translated as "Head of the water", derived from the nearby oasis of 'Ayn al-Ghuwayba.

The preliminary results of our detailed survey of both fortresses (Rās al-Miyāh *East* and *West*) reveal a surprisingly high density of archaeological remains. The ceramic assemblage from the survey is briefly discussed here, and indicates both fortress sites date to the late Iron Age. In addition, we report the results of a small test excavation conducted in the eastern fortress that indicates the construction of this massive structure was never finished. The recent discoveries concerning the fortresses and other archaeological features in their close vicinity stimulate new questions regarding the Iron Age human activities in Faynān, some of which are addressed below.

The surveys took place in December 2006 and July-August 2007. The sample excavation was conducted on December 4-5 2006, with the help of archaeological students from UCSD and Bedouins laborers from the village of Qurayqira.

Rās al-Miyāh Fortresses — Geographic Settings

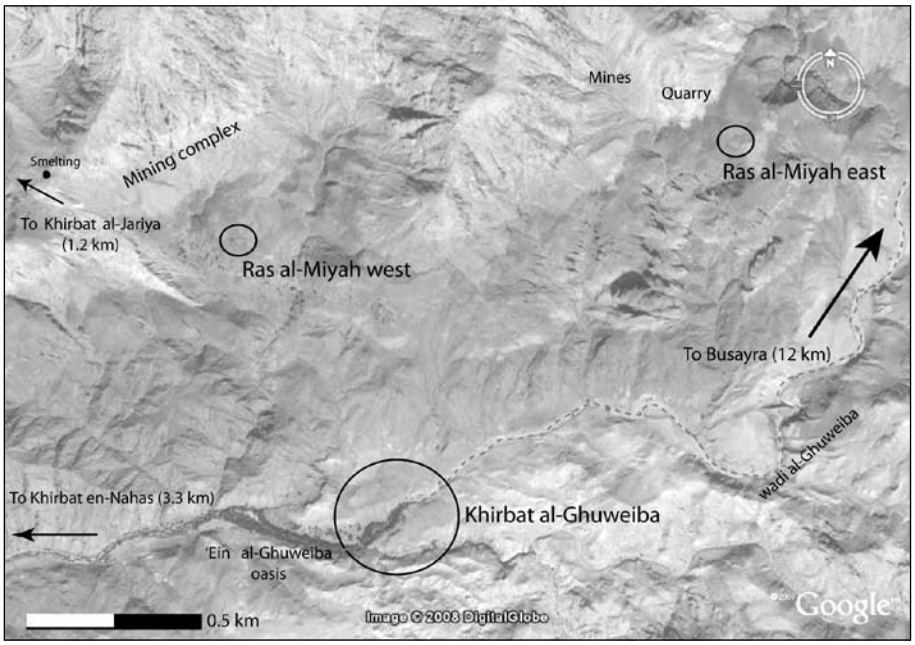
The two fortresses are located in the area of 'Ayn al-Ghuwayba, a small oasis and a the site of Khirbat al-Ghuwayba (ca. 7 hectares), an Iron Age village with some evidence of copper smelting (Khirbat al-Ghuwayba, see Hauptmann 2000: 89, 2007: 132). Together with the surrounding remains



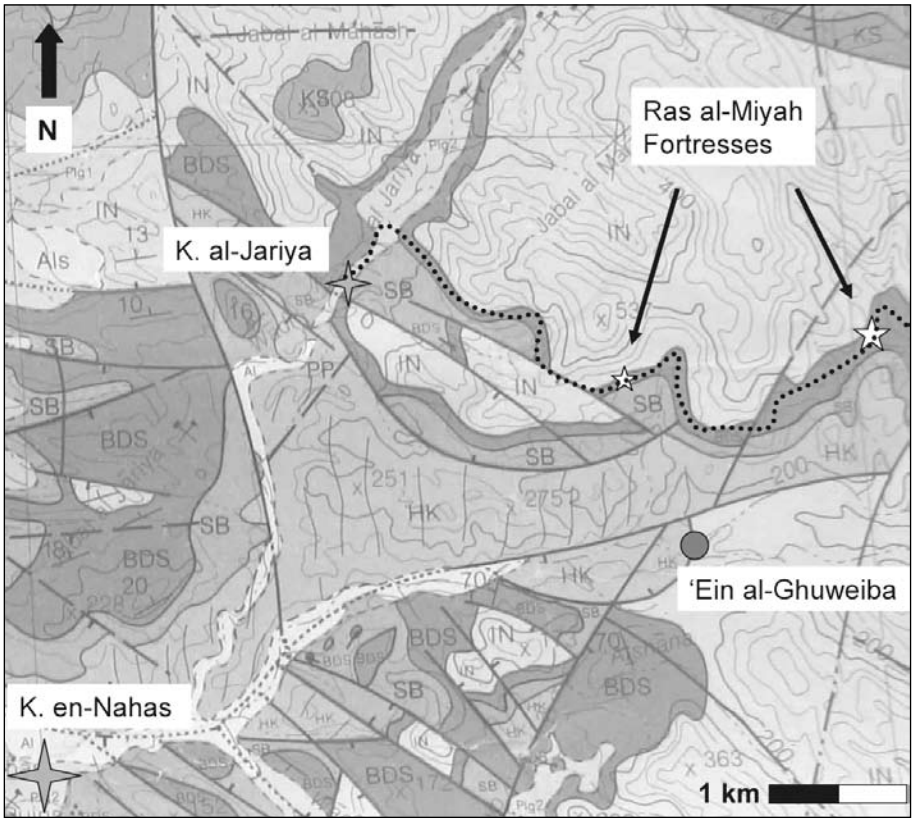
1. The copper production district of Faynān and the location of Rās al-Miyāh Archaeological Complex (after Hauptmann 2007: 86, fig. 5.1). Base map is republished by courtesy of A. Hauptmann.

of copper mines, small smelting sites, ancient road constructions, ancient encampments and numerous small installations, the area of ‘Ayn al-Ghuwayba comprises a rich archaeological complex, situated in the upper basin of Wādī al-Ghuwayba, in the northeast edge of the copper production district of Faynān (FIGS. 1 and 2). The main road connecting the region of Faynān in the lowlands of Edom with the late Iron Age administrative center of Buṣayra (Bozra and Bienkowski 2002) in the highlands passed through Wādī al-Ghuwayba, taking advantage of a relatively passable topographic path in an extremely rough terrain. The eastern fortress and its surrounding copper mines is the closest copper production related site to Buṣayra, some 12km to the northeast (as the crow flies) and is approximately 800 m higher than Rās al-Miyāh *East*. It is reasonable to assume that this distance could have been traveled in one long day, and that ‘Ayn al-Ghuwayba spring complex served as a major gateway, offering the first source of water in the severe Saharo-Arabian desert environment of the Faynān district, and an efficient control point guarding both sides of the narrow valley. For those arriving from Buṣayra, the area of ‘Ayn al-Ghuwayba also presents the first outcrops of copper bearing layers, exposed on the northern slopes of the wadi. The permanent spring still enables limited agriculture, practiced today by the Bedouins of the al-Man’ajah tribe with small orchards of olive trees and pomegranates located further downstream from the spring. This is the major water source for the entire basin of Wādī al-Ghuwayba, and probably one of the water sources for the largest Iron Age copper production site of Khirbat an-Nuḥās, located ca. 4km (as the crow flies) to the east-south-east.

The fortresses are located on a distinct plateau of the Burj Dolomite-Shale formation (for the geological settings of the region see e.g. Hauptmann 2007: 55-84; Rabba’ 1994) to the north of Wādī al-Ghuwayba (FIGS. 3 and 4). The plateau is a result of erosional processes that swept away the soft sandstone and shale of Umm-‘Ishrīn and Burj formations, thereby exposing the hard dolomite layers

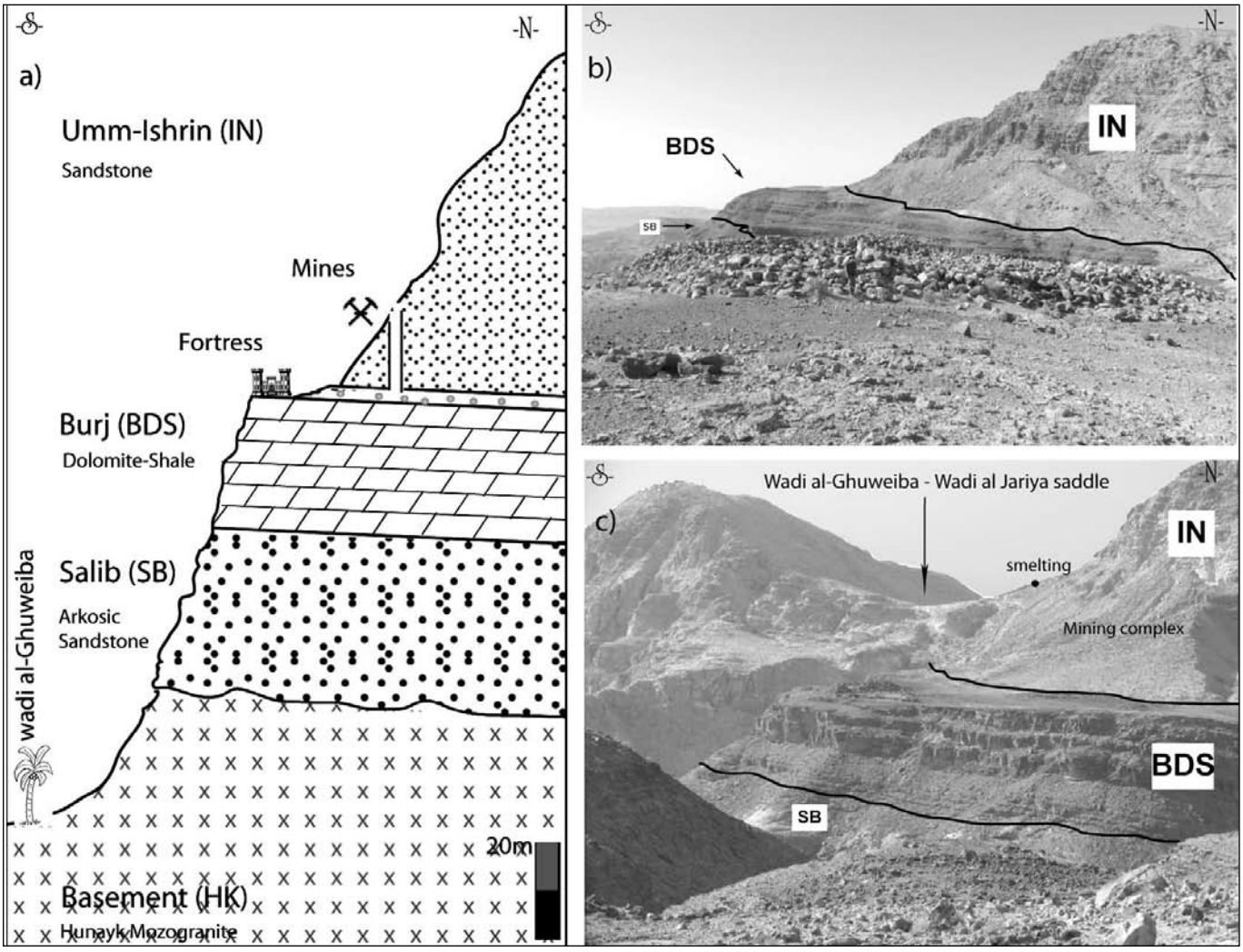


2. Rās al-Miyāh Archaeological Complex in the upper basin of Wādī al-Ghuwayba. The fortresses of Rās al-Miyāh *West* and Rās al-Miyāh *East*, as well as Khirbat al-Ghuwayba, are marked by black circles.



3. Geology map of Rās al-Miyāh Archaeological Complex (after Rabb'a 1994). HK= Hunayk Monzogranite; SB=Salib formation (arkosic sandstone); BDS=Burj formation (Dolomite-Shale; this is the main copper ore bearing formation in the Faynān district); IN=Umm-'Ishrīn formation (sandstone). Note the location of the fortresses and the local trail, which connects them on the narrow outcrop of Burj formation (see text).

and creating a well defined topographic step in the area's landscape. This step is located several meters below the contact line between Umm-'Ishrīn and Burj formations. The contact line itself, well defined by the colored shale of the upper unit of the Burj formation, forms a breaking point in the steep slopes and cliffs that enabled the construction of an Iron Age path connecting the upper Wādī al-Ghuwayba basin, the two fortresses, Wādī al-Jāriya and Khirbat al-Jāriya (FIG. 5). In close proximity to the fortresses is the copper ore rich shale unit of the Burj formation, also referred to as the Dolomite

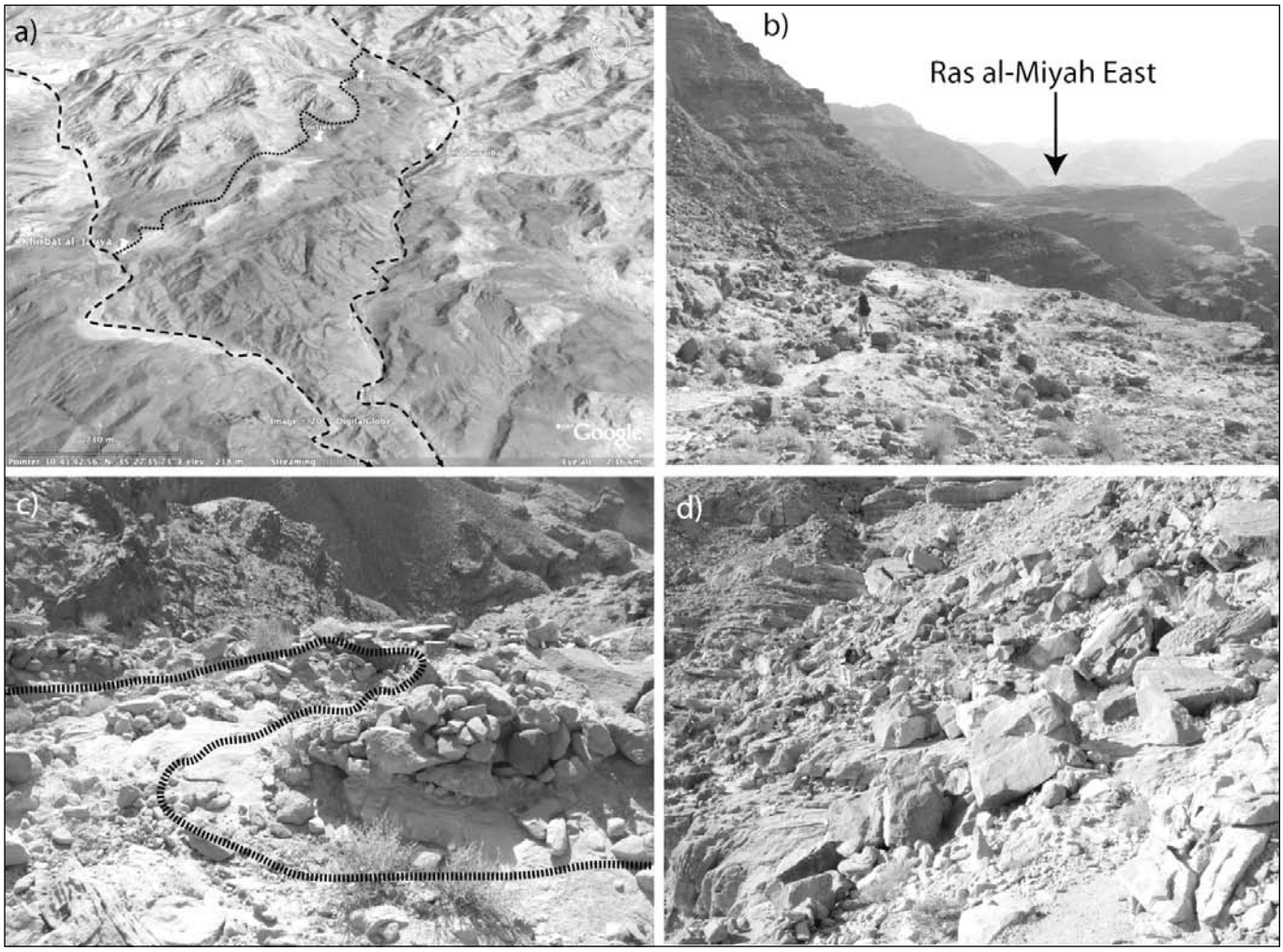


4. The geology of Rās al-Miyāh: a) a schematic section of the rock formations in the vicinity of the fortresses, looking west. Note the copper ore bearing horizon of Burj formation, the mining technique, involving shafts dug into the lower part of Umm-'Ishrīn formation and the topographic step caused by the erosion of the soft shale unit of Burj formation; b) Rās al-Miyāh *East* and the geological formations, looking west; and c) Rās al-Miyāh *West* and the geological formations, looking west.

Limestone Shale (DLS) unit (Hauptmann 2007) where we identified Iron Age mines (FIG.4a and see below).

The oasis of 'Ayn al-Ghuwayba and the main road leading towards Buṣayra along Wādī al-Ghuwayba are visible from both fortresses, as well as the wide valley connecting Khirbat Faynān and Khirbat an-Nuḥās via Rās an-Naqab. Due to the wide vista available from the elevated location of the fortresses' towers, guards could have been alerted for dealing with any unwelcome travelers or invaders approaching from the northeast or southeast. However, caravans traveling from Buṣayra to Khirbat an-Nuḥās do not have to pass through the fortresses themselves, whose location does not indicate immediate concern with the road. Rather, it seems that the main interest in building the Rās al-Miyāh fortresses had to do with the exploitation of the copper ore deposits surrounding them. The position of the western fortress is one kilometer north of Khirbat al-Ghuwayba, and a ca. 150m above the spring. The position of the east fortress is ca. 1.4km northeast of the spring and ca. 170m above it. This fortress is locally positioned for having a view towards the valleys in the west and not towards the road from Buṣayra, to the northeast.

The water supply for both fortresses was provided by the nearby oasis at 'Ayn al-Ghuwayba but demanded considerable effort to haul water from the spring up to the fortresses. An additional small water source is located ca. 3km upstream from the main spring, in a small eastern tributary of Wādī



5. Local and principle trails in the area of Rās al-Miyāh: a) a multispectral tilted satellite image of upper Wādī al-Ghuwayba basin, looking to the northeast. The main road to Buṣayra passes through ʻAyn al-Ghuwayba and Wādī al-Ghuwayba; principle road to Wādī ad-Daḥal passes through Khirbat al-Jāriya and Wādī al-Jāriya and a local road connects the two fortresses of Rās al-Miyāh with each other and with the basin of Wādī al-Jāriya (image taken from GoogleEarth); b) the local trail connecting the two fortresses takes advantage of the topographic step of Burj formation (looking to the east). This trail shows constructions, typically in difficult passages (c); and d) the boundary between the sandstone of Umm-ʻIshrīn formation and the shale unit of Burj formation is sometimes covered by sandstone talus. For scale, note the individual walking along the trail.

al-Ghuwayba (ʻThmilat al-Ghuwaybaʼ, UTM 739302/3399462). This is a small oasis with a dug pool that holds water permanently and currently has a garden consisting of fig and palm trees and local vegetation indicating the high water table. Its proximity to the fortress of Rās al-Miyāh *East* (ca. 1km ʻas the crow fliesʼ) suggests that this was the primary water source of the fortress's occupants, assuming that a same pattern of springs prevailed in the area during the Iron Age. Building cisterns in the immediate vicinity of the fortress would require the use of mortar because the local rock does not hold water. With the exception of a possible incomplete attempt to construct a water drainage system in Rās al-Miyāh *East* (see below), no signs of any cisterns were found in our surveys around the fortresses.

Rās al-Miyāh West

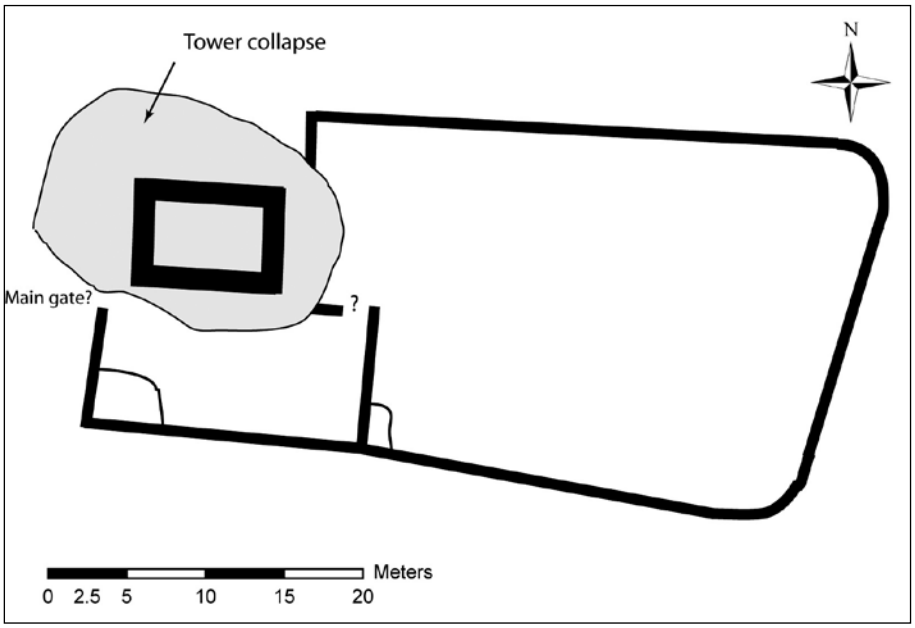
The fortress of Rās al-Miyāh *West* is located at UTM 736691/3399076, ca. 320m above sea level and 500m from the saddle separating Wādī al-Ghuwayba and Wādī al-Jāriya (FIG. 2). The fortress is built out of local black dolomite stones, roughly cut into small slabs from the layered Burj formation (FIG. 6). The structure is composed of two architecturally separate parts, a massive square tower and a rectangular enclosure divided into two main

6. The fortress of Rās al-Miyāh *West* (view towards the west).

spaces (FIG. 7). The enclosure and the tower represent distinct construction phases, as the enclosure walls abut those of the tower and do not constitute a continuous construction. The collapse walls of the tower rise ca. 4m above the ground surface, surrounded by a massive collapse that gives it a circular layout (FIG. 8a). However, some of the inner walls are still visible, revealing a rectangular chamber, ca. 4 x 8m.

The enclosure walls are preserves up to 10-12 courses of stones and to a height of more than 2m. These walls incorporate the tower forming a large rectilinear enclosure space (ca. 23 x 45m) oriented as a west-east elongated shape. The tower dominates the northwestern part of the enclosure and does not protrude out of the rectilinear layout. The area to the south of the tower is divided into small spaces and consists of the highest remaining walls in the enclosure. This part might have been roofed, indicating several small chambers adjoining the wide open enclosure to the east. The main gateway to the fortress appears to be located in the western side, between the walls of the tower and those of the enclosure (FIG. 7).

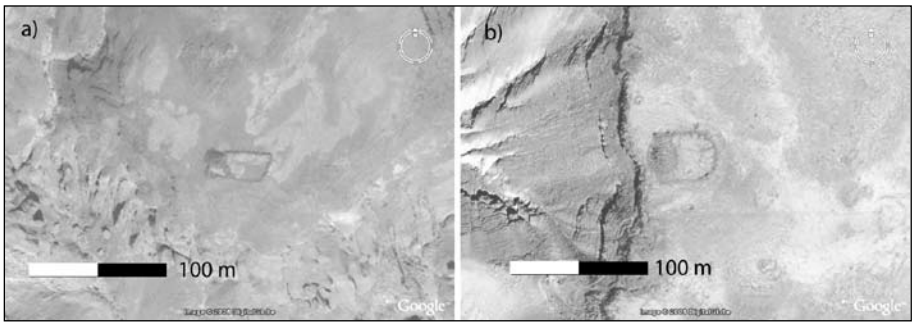
Although the fortress is roughly built from the local stones on a high and isolated plateau, it does not show similarity in its architectural plan to the other late Iron Age 'Edomite strongholds' such as Ba'ja III (Lindner and Suleiman 1987), Jabal al-Quṣayr (Lindner *et al*. 1996) and others (e.g. Ben-David 2001)[1]. An interesting parallel is found in neighboring Moab, with an Iron Age fortress reported by Parker (1987: 56, fig.25, site 232; 2006: 60, site 57) (The fortress is called by the local Bedouins 'Rujm al-'Abd') (FIG. 8)[2]. The orientation, dimensions and architectural design of both fortresses are notably similar. They are both located on a leveled plateau on the edge of a cliff; their elongate axis



7. Wall plan of Rās al-Miyāh *West*. The width of the inner walls of the tower is approximate.

[1] These 'Edomite strongholds' are typically built on isolated peaks along the western slopes of the Jordanian plateau. They show a variety of layouts and construction features according to the local terrain and rock formation (usually sandstone outcrops, but also on other types of bedrocks, see e.g. Hubner 2004), thus their common denominator is primarily their location.

[2] We thank to Chaim Ben-David for bringing this similarity to our attention. On the "Moabite" fortress and the road system in its vicinity, see Ben-David, this Volume.



8. The Edomite Iron Age fortress of Rās al-Miyāh *West* (a) and the Moabite Iron Age fortress of Rujm al-'Abd (b) show marked similarities in the architectural plan (images taken from GoogleEarth).

is in a west to east orientation; the towers are situated mostly on the northwest side of the courtyard and do not protrude from the rectilinear enclosures associated with them; the eastern side of the enclosures have somewhat rounded corners and finally, both structures are built from the local stone (in the case of Rujm al-'Abd it is roughly cut basalt stones). The "Moabite" fortress is located on a cliff above one of the on a cliff above one of the southeastern tributaries of Wādī al-Mūjib (biblical Nahal 'Arnon), far from the track of the King's highway (located to the west), the principal north – south route along the Jordanian highland plateau. The massive structure is positioned on the edge of the eastern desert, not far from the location of the Roman limes line of fortifications (Parker 2006) and probably on an ancient Iron Age road that crosses the topographic barrier of Wādī al-Mūjib through an eastern alternative to the King's highway (see Ben-David, this volume). However, there are no remains of such a road or other fortification further east and north of the fortress. This suggests that the main objective of the site was to watch over the valleys below, where more plausible paths might have been in use for transportation between both parts of Moab (see especially Ninow 2002 and Ninow this volume)[3]. This suggests that Rās al-Miyāh *West* may also be a watch tower that guarded indirect routes in the valleys below.

In close proximity to the Rās al-Miyāh *West* fortress, ca. 115m to the north and near the northern edge of the dolomite topographic step, there are two relatively well preserved small structures roughly built from the local dolomite stones (FIG. 9a). One is rectangular, ca. 7.5 x 5.5m, and the other, situated ca. 6.5m to the northeast, is a tumulus-shaped circular pile of stones. Some 20 meters to the north of the small structures is an extensive mining complex, situated on the lower slope of the Umm-'Ishrīn formation and extending over an area of ca. 1.2 hectares (FIG. 2 and 9b; for the mining technique see also FIG. 4a). Only a few of the blocked entrances to the mine shafts may be identified today, nonetheless it is clear that many are buried under the collapse of the sandstone cliff as evidence by tailings. The mine shafts were dug into the lower part of Umm-'Ishrīn formation, in order to approach the copper ore bearing layer of the upper part of Burj formation (FIG. 4a) located below. From the location of one of the shafts entrances we can reconstruct the approximate depth of the mines to be around 15-20m. Based on the extent of tailings we can presume extensive galleries were dug into the ore bearing horizon as has been documented by the German Mining team in many Iron Age locales in Faynān (Hauptmann 2007). Iron Age copper mines with similar characteristics were reported from Wādī Khālid, in the vicinity of Khirbat Faynān (Hauptmann 2007: 116-121). The depth of the mine shafts in Wādī Khālid was up to 50-60m (Weisgerber 1989), and some of the excavated mines reveal long galleries (>30m) along the copper ore bearing layer (Weisgerber 1989).

The extensive copper mining activities are recognized primarily by the distinct remains of black manganese-rich tailings that are highly visible on the bright sandstone slopes (FIG. 9b). The tailings originate from the copper ore bearing layer

3 The use of a path along the valley below the fortress (Wādī an-Nukhayla, a southern tributary of Wādī al-Mūjib) during the Iron Age as one of the alternatives to the King's highway is supported by several major Iron Age sites found along the wadi, among them the site of Khirbat Mudayna al-'Ulyā (e.g. Miller 1991) and Qaṣr Ḍab'a (Parker 2006:74, site 194), located further up the wadi basin. Although the road along the ascent from the wadi to the fortress has impressive constructions, we should consider the possibility that its main target was the fortress itself, without an additional segment towards the north or east. Alternatively, one might date the massive road constructions to the Roman period, as a secondary access to the *limes* line.

9. Archaeological features in the vicinity of Rās al-Miyāh *West*: a) small rectangular structure made of local dolomite stones; b) overview of the mining complex. Note the blackish color caused by tailings; c) horizontal line of niches, 10-15cm in diameter, located above a blocked shaft in the mining complex. A similar feature was found in the quarry area near Rās al-Miyāh *East* (d); e) open mining shaft dug into the shale unit of Burj formation; f) and g) copper slag deposit located near the saddle between Wādī al-Jāriya and Wādī al-Ghuwayba.

and were the result of removing rocks in order to create the shaft and galleries. They might also be the result of processing ore outside of the shafts after removing it from the ore body inside the hill. In addition, several small roughly built structures and installations located on the steep slope are another indication of Iron Age interest in exploiting the buried ore deposits. One particularly interesting installation is a horizontal line of rounded niches (ca. 10-15cm in diameter) carved into the sandstone cliff several meters above one of the major blocked shaft entrances (FIG. 9c). The niches might have been the base for wooden scaffolding used in the process of raising ores (and perhaps miners) through the shafts, with the help of ropes. A very similar installation appears on the sandstone cliff near the fortress of Rās al-Miyāh *East* (FIG. 9d), although there it could also be related to stone quarrying activities (see below). We do not know of any parallels for such installations in the copper mining districts of the southern Levant (constituting mainly Faynān region and Timna valley), making this particular reconstruction speculative.

Two open shallow mining shafts were dug directly into the shale unit of the Burj dolomite-shale formation close to the boundary with the Umm-'Ishrīn sandstone and in close vicinity to the mining complex of the slope. One of these was excavated by the Natural Resource Authority of Jordan (NRA) possibly in the location of an ancient shaft, and the other (the eastern) is probably a collapsed ancient mining shaft (FIG. 9e). If the date of these shafts to the Iron Age is correct, there is evidence for exploiting, or an attempt to exploit, copper ores directly from the Burj formation without the need of deep shafts. The disadvantage of mining copper directly from the outcrops of Burj formation without using the deep shafts described above is that these outcrops are startigraphically located slightly below the richest copper-bearing horizon that was eroded in the region of the topographic step.

A strikingly large quantity of ceramic fragments, many of them identifiable, were recovered from the fortress, the nearby structures and the copper min-

ing complex. The pottery sherds are scattered on the surface in a very high density relative to other Iron Age sites in the region. The large number of sherds may indicate a substantially long occupation phase and/or high intensity of activities in the last stage of the Iron Age II.

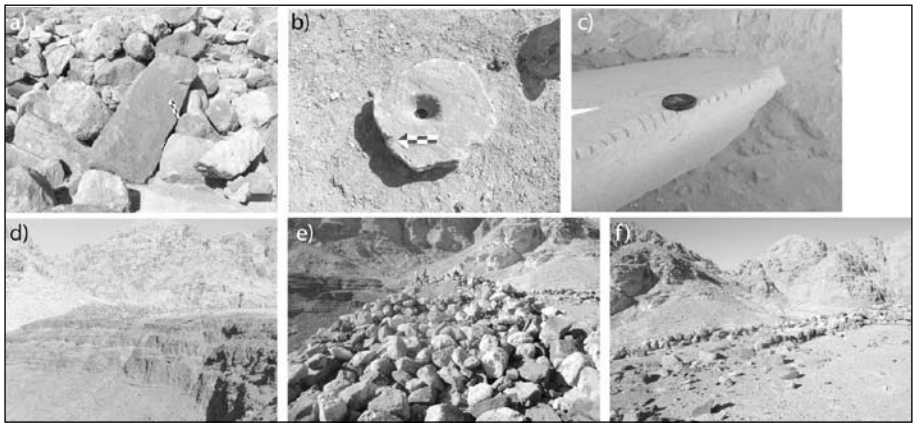
Four hundred meters to the west of the mining complex and ca. 20m above the saddle between Wādī al-Ghuwayba and Wādī al-Jāriya, there is a small deposit (ca.70 m^2) of broken slag (UTM 736190/3399275) (FIG. 9f and 9g; see also FIG. 2 for location). We could not find any ceramics associated with this site, and although the technology is relatively simple we speculate that limited copper smelting took place simultaneously with the Iron Age copper mining activities in the area of Rās al-Miyāh *West*. Technological typologies based on the slag cannot be directly used as a chronological marker (Ben-Yosef 2008) as simple industries could have been practiced even after more innovative technologies were introduced during the Iron Age. In the case of this slag deposit, its proximity to the archaeometallurgical complex of Rās al-Miyāh may indicate dating the smelting activities to the late Iron Age. The Iron Age smelters may have selected this location some distance from the Rās al-Miyāh *West* fortress and nearby mines to take advantage of the high wind in the saddle. Similar remains of small scale smelting activities were found in the close vicinity of Rās al-Miyāh *East*, there associated more directly with Iron Age ceramics (see below).

Rās al-Miyāh East

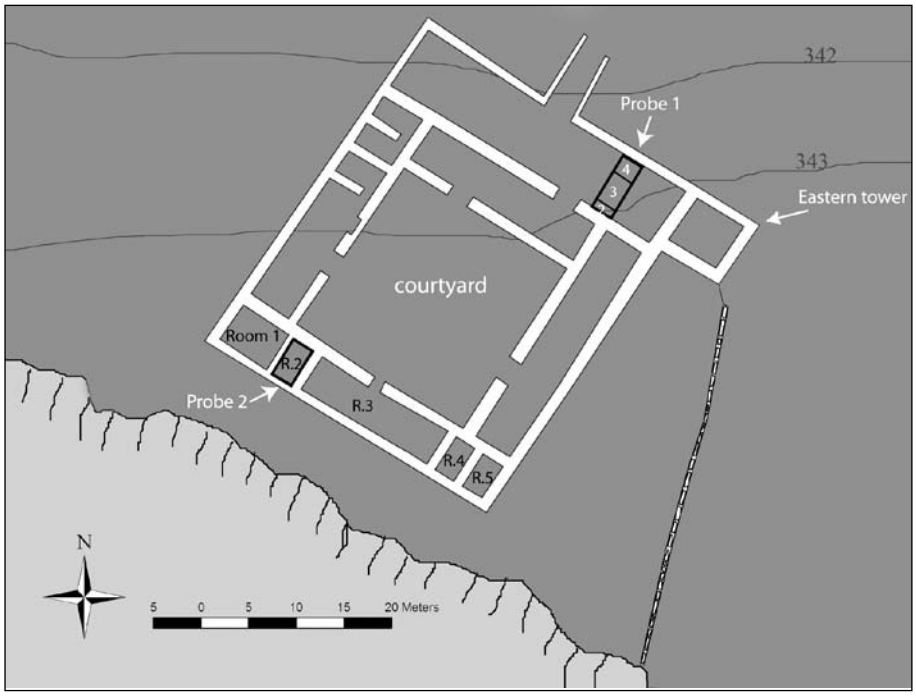
The fortress of Rās al-Miyāh *East* is located at UTM 738148/3399340, ca. 350m above sea level and ca. 100m above the stream channel of Wādī al-Ghuwayba (FIG. 2 and 10). The fortress is quite different from Rās al-Miyāh *West*, both in building material and in architectural design. Rās al-Miyāh *East* was not built out of the local dolomite stones that can provide only relatively small slab blocks. Instead, the enitre structure is built out of massive brown sandstone that originate from the nearby outcrops of the Umm-'Ishrīn formation. The thick layers of the sandstone in this formation can provide massive blocks of building stones with size limited only to transportation constraints and the architectural design. The fortress's walls and tower were built with huge, typically well cut, sandstone blocks, sometimes exceeding 1m in length (characteristic dimensions of stone blocks in the outer wall are ca. 80 x 40 x 30cm, i.e. elongated blocks of about ca. 0.1 cubic meter) (FIG. 11a). The distance to the quarry located in the sandstone cliffs to the north is relatively short (ca. 200-250m). However, moving the massive sandstone blocks had to overcome both the lower steep slope of the Umm-'Ishrīn formation (a descent of some 30m) and the moderate but longer slope of the Burj formation (an ascent of about 30m).

10. An overview of Rās al-Miyāh *East*, looking towards southeast. The fortress is located on the dark Burj formation plateau and built almost entirely of bright sandstone. Note some of the small structures and the arrangement of building stones in front of the northwestern wall of the fortress. The size of this fortress is indicated by the two people standing along the southern corner of the structure.

The outer dimensions of this fortress are ca. 42 x 35m, with a northeast to southwest elongated axis. The walls are well preserved and the architectural plan is still clear, revealing small details of rooms and passages (FIG. 12). The fortress has an inner courtyard of ca. 20 x 20m, corridors on the northwestern and southeastern sides, a semi-casemate wall on the southwestern side and a double corridor with complicated maze of passages on the northeastern side. A massive tower (ca. 8 x 8m, outer dimensions) protrudes form the fortress's eastern corner. Along the southern corner of the tower a line of small stones follows the moderate hill gradient towards the south until it reaches the edge of the cliff. An additional shorter line of small stones is located between the southern corner of the fortress and the cliff. The pattern of these installations probably implies an attempt to collect seasonal rain water, as they divert the run-off into a local



11. Details from Rās al-Miyāh *East* Fortress: a) massive sandstone ashlar is seen in the collapse of the eastern tower; b) carved hole in a sandstone found in the fortress's courtyard, probably a door socket; c) carved stone found in the nearby quarry, probably prepared the fortress; d) southwestern wall of the fortress, just above the edge of the dolomite plateau; e) southwestern wall of the fortress with semi-casemate rooms filled with rubble; and f) northwestern inner and outer walls of the fortress (view from the courtyard).

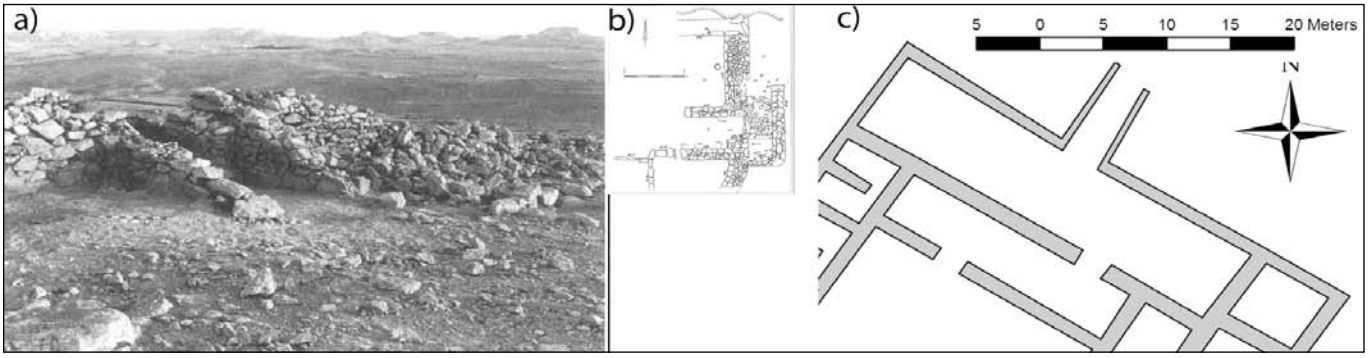


12. Wall plan of Rās al-Miyāh *East*. The location of the sample excavations is marked with black rectangles. Contour lines are approximate.

topographic drainage channel. However, there are no remains of a cistern at the end point of this system suggesting: a) an incomplete construction, b) a channel that was used by placing a jar at the end point to collect water, and/or c) a different use for these stone lines, such as diverting the run-off for protecting the foundations of the fortress walls.

The gate of the fortress is located in the middle of the northeastern wall. It has a unique shape with two protruding walls, which extend ca. 8m toward the northeast. The width of the protruding walls is significantly smaller than that of the fortress's external wall (ca. 0.5-0.8m vs. 1.2-1.7m respectively) and their height decreases gradually towards the outside. The protruding walls seem to be part of a short ramp that was constructed to overcome the elevation difference caused by the down sloping of the bedrock surface towards the north (FIG. 12). The inner width of the ramp changes from about 2.5m in the outside and 3m in the inside. A similar construction, also interpreted as a ramp used to overcome local elevation difference, is reported from the Iron Age I-IIA fortress near Quseima in the northern Sinai Peninsula (Meshel 1994). At that site, which is considered one of the so called "Israelite Fortresses" of the Negev, the ramp's walls extend towards the inner part of the structure (FIG. 13).

In the first corridor from the gate of Rās al-Miyāh *East* there are two small intrusive structures built out of small local dolomite stones. One is located in the northern part of the corridor and the other just in front of the gate area. Both of the structures have a circular, tumulus-like shape, which sug-



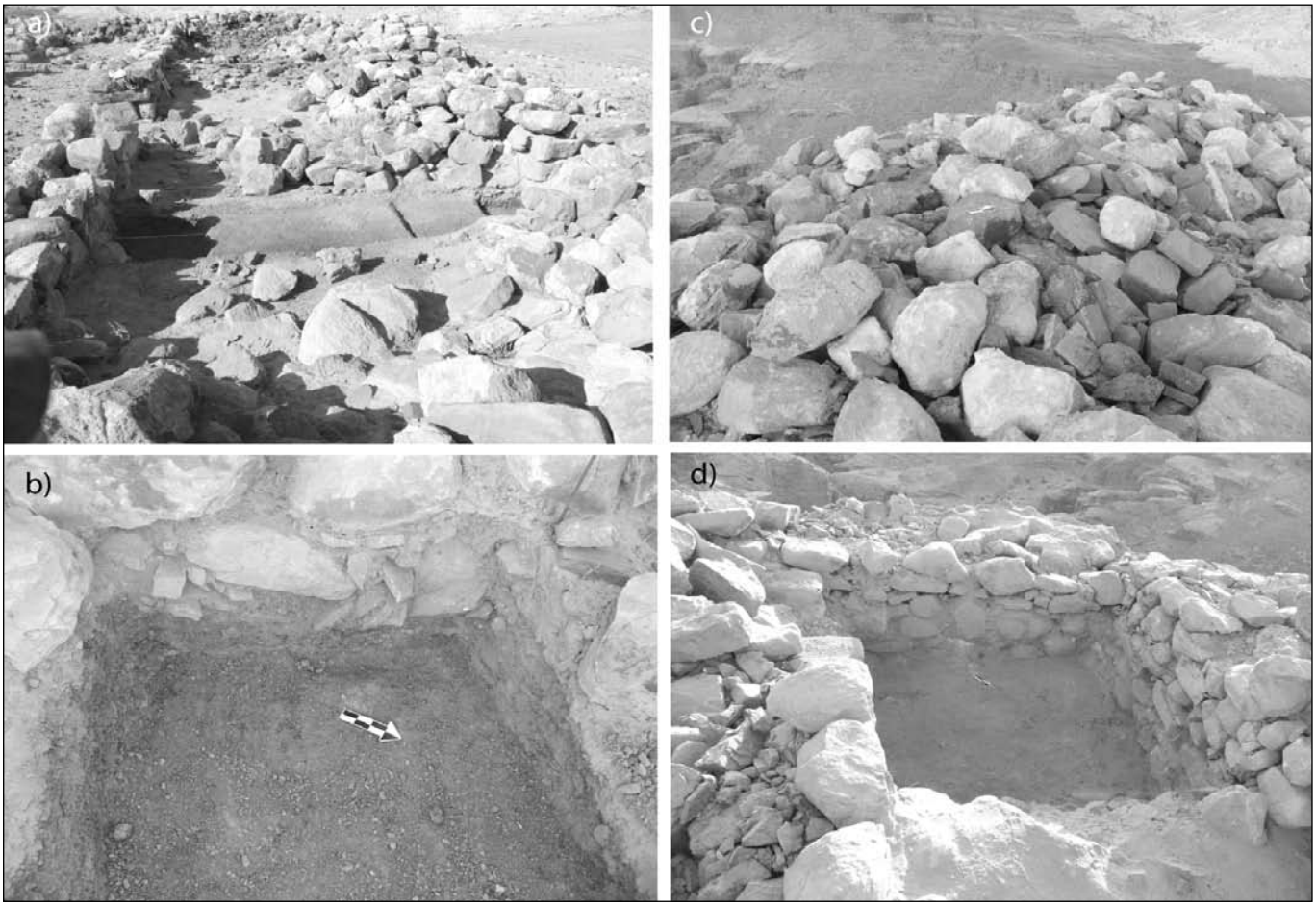
13. A picture (a) and a plan (b) of the gate complex of the so called "Israelite Fortress" of Quseima (after Meshel 1994: figures 7 and 8). The parallel walls are interpreted as being constructed for overcoming elevation difference, and are similar to in shape and purpose to those found in the fortress of Rās al-Miyāh *East*.

gests that these are later graves. The inner walls of the fortress are massive but short, consisting of to rows of stones, which stand up to a height of four courses (FIG. 11f). There are almost no remains of collapsed stones in the close vicinity of these walls (see below).

The southwestern side of the fortress is the most fortified, consisting of an aextremely wide semi-casemate wall (ca. 6.5m wide including the casemates and inner wall; FIG. 11d and e). The confined spaces within the wall (the 'casemates') are filled with a vast amount of rock and earth (excluding the central space, which has only partial remains of collapse). The fact that this side of the fortress is the most fortified is somewhat surprising giving the fact that it is the only side that is directly protected by the natural sheer cliff (dropping abruptly for more than 50m) along the edge of the dolomite plateau (FIG. 11e).

In order to gain more insights about the date and function of Rās al-Miyāh *East* we conducted two small test excavations in this fortress: Probe 1 at northeastern corridor and Probe 2 in one of the casemate room spaces along the southwestern fortified wall (FIG. 12 and 14). Probe 1 in the northeastern corridor was a narrow trench, ca. 1.5 x 6.15m, and excavated between the outer wall and one of the inner walls of the fortress (FIG. 14a and b). The higher surface elevation in this side of the corridor seemed to indicate the presence of occupational deposits and was one of the reasons for choosing this location. While excavating it became clear that the higher surface elevation was a result of the natural slope of the bedrock and that there was virtually no archaeological accumulation besides collapsed stones. We defined three loci (2, 3, 4, see FIG. 12) that represent the inner wall's collapse and wall foundation; the exposed bedrock in the center of the corridor; and the outer wall's collapse and foundation respectively (FIG. 12 and 14a). The inner wall's collapse is meager and represented in Locus 2 by only two relatively small stones. It seems that the inner wall in this location is preserved to its original height (3 courses, ca. 1.35m). Beneath the collapsed stones and directly above the bedrock was a thin layer of yellow aeolian dust with small amounts of ceramic sherds. This probe was excavated to bedrock (some Burj copper ore concentrations were found here) to expose the lower course of wall stones that was built into a shallow foundation trench (ca. 30cm deep). The bottom of the trench was filled with relatively small stones (1500 cubic centimeters or smaller) (FIG. 14b). This rough fill might indicate an intentional construction design for creating a more earthquake-resistant wall, as the small stones would give more flexibility to the heavy wall they support. We exposed a similar foundation trench (ca. 20-40cm in depth) beneath the outer wall, after removing a massive collapse of wall stones (15 large stones in an area of ca. 1.5 x 3m, Locus 4). Also here, a thin layer of yellow aeolian dust with few fragments of pottery was uncovered, and part of the trench was filled with relatively small stones. Between the collapsed stones of the two walls, as in the majority of the corridor's surface, the crumbly shale unit of the Burj formation was exposed (represented by Locus 3).

Probe 2 in the southwestern wall of the fortress was aimed at exposing one of the casemate rooms (Room 2, FIG. 12; FIG. 14c and d) to reveal a possible occupation layer beneath the collapse. Al-



14. The sample excavations in Rās al-Miyāh *East*: a) probe 1 in the northeastern corridor. An area of ca. 1.5 x 6.15m was opened between the outer and inner walls (view to the northwest); b) foundation trench beneath the inner wall. Excavations into bedrock exposed the base of the wall (note the small copper nodules and the brittle shale of the upper unit of Burj formation); c) an overview of the casemate room 2 before its excavation; and d) the excavated casemate room at the end of excavation, view towards southwest. Bedrock was not reached in this probe.

though bedrock was not reached, the result of the excavation indicates that the so-called "collapse" is probably an intentional fill as part of the fortress's construction. Thus, the divided spaces between the inner and outer southwestern walls were probably planned as a frame for constructing a massive and wide wall with the use of a fill made of sediment and roughly cut stones.

The casemate room is an elongate space perpendicular to the fortress's external wall (ca. 4.6 x 2.5m inner dimensions; see Figure 12). The outside wall of the fortress consists of two rows of stones, ca. 1.5m in width, with a sharp bulge towards the outside of the fortress that was most likely the result of the massive pressure caused by the casemate's fill. The wall stands to a preserved height of ca. 1m (the base of the wall is not exposed; FIG. 14d). A massive stone collapse is found outside of the wall, on a narrow step between the fortress and the cliff of the dolomite plateau. The inner wall of the fortress, standing to a height of ca. 2m, is made of two rows of stones, ca. 1.2m in width. It has sharp inclination towards the fortress courtyard, similarly the result of the intense pressure of the fill. The crudely built long walls of the room consist of one narrow row of roughly cut small stones (ca. 30-40cm in thickness) with at least 10 unstable courses and some gaps of missing stones (the upper 2m of these walls were exposed; FIG. 14d). The poor building quality of these walls suggests that they had never stood by themselves and that they were erected together when the fill was poured inside the confined casemate spaces. A doorway between casemate rooms 2 and 3 is represented by a gap of ca. 1m between the southeastern long wall and the outer wall of the fortress. A similar doorway is located between the

northwestern long wall and the inner wall of the fortress, connecting room 2 with room 1, although there the excavation is only 1.15m deep and the gap is less clear.

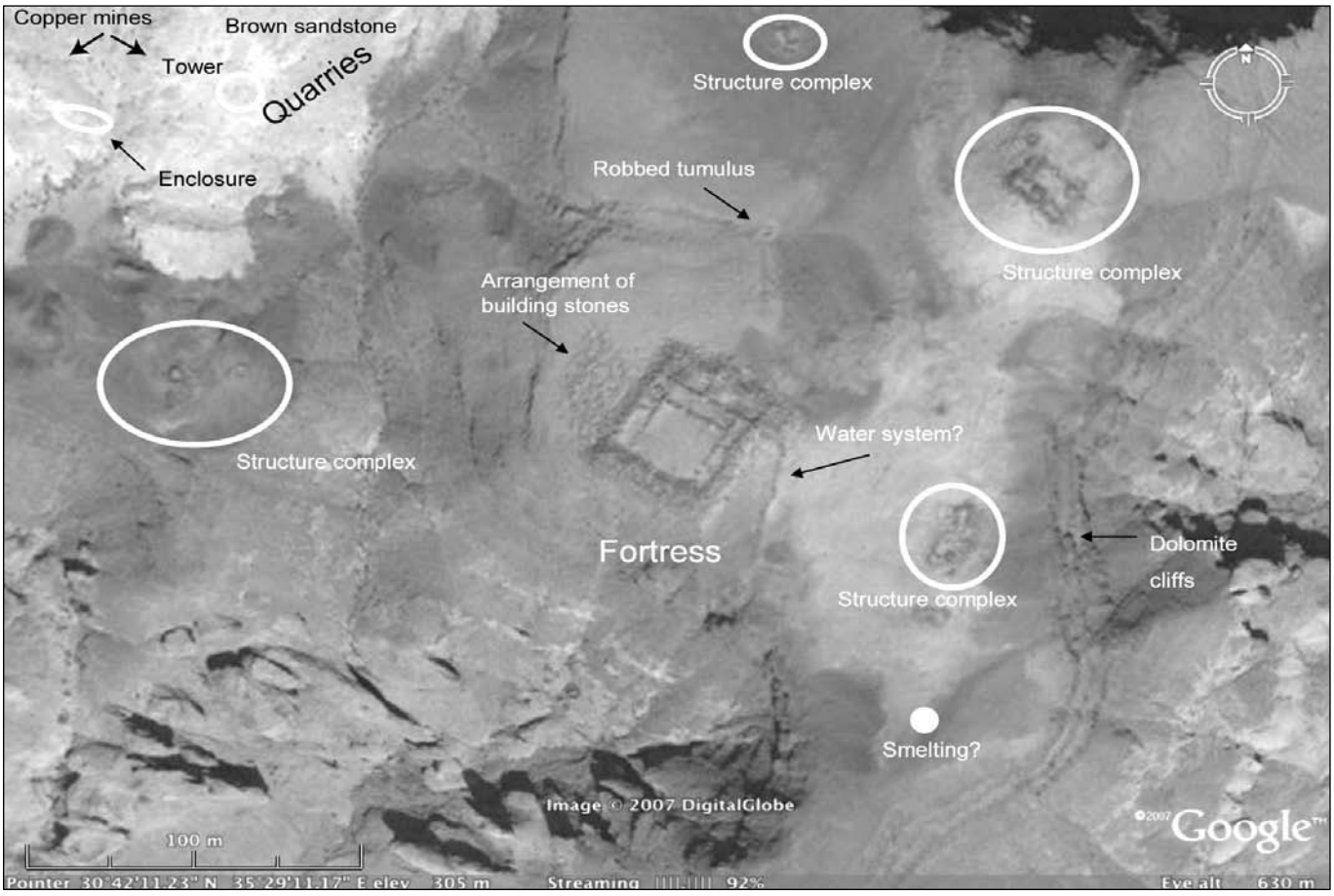
Before the excavation of Probe 2 was carried out, the long walls of the casemate were visible in only a few places. The southwest side of the fortress appeared as a continuous and massive pile of stones, confined only by the inner and outer walls of the fortress (this excludes the central space that has much less fill; FIG. 11d and 14c). The fill is a mixture of sandstone, dark dolomite stone and a large quantity of fine earth (in places more than 0.5m deep). The nature of this fill lends additional support for assuming an intentional blocking of the casemates: a) the dolomite stones do not appear elsewhere in the construction of the fortress; b) there is a mixture of two stone types, and both are roughly cut in a manner not suitable for quality building found in the rest of the fortress; and c) the large quantity of sediment excavated here does not seem to be aeolian in origin.

The evidence from Rās al-Miyāh *East* shows that the construction of the massive fortress was never finished. Although some of the indications are speculative, putting them all together presents a clear picture of an abrupt abandonment in the middle of the building process. The fortress's features that indicate unfinished construction are: 1) a possible unfinished water system; 2) a possible unfinished filling and fortifying the southwestern semi-casemate wall; 3) the well designed architectural plan of the fortress suggests a symmetric layout, especially for the northwest and southeast corridors. However, only the northwest corridor is divided into inner spaces, and even this division seems to be incomplete. The intended construction might have been two similarly arranged corridors or even two blocked semi-casemate walls as the one found in the only naturally fortified side (southwest); 4) the inner walls are short although their massiveness and foundation trench indicate an intention to build high walls, a building effort that never took place. In close proximity to these walls there are almost no indications of collapse, and there is no evidence of robbing these walls; 5) no significant occupation layer or cultural debris was found in the probe (No. 1) in the northeast corridor. In addition, the surface finds in the entire area of the fortress are scarce, including ceramic sherds. This stands in sharp contrast to the abundant surface ceramic both in the nearby copper mining complex and in the fortress's satellite small structures (see below). The latter structures may have been the dwellings of fortress's construction workers and/or the project management; and 6) an almost 'laid out' arrangement of building stones outside the northwest side of the fortress and in the direction of the quarry (FIG. 10 and 15) represents preparations for construction (that was never finished), rather than a collapse.

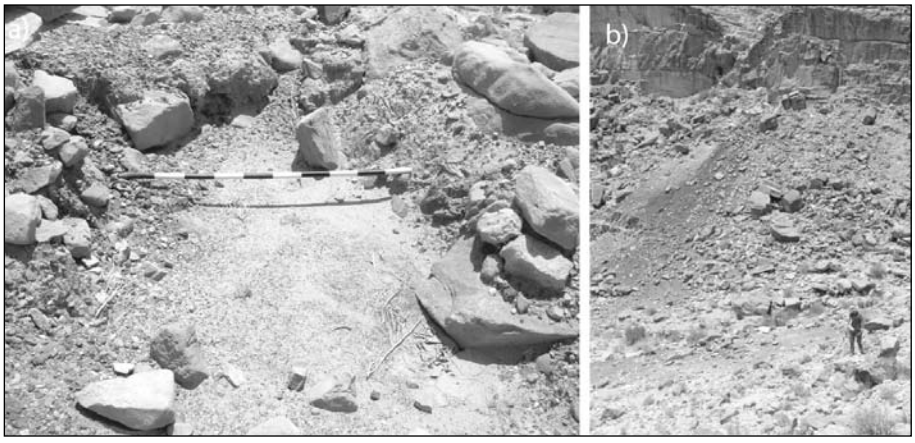
In close proximity to Rās al-Miyāh *East* fortress are abundant archaeological remains, most probably from the same period (excluding a small sandstone tumulus, ca. 40m to the north of the fortress) (FIG. 15). On the dolomite plateau five groups of small, roughly built structures are located between 30 to 120 m from the fortress. Most of the structures have rectangular shapes and some comprises several rooms. They are very similar in characteristic to the small structures near Rās al-Miyāh *West* fortress (FIG. 9a), including dimensions and building quality. These may also have been associated with the Iron Age miners and/or builders responsible for the construction of the fortress.

A deposit of small slag fragments was found near the highest point of the dolomite plateau (FIG. 15). The Iron Age II pottery fragments collected from the surface suggests a similar date for the smelting process, despite the simple technology that was practiced. Similar satellite site was found close to the Rās al-Miyāh *West* fortress (see discussion above). At both sites we did not find any remains of furnaces.

A copper mining complex was found ca. 400m northwest of the fortress, in both sides of a small valley and on the lower slope of the Umm-'Ishrīn formation (UTM 737754/ 3399525) (FIG. 16). This area is directly related to mining activities and extends over an area of ca. 500m^2. It includes several blocked mining shafts associated with black tailings that are visible from a long distance (FIG. 16b). The layout of the mining complex is similar to the one located near Rās al-Miyāh *West* and discussed above. The mining shafts of Rās al-Miyāh *East* appear to be deeper, as the distance between their entrances to the boundary between Umm-'Ishrīn and Burj formations is longer (more than 30m). In the lower part of the valley, ca. 100m southeast of the mines, a large trapezoidal enclosure was found (ca. 13 x 19 x 8m) built out of massive local sandstone (FIG. 17). The pottery in the vicinity of this



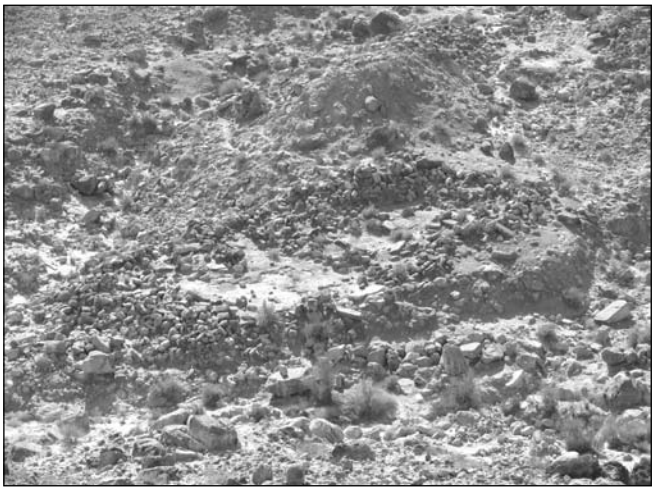
15. Multispectal satellite image of the fortress of Rās al-Miyāh *East* and its vicinity (image taken from GoogleEarth).



16. The copper mines near Rās al-Miyāh *East*: a) blocked shaft; b) black tailings, easily visible on the bright sandstone slope, indicate the location of an ancient mining shaft.

structure was scarce and its dating is insecure. It is important to note that the organization of mining activities at both fortresses is remarkably similar.

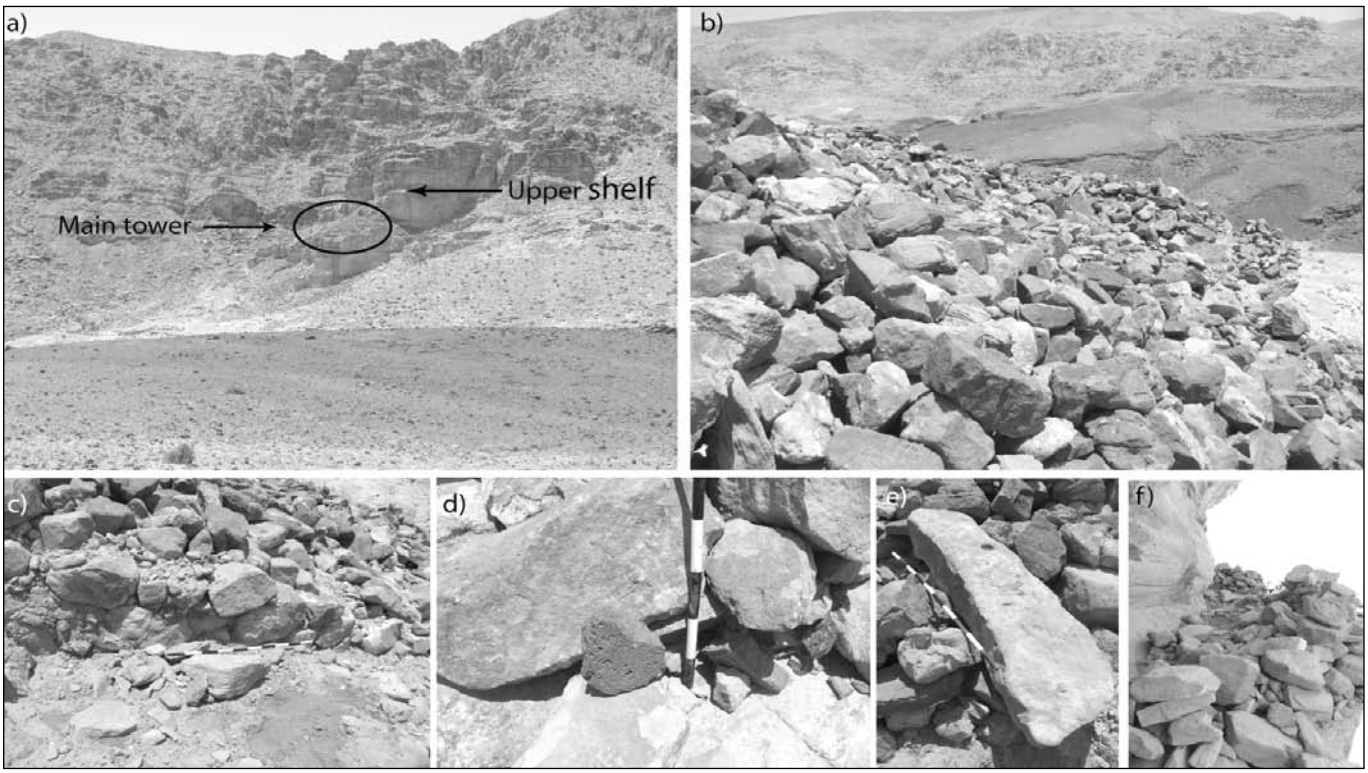
On a narrow step high in the brown sandstone cliffs of Umm-'Ishrīn formation a massive tower was found with adjacent small structures (FIG. 18). The tower is located ca. 220m ('as the crow flies') northwest of the fortress and ca. 40m above the dolomite plateau, in the vicinity of the sandstone quarry. The construction of this unique structure on the extreme location of the sandstone cliff is admirable even today. The layout of the tower, visible only in part beneath the massive collapse (FIG. 18b), is probably rectangular. The western wall constitutes a straight line that can be identified for a length of ca. 8m (FIG. 18c). Thus, the dimensions of the tower might be 8 x 8m or larger. The building stones comprise mostly the local sand-



17. A large (13 x 19 x 8m) Iron Age enclosure made of the local sandstone in the vicinity of the copper mines near the fortress of Rās al-Miyāh *East*.

stone although blocks of black dolomite stones are also part of the collapse. The tower remains include numerous fragments of pottery, many of which are identifiable. The abundant pottery sherds all over the slope below the sandstone step are derived from the archaeological remains of the tower and the adjacent small structures. Between the collapsed stones of the tower we found a fragment of a basalt grinding stone (ca. 35 x 20 x 10cm) indicating food preparation activities or initial processing of copper ores (FIG. 18d).

On a narrow shelf above the tower is a small roughly built structure in the opening of a shallow cave (FIG. 18a and f). Below the tower and ca. 15m to the northeast of its center, is a line of rounded niches (ca. 10-15cm in diameter) carved horizontally into the sandstone cliff (FIG. 9d). A similar installation was found in the copper mining complex of Rās al-Miyāh *West* (see above), although there it is associated with a copper mining shaft. We associate the niches near the tower of Rās al-Miyāh *East*, together with other remains on the slope, with the sandstone quarrying activities that were part of the fortress's construction. However, even though there are no visible remains of mining activities on this slope, we cannot completely dismiss the possibility that such remains are buried under the eroded sandstone cliffs. Small installations, such as carved mortars located on the slope further to the west of the tower, suggest copper ore related activities (crushing and grinding). Just below the line of niches we found nicely carved cornice-like



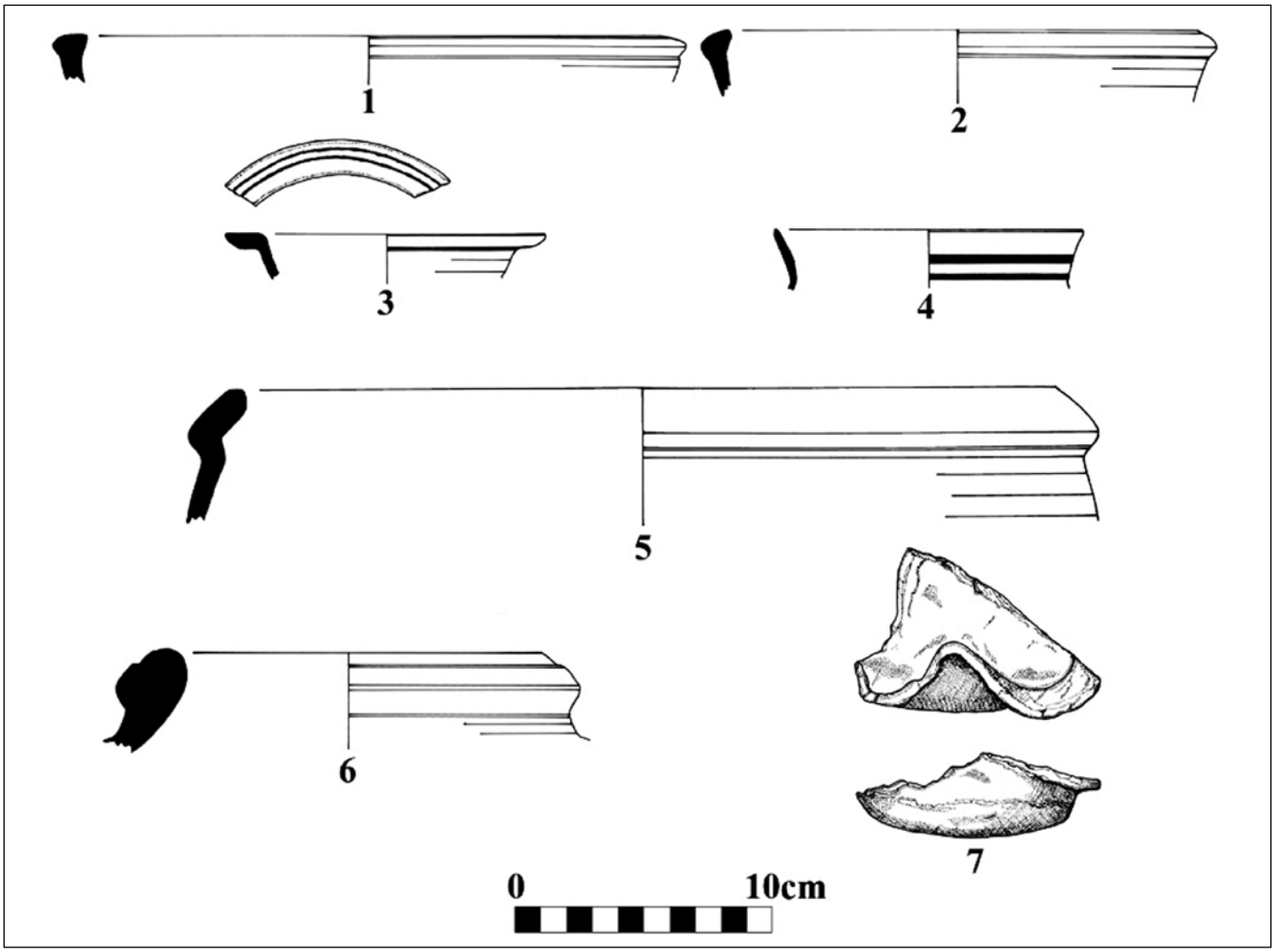
18. Rās al-Miyāh *East* - remains of a tower on the sandstone cliffs: a) overview; b) massive collapse of the main structure; c) face of the western wall of the tower; d) basalt grinding stone found in the collapse of the tower; e) massive sandstone building block in the collapse of the tower; and f) construction remains on the upper shelf.

sandstone block with a line of grooves that might have been a simple decoration (FIG. 11c).

Many ancient activities took place in the area of Rās al-Miyāh *East*. Although scant amounts of pottery fragments indicate a limited ephemeral Nabataean presence at the site, the vast majority of the pottery indicates late Iron Age II activities. However, we cannot discern whether the copper production activities (mining and small scale smelting) were done simultaneously with the project of quarrying massive sandstone and constructing the fortress or earlier (assuming that the abandonment of the fortress construction marks the end of the area's occupation). This question, together with revealing the exact function and date of the various structures and installations, awaits further research.

Dating the Fortresses

In the current stage of the research we consider the ceramic assemblage collected in both areas of Rās al-Miyāh *West* and *East* to represent one period without subtle distinction of different occupational phases[4]. The ceramic assemblage in general is typical to Edom in the seventh and sixth centuries BC (Iron Age IIB/C). A limited sample of indicative pottery sherds from the two fortresses was presented in FIG. 19. Additional discussion, including the distribution of the pottery between the different



19. Representative Iron Age ceramics from the fortresses of Rās al-Miyāh and their vicinity: 1) Bowl, Rās al-Miyāh *East* (EDM 8137, Reg. 56); 2) Bowl, Rās al-Miyāh *West* (EDM 5663, Reg. 160); 3) Bowl, copper mining complex of Rās al-Miyāh *West* (EDM 6549, Reg. 51); 4) Bowl, copper mining complex of Rās al-Miyāh *West* (EDM 6549, Reg. 268); 5) Krater, the tower on the sandstone cliff near Rās al-Miyāh *East* (EDM 11259, Reg. 73); 6) Jar, copper mining complex of Rās al-Miyāh *East*, near western shafts (EDM 11152, Reg. 211); 7) Lamp, copper mining complex of Rās al-Miyāh *West* (EDM 6549, Reg. 52).

[4] Excluding the scant Nabataean pottery collected in the area of Rās al-Miyāh East and discussed above.

sites of Rās al-Miyāh region and parallels from the Edomite highlands, is in preparation.

If the dating of the pottery sherds found at the two sites and their associated installations is correct, the Iron Age sites in the region of Rās al-Miyāh were occupied approximately one hundred years or more after the peak in early 11th – ninth century BC copper production activities in Khirbat an-Nuḥās and Khirbat al-Jāriya (Higham *et al*. 2005; Levy *et al*. 2004b; Levy *et al*. 2005). There is no large scale sophisticated copper smelting industry such as that found at Khirbat an-Nuḥās and Khirbat al-Jāriya associated with these Rās al-Miyāh fortress sites. The organization of metallurgical activities around these fortress sites is quite different form earlier Iron Age metal production. However, the interest in exploiting the copper ore in the region of Rās al-Miyāh fortresses is evident, and the question is where the smelting process took place. A good candidate is the nearby large copper smelting site of Khirbat al-Ghuwayba which is dated only generally to the 'Iron Age' (Hauptmann 2007: 132) without more precision. Although there is widespread evidence of smelting activities at Khirbat al-Ghuwayba (assumed here to date to the Iron Age IIC), judging by the thickness of slag deposits on the site surface, the scale of production was much smaller here and with relatively more simple technology, than the massive smelting work carried out more than a century earlier in the Iron IIA-B, and possibly late Iron IB periods.

Conclusions

The archaeological complex of Rās al-Miyāh is extremely rich in Iron Age remains. The two fortresses, the main focus of this paper, are associated with copper mining activities in the northern slopes of Wādī al-Ghuwayba. The fortresses were probably also connected with a defense system around the oasis of 'Ayn al-Ghuwayba, which controlled the northeastern gateway to the entire region of Faynān. The rich ceramic assemblage of the Rās al-Miyāh fortresses and associated complex of sites are probably dated to the Iron Age IIC. These complexes of Iron Age sites are situated on top of the Burj formation relatively high above the main Iron Age copper production sites of Khirbat an-Nuḥās and Khirbat al-Jāriya that date to the 11th – ninth centuries BC (Hauptmann 2007; Levy *et al*. 2005). The late Iron Age date for the newly described fortress complexes indicates perhaps the latest phase of Iron Age copper production activities in the Faynān district, which was considerably smaller in scale and simpler in technology than the industry of the Iron Age IIA in Faynān. The advanced technology of massive production displayed in Khirbat an-Nuḥās and in Khirbat al-Jāriya may have been forgotten, and/or the social organization in the Iron Age IIC was not adequate for organizing such industrial activities on a scale comparable with the earlier years of the Iron Age. Thus, the overland trade in commodities from Arabia and other regions may have been of much greater importance to late Iron Age Edom than copper production.

As the Rās al-Miyāh fortresses are located on a high plateau in a rough mountainous region, these defensive sites might be considered as part of an the late Iron Age 'Edomite pattern' of 'high places' and 'mountainous strongholds' sometimes associated with the biblical passage of Jeremiah 49:16 and sites such as Sala', Umm al-Biyāra and other highland locales (e.g. Hubner 2004; Lindner 1992; Lindner *et al*. 1996). However, besides the location and the surrounding rough terrain, the architectural similarities between the Rās al-Miyāh fortresses and other Edomite strongholds and high-places are meager.

The fortresses are distinct from each other in size, material and architectural plan. Rās al-Miyāh *West* is relatively small and has an interesting parallel in the region of Moab (Rujm al-'Abd). This parallel should be taken into consideration when estimating the differences and boundaries between the Iron Age polities of Cis-Jordan. The fortress of Rās al-Miyāh *East* is a massive, well planned fortress with no clear archaeological parallels. The huge labor effort manifested in the construction of the structure together with the details of the architectural plan suggests a centralized and well organized society in Edom during the late Iron Age. The fact that actual metal production actives was meager just when tremendous expenditures were invested in the construction of these fortresses remains a puzzle. The construction process at the Rās al-Miyāh *East* fortress was never finished. It ceased abruptly, maybe as a result of an economic crisis, a threat or a war, a failed economic policy in the Late Iron Age, external factors, or a combination of these variables. Additional excavation probes may provide the much needed answer to this question. However, it is clear that there are cycles of metal industry accompanied by changes in the intensity

of copper production through the full Iron Age sequence in Edom that researchers are now beginning to consider. The relationship between the new archaeological data presented here and the ancient texts including the Hebrew Bible will be discussed elsewhere. Taking these new data together, this report on the Rās al-Miyāh fortresses contributes to our understanding of how people 'crossed Jordan' in the copper-ore rich Faynān district of Edom.

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A Doric Frieze from Petra

This article briefly discusses a Doric frieze, which was uncovered at Petra in 2000 and 2001 during excavations carried out by Basel University Department of Archaeology, under the patronage of the Swiss-Liechtenstein Foundation for Archaeological Research Abroad (SLFA). The frieze will then be used as a starting point for further thoughts on Nabataean architectural sculpture [1].

The frieze, preserved in a fragmented state, originally stood above the main entrance of a lavish Nabataean mansion on the southern terrace of az-Zanṭūr (EZ IV), a rocky peak to the south of the city-centre of Petra (FIG. 1; main entrance marked with arrow)[2].

The main entrance of this palatial dwelling was situated in front of a religious area, with no apparent architectural discontinuity between the two. An altar with a three-part stairway and possibly a small temple, which was only partially excavated, were integrated within this sacred area. Seemingly, the northern outer wall acted as the entrance façade of the house as well as constituting part of the temenos wall of the sanctuary.

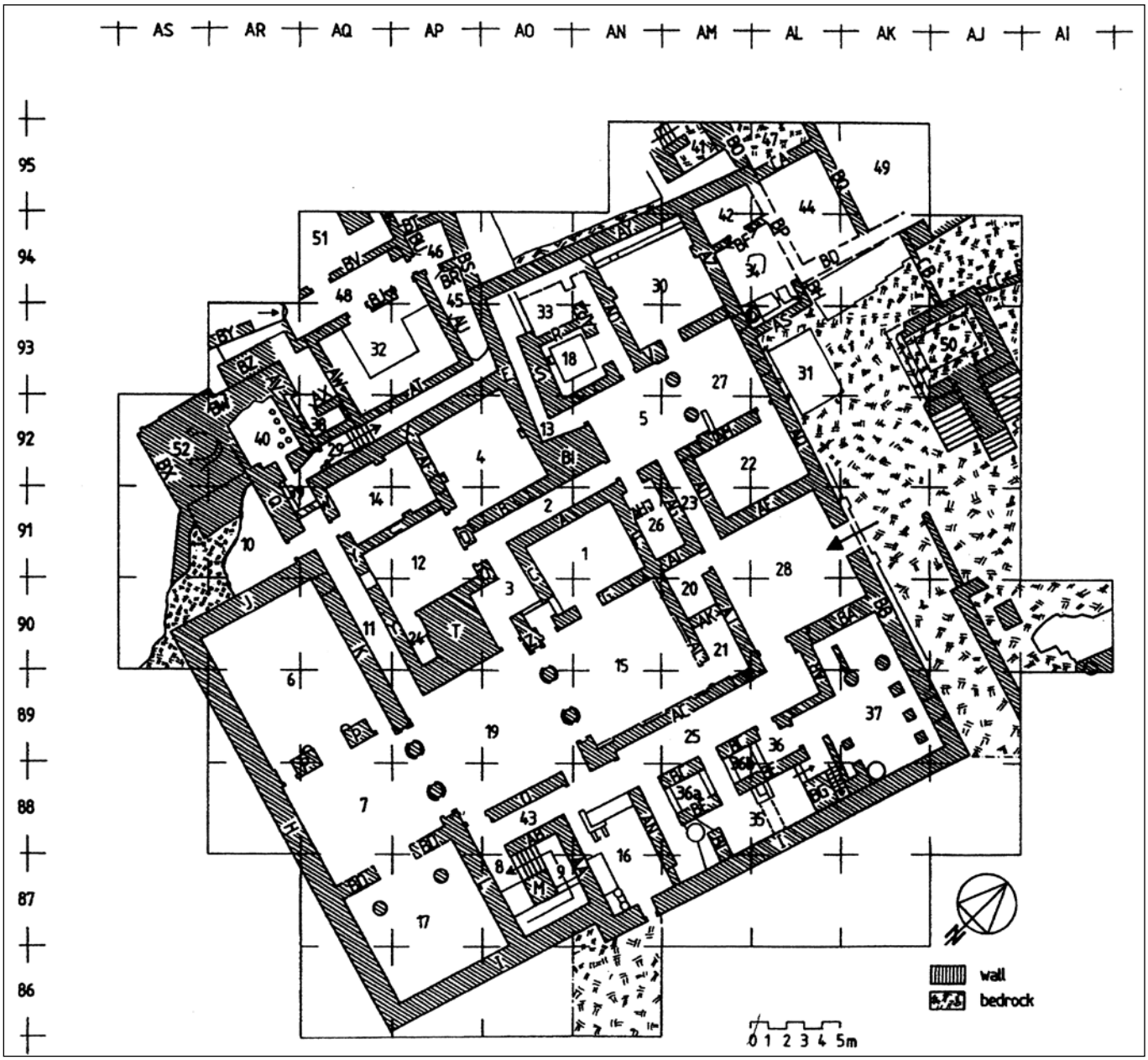
From the associated artefacts, one can conclude that the Doric frieze collapsed during the great earthquake of AD 363. The archaeological evidence enables a tentative reconstruction to be put forward. Thus, the frieze, which was approximately 3.7m. long, would have been made up of six metopes and was supported by two shallow pilasters with Nabataean capitals. It was made out of two different types of local sandstone and, as the stucco remains testify, was painted.

Each of the metope fields contained the bust of a deity set in a profiled, circular frame, approximately 33cm. in diameter. The busts belong to the Graeco-Roman tradition and can thus be identified. The two better-preserved busts portray the gods Athena (FIG. 2) and Ares (FIG. 3). Both are characterized by their attributes: Athena wearing the aegis and helmet, and Ares carrying a helmet and a sword belt beneath the chlamys. Further fragments hint that the other metopes were also decorated with busts: recognizable are Artemis, with a quiver, and perhaps Hermes, with a hat. The evidence suggests that gods and goddesses were arranged in couples on the frieze, turning their heads to each other.

The interpretation and comparison of this figurative decorated frieze is rendered more difficult by factors including the secondary usage of local parallels, as well as the state of preservation of the monuments at Petra and in the surrounding area. Furthermore, the written sources only offer a partial insight into different aspects of Nabataean culture [3].

Nonetheless, one can still conclude that bust reliefs were a common feature at Petra [4], even when the particular monuments cannot be completely reconstructed owing to their state of preservation. This is the case for the closest parallel for the frieze from EZ IV, *viz.* the Doric frieze from Qaṣr al-Bint, which is only partially extant, even as part of the best-preserved temples in Petra [5]. The temple's sacred area was positioned at the west end of the Col-

1. The author would like to thank the leader of the excavations, Dr. B. Kolb, as well as the initiator of the Project, Prof. Dr. R. A. Stucky, for the permission to work on the Doric frieze discussed in this paper and thir suggestions on the subject. Andrew Lawrence is thanked for the English translation of the manuscript.
2. The frieze has been mentioned in the preliminary reports of the excavation campaigns: Kolb and Keller 2001 and Kolb and Keller 2002. A comprehensive publication of the architecture of ZEIT and the frieze is in preparation.
3. On the sources see Hackl, Jenni and Schneider 2003.
4. See wenning 2004.
5. Zayadine, Larche and Dentzer - Feydy 2003: 51-58.



1. Schematic plan of the structures at EZ IV (Drawing: B. Kolb).

onnaded Street. Here, the metopes were decorated with rosettes on one part, and with round-framed busts on another. Despite the difference in size, the mouldings of the medallions show the same design as the frieze of EZ IV. Chisel traces show that the busts, which are still *in situ* on the building, were vandalized; only one male bust fragment with a radiant crown is preserved. It must have fallen off the building before the defacing took place.

A comparable set of metopes decorated with medallion busts can be found on three blocks recovered during the excavation of the Byzantine 'Petra Church', where they were built-in secondarily [6]. The fragments show a triglyph and metope accordingly. Owing to the heavy modification, the busts can only be roughly identified. Here too, the original number and positioning of the busts cannot be reconstructed, and in this case it is also unclear to which monument they originally belonged.

The same applies for a series of blocks discov-

6. Roche 2001: 335.

2. Bust of Athena (Photo: O. Jäggi).

3. Relief medallion with bust of Ares (Photo: O. Jäggi).

ered in a secondary fill near the Temenos Gate of Qaṣr al-Bint [7]. They show that the deities decorating the frieze of EZ IV also appeared on other monuments at Petra. Busts of various of gods, set in rectangular frames, can be identified with on account of their attributes — Ares, Athena and Hermes amongst them.

These few examples have illustrated some of the difficulties encountered in studying the monuments at Petra. Regarding the number and the positioning of the gods, no close parallels can be drawn with the frieze of EZ IV. This could lead to the presumption that this frieze was a citation of a more complex iconographic programme, albeit on a smaller scale.

In view of the assumed pairing of the deities on the frieze, as well as the recurring importance of a 'divine pair' within the written sources [8], it would be tempting to interpret the busts as visualisations of the said couple, which combined different functions in themselves. However, every interpretation must be viewed against the backdrop of Nabataean architectural sculpture in general. Here, the motives have often a universal meaning and promulgate messages such as blessing, luck and fertility which are immediately graspable and can be understood on various levels. For example, many busts in Petra and the surrounding area have the cornucopia as an attribute [9], and some of the anthropomorphic busts depict personifications of planets and the signs of the zodiac. This has been demonstrated recently by convincing interpretations of series of busts which adorned the neighbouring sanctuaries of Khirbat adh-Dharīḥ and Khirbat at-Tannūr, approximately 100km. north of Petra.[10] Bust reliefs were used in various contexts, amongst them the decoration of tombs and votive niches. Comparable practice also occurred outside the Nabataean kingdom and should probably be included within a more widespread late Hellenistic phenomenon, which must be analyzed in a broader context.

The frieze of az-Zanṭūr is exceptional, not only because its figural decoration is well-preserved in comparison with other monuments at Petra, but also because it offers information on the original architectural setting and date; this is very rare for monuments from Petra and the surrounding region. On the basis of archaeological evidence from the excavation, the frieze can be attributed to the first phase of the residential building, which has a *terminus post quem* of 20AD.

From a stylistic point of view, the frieze eclectically combines high Hellenistic as well as late Hellenistic traditions, a common phenomenon in the

7. McKenzie 1990: 134-135, Pl. 60-62.
8. See Hackl, Jenni and Schneider 2003: 76ff. and Healey 2001: 80ff.
9. Wenning 2004: 171.
10. See Villeneuve and al-Muheisen 2000: 1546f. and McKenzie, Gibson and Reyes 2002.

late first century BC and early first century AD. The busts portray a certain portliness, which can be seen as characteristic of late Hellenistic sculpture, especially in the Near East where such voluptuous features were a sign of wealth and luxury. Furthermore, elements of the constitution of the faces and hair can be traced back to Ptolemaic sculpture. This is in no way surprising when one takes the Alexandrian influence on numerous monuments at Petra into account.

As the above examples have shown, difficulties resulting from the poor state of preservation of the monuments and the fact that architectural sculpture was often re-used complicate the dating of the relief sculpture of Petra, in the sense that one must rely exclusively on stylistic criteria for dating. This unfortunate situation often gives rise to unsatisfactory dating, which proclaims a linear stylistic development and, in doing so, fails to do any justice to local circumstances. It is necessary to consider the exceptional position of Petra that resulted from its very rapid rise, along with the discernable co-existence of different cultural traditions. This impedes and hinders any dating methods based exclusively on over-simplified models. A detailed analysis of this subject cannot be given within the confines of this paper but the problem needs to be pointed out.

Generally speaking, a geographically differentiated examination of Nabataean architectural sculpture is essential for any undertaking in this field. Distinctive local creativity can be discerned, that was not determined by chronological developments or by the use of different types of stone, but which was the result of slightly different cultural traditions. Different regions were under varying degrees of Nabataean rule and were thus influenced differently in a cultural sense. This presumption is underlined by the written sources. These can be seen as an account of how the Nabataeans evolved from bedouin clan traditions and how the resultant social structures — which worked against any sort of tight-knit administration — continued to exist within the Nabataean kingdom [11]. This diversity manifests itself in the material record as an absence of any uniform 'official' art. Stylistic comparisons between the different regions, with the aim of chronological classification, therefore rapidly become equations with too many variables.

To conclude, the Doric frieze of az-Zanṭūr — which has been briefly discussed here — makes an important contribution to our understanding of the architectural sculpture of Petra, as it provides information relating to style, architectural context and dating. The unsolved problems have only briefly been touched upon. In general, these attest that architectural sculpture from Petra and the Nabataean kingdom requires not only geographically differentiated study, but must also be seen in the context of a broad perspective.

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11. See Hackl, Jenni and Schneider 2003: 61.

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The Late Epipaleolithic: The View from West-Central Jordan

Introduction

The Late Epipaleolithic of Jordan represents a crucial period in human history. These populations were the last in a long line of successful hunter-gatherers adapted to a variable range of environmental conditions. They also represent the first link in a series of new, revolutionary changes in subsistence and social organization that would come to characterize the subsequent Pre-Pottery Neolithic (Simmons 2007). This paper examines aspects of the Late Epipaleolithic world from the perspective of foragers in west-central Jordan. Prior research from the Wādī al-Ḥasā is augmented by recent work in the Wādī Juhayra that broadens our understanding of the Late Epipaleolithic in west-central Jordan. In addition to expanding the existing site database, particular emphasis is placed on issues of chronology and paleoenvironments — the importance of the latter has implications for Late Epipaleolithic settlement patterns.

The Late Epipaleolithic/Natufian

The Late Epipaleolithic or Natufian in the Levant dates between 12,500 and 10,200 years BP. (uncalibrated radiocarbon years). This period is traditionally divided into an early (12,500-11,000) and late (11,000-10,200) phase based on differences in the material record and the spatial distribution of these sites (Bar-Yosef 1998; Belfer-Cohen 1991). The significance of the Late Epipaleolithic lies in its relationship to the emergence of the first agricultural communities as many of the Neolithic developments have correlates in this time period.

The Early Natufian is characterized by a suite of cultural developments that are manifest in the archaeological record. These include increased sedentism, small villages, stone architecture, burials, ornamentation, and worked bone (Belfer-Cohen 1991). In addition, the chipped stone industry is characterized by crescent-shaped, backed microliths (lunates) that distinguish the Natufian from earlier periods. These lunates tend to exhibit greater frequencies of bifacial backing (known as Helwan backing) and are generally larger than their Late Natufian counterparts (Valla 1995: 181). Spatially, the Early Natufian occurs in the "core" area, defined by the prehistoric extent of Mediterranean plant communities in the southern Levant (Bar-Yosef 1998: 161). Traditionally, the core was confined to the northern portions of the southern Levant, however, the boundaries of the Natufian core have been pushed further south in Jordan with the discovery of additional Early Natufian sites (Bar-Yosef 1998: 160). There is some debate, however, as to whether this expanded core area is really represented by Mediterranean plant communities or whether it constitutes a more open, steppe-like environment (Olszewski 2004: 191). If this is the case, then it should come as no surprise if we observe variation in the organizational and subsistence properties of Early Natufian sites (Olszewski 2004: 191).

In contrast to the Early Natufian, the Late Natufian has been interpreted as a less elaborate cultural manifestation. This is evidenced by the general increase in residential mobility along with fewer examples of substantial architecture, less elaborate artistic representations, and fewer burials. The Late Natufian lithic technology is characterized by a decline in Helwan backing of lunates in favor of abrupt or bipolar techniques (Belfer-Cohen 1991: 172). Geographically, Late Natufian sites are more widely dispersed and occur in presently arid environments (e.g., the Negev and Eastern Desert).

This division between the early and late Natufian coincides roughly with the onset of the Younger Dryas (ca. 11,000 BP). The Younger Dryas is a cli-

matic event that resulted in cooler, drier conditions that limited the extent of the Mediterranean forest/ woodland environments and presumably initiated stress on the more sedentary, early Natufian populations (Bar-Yosef 1998: 168). At the end of the Younger Dryas, when climates became more favorable, we see the emergence of early agricultural communities.

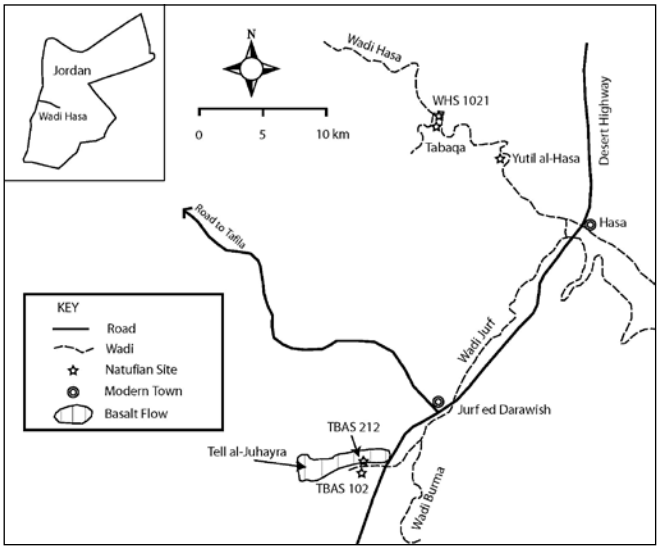
West-Central Jordan

Research in west-central Jordan has generally lagged behind that of the traditional core area for two reasons. First, the environmental setting of west-central Jordan is largely steppe-desert, making it peripheral to the more heavily researched Mediterranean environment of the core area. However, the Pleistocene environments of west-central Jordan were much different in the past as indicated by localized marsh and lake environments. Second, the history of archaeological research in west-central Jordan is relatively recent in comparison to the Mediterranean core region. Only through regional survey and excavation programs in the past 25 years have we acquired systematic information about the prehistory of west-central Jordan.

Perhaps the most interesting indicators of past environmental and ecological conditions in west-central Jordan are the aforementioned marsh and lake settings. These have been documented in the form of marl deposits both in the Wādī al-Ḥasā as well as farther south near Jurf ad-Darāwīsh (Moumani *et al*. 2003; Schuldenrein and Clark 1994). Archaeological surveys along the edges of these Pleistocene deposits have yielded numerous Paleolithic sites, indicating the long-lived nature of these landscape features (Clark *et al*. 1992, 1994; MacDonald 1988; MacDonald *et al*. 2004).

The Wādī al-Ḥasā

In the Wādī al-Ḥasā, Natufian sites are relatively rare (particularly when compared to the Middle and Upper Paleolithic periods) (FIG. 1). Three sites, all in the eastern portion of the Wādī al-Ḥasā, have been identified as Natufian in age (Byrd and College 1991; Olszewski and Hill 1997; Olszewski *et al*. 1994). Yutil al-Ḥasā and WHS 1021 are considered to be task specific camps (short-term occupations) while aṭ-Ṭabaqa with its extensive deposits and ground stone artifacts is classified as a base camp. Only aṭ-Ṭabaqa and Yutil al-Ḥasā have been subject to excavation whereas WHS 1021 is known



1. Location of Natufian Sites in West-Central Jordan.

only from surface collected materials. All three of these sites have been assigned an Early Natufian age based on the frequency of Helwan backed lunates in these assemblages.

The local environmental setting for the Early Natufian in the Wādī al-Ḥasā is characterized by springs and marshes rather than extensive lake systems. The deposits at aṭ-Ṭabaqa suggest the presence of an oxbow lake, probably consisting of a marsh environment in proximity to the site (Hill 2006: 76; Olszewski and Hill 1997: 12). Similarly, spring deposits near Yutil al-Ḥasā may also have fed marsh deposits in this area as well (Olszewski *et al*. 1998). These examples present a picture of the Early Natufian in which water tables were relatively high, probably corresponding to higher levels of precipitation. This pattern coincides with the sort of climate expected for the period immediately prior to the Younger Dryas (12,500-11,000 b.p.) (Bar-Yosef 1998: 161).

The Wādī Juhayra

In the Wādī Juhayra, archaeological survey recorded ten Late Epipaleolithic/Natufian sites with surface densities varying from light to very dense (Neeley 2004). Interpretation of the surface remains suggested site types ranging from base camps to task oriented locations. The distribution of sites along the Wādī Juhayra is somewhat unusual as Natufian sites rarely occur in clusters (Sellars 1998: 87). This pattern of site location suggests that key resources (e.g., water) were regular and stable features of the landscape — possibly allowing Natufian populations to maintain an increasingly seden-

tary lifestyle.

Two of these sites, TBAS 102 and 212, were selected for test excavation in 2006 as part of a research project focused on the transition from foraging to farming (Neeley and Peterson 2007). Both sites appeared to contain high surface artifact densities, single components (no pottery), and had yielded examples of lunates and small microlithic cores from surface contexts indicative of a Natufian occupation.

Site 102 is a small, but dense scatter of lithic material on the south side of the Wādī Juhayra. The site measures approximately 15 by 20m. On the north side of the site is a rock alignment (roughly E-W) that extends for approximately 17m. Excavations yielded cultural materials to a depth of 35cm below the surface.

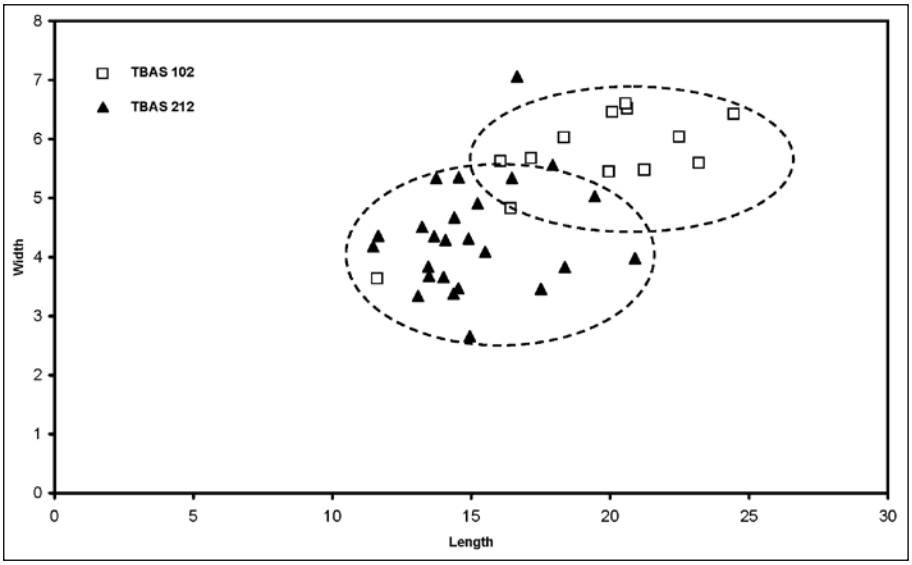
Site 212 is located on the north side of the wadi approximately 180m from Site 102. The site is much larger with surface materials paralleling the wadi for 100m and extending 50m to the north of the wadi. The site also abuts the basalt flow from Tall Juhayra that marks the north side of the wadi. Excavation reached a depth of 50cm below the surface without reaching culturally sterile deposits.

The analysis of materials from the 2006 season is on-going and much of what we have is preliminary in nature. Materially, the excavations at Sites 102 and 212 were quite successful. While the surface of both sites was littered with chipped stone, the subsurface deposits were equally rich. In addition to the chipped stone, the sites yielded ground stone, faunal remains, shell ornaments, and samples suitable for dating. The following is a brief overview of the lithics, radiocarbon dates, shell, architecture, and geomorphology.

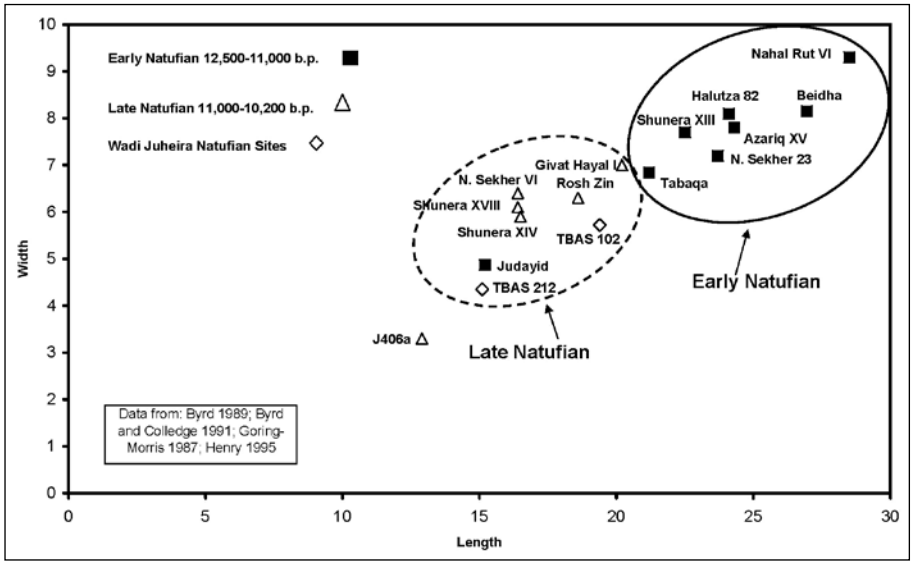
Lithics artifacts were numerous with more than 10,000 artifacts from the excavation of $6m^2$ and the surface collection of $30m^2$. Given the quantity of debitage, debris, and cores, it appears that primary and secondary reduction activities occurred at both locations. Raw materials are similar at both sites and focus on small nodules of high quality flint. Both sites are characterized by the production of flakes, blades, and bladelets from small bladelet cores. The characteristic element of the Natufian, the lunate, occurs at both locations and the emphasis on microlith production is also represented by numerous microburins in the assemblages.

A comparison of the complete lunates from the two sites indicates that the lunates at Site 102 are larger than those from Site 212 (FIG. 2). When the average size is compared to other Levantine assemblages, the Wādī Juhayra sites tend to be on the small end and cluster with those that are Late Natufian in age (FIG. 3). In addition, the backing on the Wādī Juhayra lunates (and other microliths) consists almost entirely of abrupt or bipolar backing. Helwan or bifacial backing, indicative of the Early Natufian, is absent suggesting affinities with the Late Natufian.

Aside from techno-typological comparisons, two radiocarbon dates were obtained from Site 102 (TABLE 1). These dates suggest an occupation at the very end of the Early Natufian just prior to the onset of the Younger Dryas at about 11,000 BP



2. Scatterplot of Lunate Size (in mm) from TBAS 102 and TBAS 212.



3. Comparison of Average Lunate Size (in mm) from selected Early and Late Natufian Sites in the Levant.

TABLE 1. Radiocarbon Dates from TBAS 102.

Sample No.	Unit/Level	Conventional Age	Two Sigma Calibrated Results
Beta 221179	3/3	11,170±70 BP	13,410-12,980 BP and 12,940-12,910 BP
Beta 229411	4/2	11,040±60 BP	13,100-12,860 BP

(uncalibrated). Given the discrepancy between the techno-typological markers and the radiocarbon dates, it is suggested that the characteristics used to distinguish the early and late Natufian are less useful near the "transition".

A total of 460 shells and shell fragments were recovered from these two sites (TABLE 2). Most of these were freshwater shells (96%) with marine shell comprising 3% of the sample. Most prominent among the marine shell sample were *Dentalium* shell which are found in both the Red Sea and Mediterranean Sea. However, other shells (*Nassarius gibbosulus* and *Euplica turturina*) have sources in the Mediterranean and Red Seas respectively. These suggest contact, probably in the form of trade networks, with Natufian populations both to the west and the south.

There was also a stone alignment at Site 102, which remains somewhat enigmatic (FIG. 4). Functionally, it might have served as a windbreak

TABLE 2. Shell Species and Counts from TBAS 102 and 212.

Species	Origin	TBAS 102	TBAS 212
Melanoides tuberculata	Freshwater	424	1
Melanopsis buccinoidea	Freshwater	13	6
Bulinus truncates	Freshwater	1	-
Xerocrassa sp.	Land	2	-
Nassarius gibbosulus	Mediterranean Sea	2	-
Euplica turturina	Red Sea	-	1
Dentalium shells	Mediterranean and Red Sea	9	1
Total		**451**	**9**

4. Stone Alignment from TBAS 102. View to the south.

however, assigning its construction to the Natufian is tenuous. Natufian artifacts are found both up and down slope of the feature as well as in the adjacent subsurface deposits. Prior or subsequent periods of occupation are absent from the site, especially ceramics. But the question remains, is this enough to unequivocally assign this to the Natufian occupation of the site?

The picture of the environmental setting in the Wādī Juhayra is beginning to emerge through an increased understanding of the local geomorphology. Marl deposits, which are associated with standing bodies of water both there and in the Wādī al-Ḥasā, suggest the presence of marsh or wetlands rather than a lake. In the Wādī Juhayra, marl deposits were less extensive than expected and their uneven distribution suggests a wetland type of environment. Several areas upstream from the sites were identified as potential tufa or ancient springhead deposits that may have fed the marsh/wetland. Support for local springs is found in the presence of numerous freshwater shells recovered from archaeological contexts at both sites. The big question is when did this marsh/wetland environment disappear? Did it persist throughout the Natufian or did the onset of the Younger Dryas at 11,000 BP signal the end of this environment? It seems that dating is crucial here, for if the region were occupied into the Late Natufian, then we might argue for the impact of the Younger Dryas to be abated for this area. However, if all the sites in the Wādī Juhayra date to the Early Natufian or the "transition", then the abandonment of the Wādī Juhayra would coincide with the climatic and environmental changes of the Younger Dryas.

Conclusions

So what is the view of the Late Epipaleolithic in west-central Jordan? It appears that a range of site types, both base camps and specialized activity camps, can be found in this area (Olszewski 2000: 239). This is encouraging for it suggests that foraging societies were engaged in a broad range of settlement and subsistence activities. It is also apparent that settlement in west-central Jordan is closely tied to marsh/wetland resources areas; however these areas might be seasonally productive, resulting in repeated short-term occupation rather than full-blown sedentism. In addition, research to date has not yielded architecturally complex sites like those found in the traditional Mediterranean core area. This raises some interesting, and unanswered questions. Is west-central Jordan is a cultural backwater relative to the Mediterranean core? Might other factors account for this absence of material complexity? Or is this a reflection of the research history of the area? There also remains the question of an unequivocal Late Natufian occupation in west-central Jordan. At present, no evidence exists for a Late Natufian occupation in the Wādī al-Ḥasā. The assemblages in the Wādī Juhayra appear to be typologically Late Natufian, but radiocarbon dates put these sites at the very end of the Early Natufian. A Late Natufian presence in west-central Jordan would be significant for addressing potential local influences on the development of agricultural communities. Clearly, more work remains to be done to resolve these issues and enhance our understanding of the Late Epipaleolithic/Natufian in west-central Jordan.

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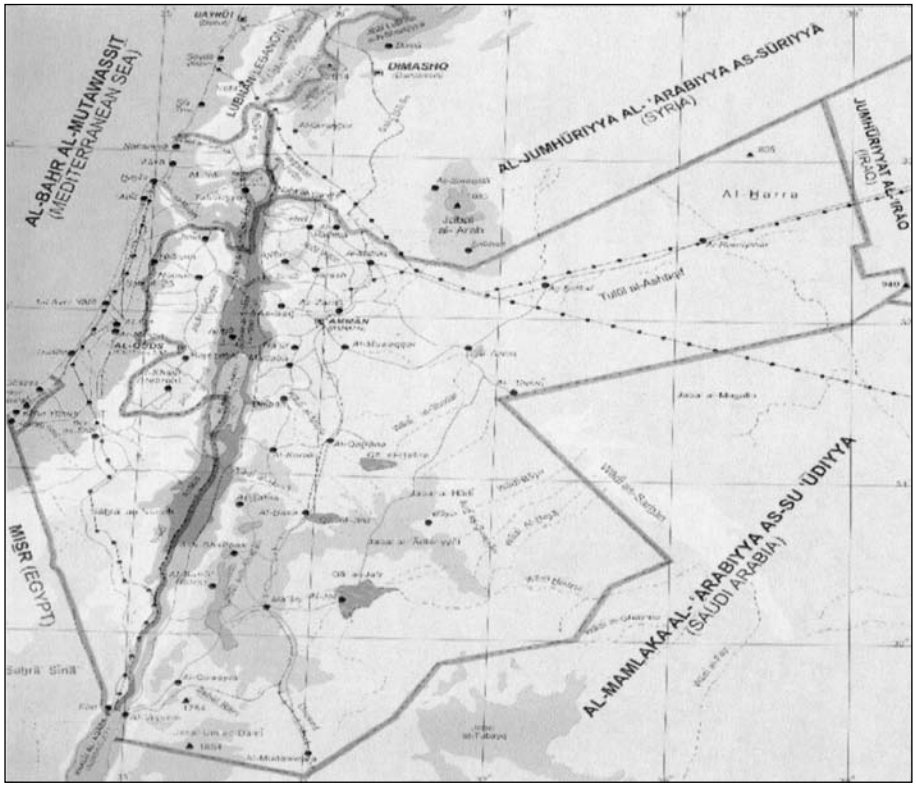
The Role of the Department of Antiquities of Jordan in Preventing the Illicit Trade in Cultural Heritage

Introduction

Antiquities in Jordan are considered one of the main attractions for tourism and are consequently an important income generator for the national economy. Since Jordan is a country with limited natural resources and mineral wealth, it is fortunate that it is rich in archeological sites that are found all over the country, varying from minor features such as cairns and caves, to forts and even whole cities such as Jarash, Umm Qays and Petra (al-Shami 2002a: 2). It is the responsibility of the Department of Antiquities to preserve all movable and immovable antiquities in the country (FIG.1) and to control them according to the Jordanian Law of Antiquities. Established in 1924, the Department of Antiquities is one of the oldest departments in the Jordanian government. Currently it is part of the Ministry of Tourism and Antiquities (al-Shami 2005c: 2) (FIG.2).

Around 27,000 archeological sites are now officially registered in Jordan, but the actual number is thought to be over 100,000. Many of these sites are in relatively remote areas where unemployment is widespread and where many people are unaware of the significance of their archaeological heritage. Add to this the various economic and political problems that occurred in the Middle East during the 1980s and 1990s and the result was an increase



1. Map showing the location of Jordan in the middle of the Levant.

2. The Department of Antiquities at Jabal 'Ammān, near the Ammonites' Tower.

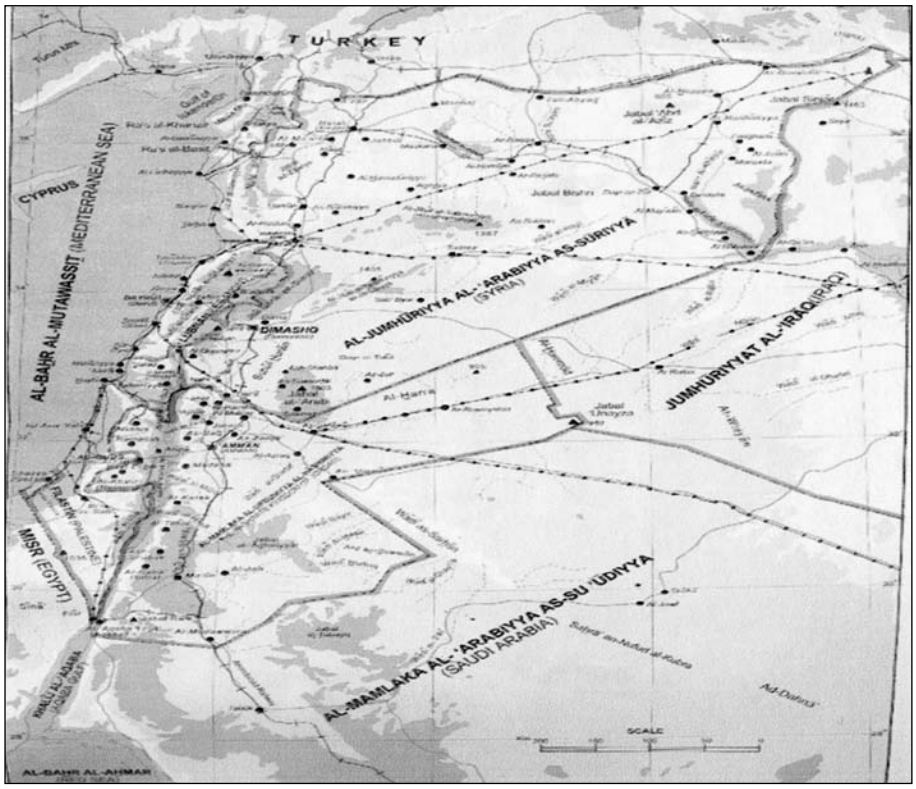
in antiquities smuggling and the illicit trade in cultural property. Owing to the geographical location of Jordan, which has long made it major crossroads for trade between Syria, Palestine, Egypt, Iraq and the Arabian peninsula, there have also been many modern attempts to utilise the country for the illicit trafficking of antiquities (al-Shami 2005a: 2-3) (FIG.3).

When Did the Problem Start?

Before 1976, it was legal to trade in antiquities in Jordan with an authorisation issued — and renewed annually — by the Department of Antiquities. However, in 1976 a new law was passed which prohibited the trade (The Jordanian Law of Antiquities for 1976, Articles 8 and 23) whilst giving dealers a period of one and a half years to rectify their positions. Two provisions were made to reduce the economic loss incurred by the dealers:

1. The Department of Antiquities would purchase a large proportion of their collections (The Jordanian Law of Antiquities for 1976, Article 8; The Jordanian Law of Antiquities for 1988, Articles 23 to 25).
2. The Department of Antiquities allowed them to keep the remaining artefacts, which were officially registered and authenticated by the Department of Antiquities (The Jordanian Law of Antiquities for 1988 to 2004, Articles 8 and 23 to 25).

After the period of adjustment, trade in antiquities became illegal and hence the problem started. The price of antiquities increased, as they were not available in the shops. The new legal position and subsequent price increases encouraged some dealers and other providers of movable antiquities. Before 1976, foreigners were allowed to buy and export antiquities at reasonable prices. Under the new law, a few members of the diplomatic community exploited their privilege of diplomatic immunity in order to smuggle antiquities in diplomatic bags. A number of these attempts were discovered



3. Map showing the illicit trafficking of antiquities through Jordan, Syria-Palestine, Egypt, Iraq and the Arabian peninsula.

when boxes containing antiquities broke open during loading and transport, when customs officials suspected certain packages and when informers provided information (al-Shami 2005c: 3).

Under the new situation, some 'gold hunters' recognised the high price of antiquities and therefore turned to robbing antiquities from archeological sites (FIGS. 4 and 5). The desire of the country's expanding *nouveau riche* community to possess antiquities, imitating what they saw in the houses of the wealthy that acquired antiquities under license before 1976, also increased the demand for antiquities at any price. Some of them also tried to bring in antiquities from neighboring countries such as Iraq and Turkey.

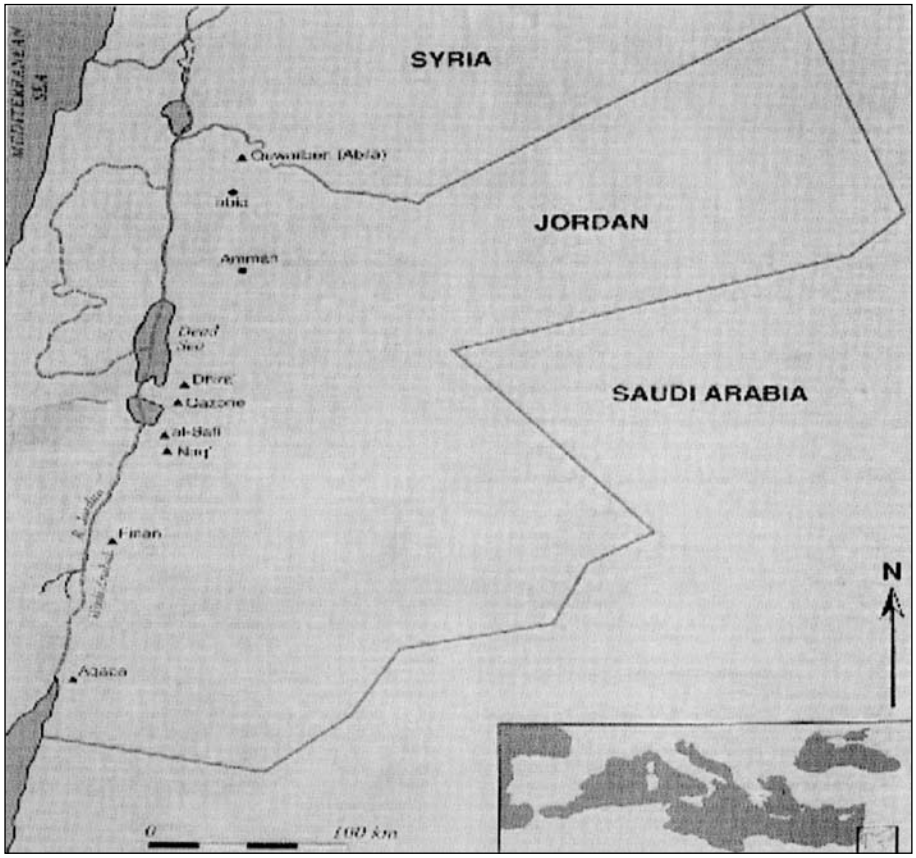
The Department of Antiquities did not appreciate the problems that would subsequently emerge when the law of prohibition was passed in 1976. At that time, the dealers had large stocks of antiquities in special warehouses from which they could meet the needs of their customers. This kept the price of antiquities low and did not encourage illicit excavations. However, in time their stocks ran out and certain types of antiquities became much in demand, which led some dealers to resume business with their previous suppliers, paying them higher prices and encouraging illicit excavations (al-Shami 2005a: 3-4) (FIG. 6).

The Department of Antiquities eventually recognised the scale of the related problems of (1) the decline in the security of the archaeological sites and (2) the illegal possession of antiquities. At the end of 1996, the Department of Antiquities offered an amnesty to collectors of antiquities in Jordan, giving them the opportunity to register their collections. This was an attempt to control the illicit trade in cultural property and to check the private collections.

Despite all efforts, the problem is getting worse all over the world. This has led several neighboring countries to sign agreements targeting the smuggling of antiquities, making provision for the exchange of information relating to this issue and enabling smuggled antiquities to be repatriated to their original countries (al-Shami 2002a: 3).

Causes Behind the Increased Pressure on Antiquities

1. The country has witnessed an increase in the pace of construction that has inevitably led to some destruction. Some of the destruction has however been deliberate and appropriate precautions should therefore be taken (FIG. 7).
2. War and unrest in neighboring countries have



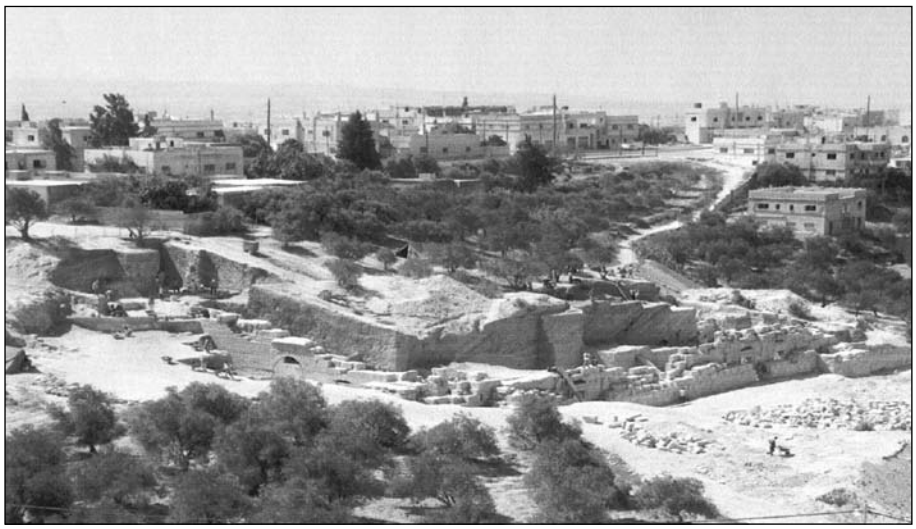
4. Map showing the location of affected sites in Jordan.

5. Bulldozed remains of the Ottoman fort of al-Mudawwara at the al-Mudawara border crossing.

increased the problem of antiquities smuggling into Jordan, or through Jordan *en route* to other countries. There has been a noticeable increase in cases relating to antiquities originating from neighboring countries.

3. The significant increase in the price of antiquities has encouraged some people to deal illegally and / or smuggle.
4. The economic situation and high unemployment has led some people to deal illegally and / or to search for antiquities in order to fulfill their basic needs.
5. The establishment of new museums overseas, or the expansion of existing museums, in addition

6. Archeological site surrounded by modern houses (the Iron Age Ammonites' Tower at 'Ammān).



7. The increase in construction led to destruction-a new city built over the old one at Bayt Rās, north Jordan.

to the desire of rich foreign collectors to possess antiquities (al-Shami 2005a: 4).

The Precautionary Procedures Taken by the Department of Antiquities

In an attempt to control the problem, the Department of Antiquities has increased the number of guards at threatened archeological sites. In addition, several sites have been fenced for their protection and new Antiquities offices have been established to safeguard and manage them. The Department of Antiquities also co-operates closely with the various public security services in order to protect archeological sites. These services are:

1. The Police Department, representing all police stations in the country as well as border checkpoints.
2. The Desert Police and Border Guards.
3. The Drug Control Department.
4. All branches of the Customs Department, plus the Smuggling Control Directorate.

The Role of the Security Services in Implementing the Archaeological Security Policy

The security services assist the Department of Antiquities in the implementation of the first phase of the archaeological security policy that is up to the point when cases reach the law courts. The regional security centers can arrest violators and assist with the passing of relevant information to the Depart-

ment of Antiquities. They also help in the temporary guarding of threatened sites until the Department of Antiquities can take over (al-Shami 2005c: 4-5).

At the border checkpoints, the security services play a significant role in fighting the smuggling of antiquities. Since 1996, the Police Department has assigned responsibility for the fight against the illicit trade in cultural property and smuggling of antiquities to the Drug Control Directorate. As a result, an Antiquities branch has been established within the Directorate in an attempt to control antiquities smuggling.

In co-ordination with the Department of Antiquities, the Customs Department collates all data relating to the import and export of cultural property, and passes on any suspicious information. In addition, the Customs Department consults the Department of Antiquities in cases concerning 'old objects', investigates the possessors, issues confiscation papers and puts violators before the courts in accordance with the Law of Customs and the Law of Antiquities (al-Shami 2002a: 5).

For the quantity of antiquities confiscated by the security forces and currently in storage at the Department of Antiquities see the table below.

Year	No. cases	No. confiscated artefacts
1991	Several	1103
1992	3	26
1993	3	457
1994	6	1234
1995	6	897
1996	4	45
1997	2	27
1999	7	4136
2000	12	744
2001	15	3600
2002	13	4662
2003	23	2247
2004	19	4695
2005	5	272
2006	25	2178

Field Experience

A large number of archeological sites in Jordan are looted for gold, ceramics, glass, tomb stones etc. It is however difficult to quantify the scale of the problem, owing to the following factors:

1. Not all archaeological sites are known and registered; most are still undiscovered.
2. Most sites are discovered by accident, for example during agricultural or construction activities.
3. Most threatened sites are located in remote or uninhabited areas and therefore lack proper security and supervision.
4. Other than the problem of being in remote or uninhabited areas, most of the threatened sites are also cemeteries that are still underground. These cemeteries are most often discovered by accident (al-Shami 2002b: 54) (FIG. 4).

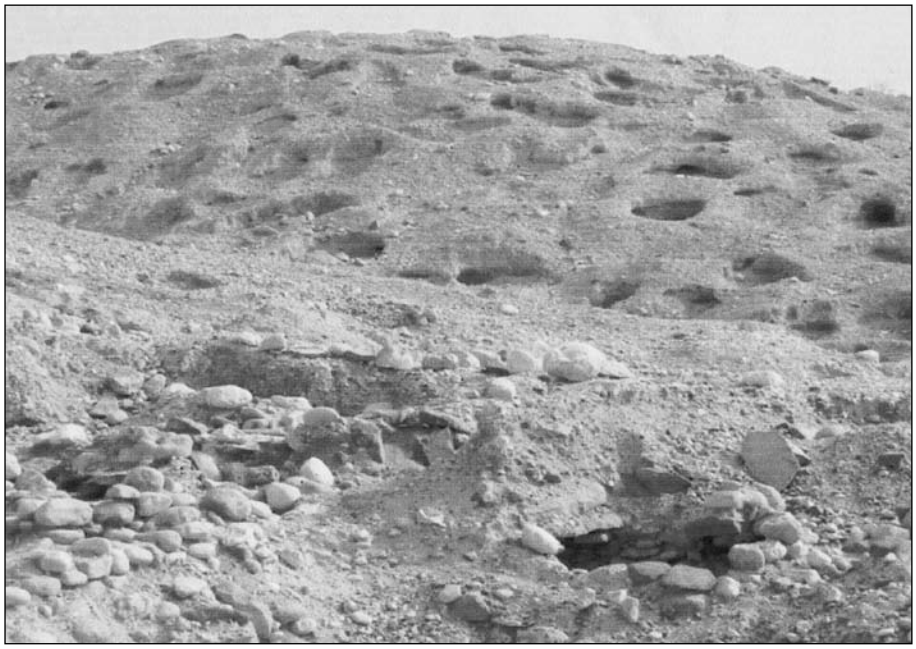
The number of cemeteries is large; examples include (1) the site and cemetery at Bayt Rās in north Jordan, where the modern town is built over the ancient one and some people dig on a daily basis looking for expensive objects to loot (al-Shami 2004: 11; 2005: 511) (FIG. 7); (2) the second-third century AD cemetery at Queen Alia International Airport, which was partly discovered in 1978 and then again in 2000, when salvage excavations took place prior to destruction; (3) the fifth-seventh century AD Byzantine cemetery at Khirbat as-Samrā in al-Mafraq governorate; and (4) the Byzantine cemetery at Faynān in Wādī 'Araba where salvage excavations were conducted by the Council for British Research in the Levant and Yarmouk University (al-Shami 2005c: 7).

There are also the southern sites in the Jordan Valley, including (5) Khirbat Kazūn in Ghawr al-Mazra'a, close to the southern end of the Dead Sea; this cemetery, which contains around 7,000 burials, has been subjected to destruction on a massive scale. Salvage excavations carried out there by the British Museum unearthed second-third century AD Nabataean and Roman burials in which both textiles and leather goods were preserved (Politis 1988b: 613); and (6) the an-Naq' and (7) Fīfā cemeteries in Ghawr aṣ-Ṣāfī, which date to the Early Bronze Age or *ca*. 3000BC. At an-Naq' there is also a Byzantine cemetery which is rich in glass and ceramics; Hundreds of *dunums* had been totally destroyed there (Politis 1988a: 628). The Department of Antiquities has conducted salvage excavations at both cemeteries, first, in 1994, at an-Naq' and second, in 2000, at an-Naq' and Fīfā (FIG. 8).

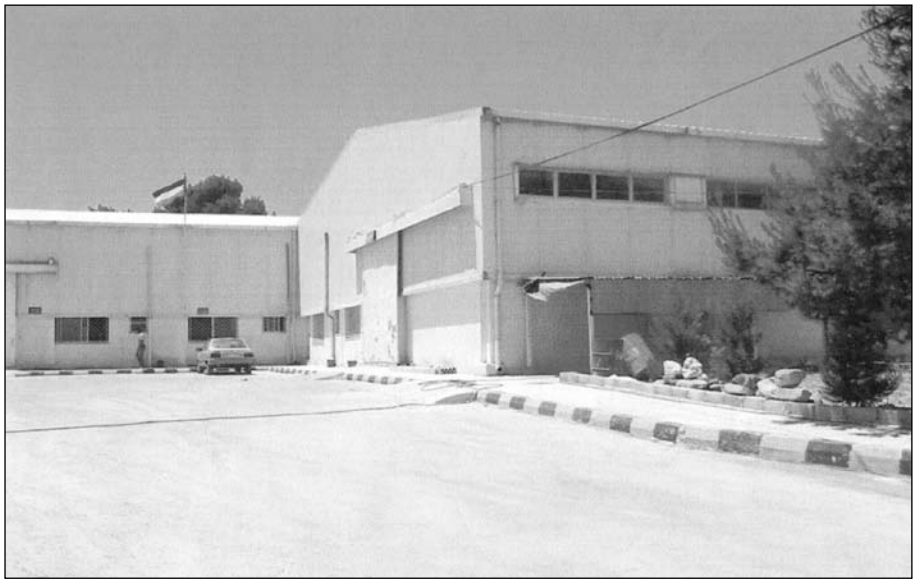
As a result of the dire agricultural situation in

the southern part of the Jordan Valley, many people resorted to looting these cemeteries and selling the artefacts to dealers at low prices. For example, the Drug Control Directorate arrested a dealer trying to smuggle a consignment of 300 artefacts through the airport. The warehouses of that dealer in Amman were searched and around 3,500 artefacts confiscated. These artefacts originated from the above-mentioned cemeteries and included ceramic vessels, sculpture, glass, basalt tools and other objects.

At the beginning of 1996, the Department of Antiquities established large warehouses to store artefacts recovered through legitimate excavation. These warehouses have an independent hall for artefacts confiscated by the police, including those recovered during the course of operations against smuggling and illegal dealing (FIG. 9). They contain hundreds of ceramic objects, stone tools, glass vessels, sculptures and bronze, silver and gold coins, in addition to the fakes that some dealers have tried to introduce into the local market or to smuggle out of the country. They also house the files of cases dealt with by the security forces in collaboration with the Department of Antiquities (FIG. 10). The official record of these artefacts, which are classified according to type and date, includes a precise description of each object with a serial number at-



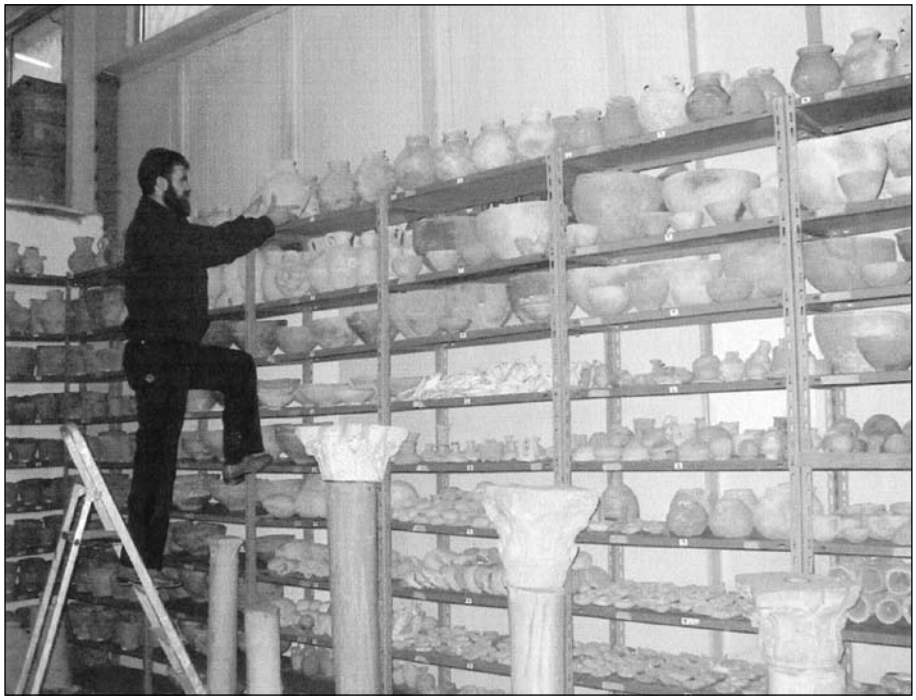
8. Illicitly excavated Bronze Age cemetery at an-Naq‘ in Ghawr aṣ-Ṣāfī.



9. The DoA established large warehouses in 1996 to store the artefacts discovered during excavations.

tached to the artefact itself.

These operations cannot be implemented by the Department alone, owing to a lack of funds and the difficulty of covering archaeological sites which are spread all over the country. The importance of co-operation and co-ordination with Jordanian security forces has been mentioned above. Equally important is co-ordination with other Arab and foreign countries, through their diplomatic representatives in Jordan. For example, a shipment of 798 artefacts was returned to Jordan from Italy (FIG. 11); these artefacts came from the cemeteries mentioned above and the Italian government arrested the smugglers (al-Shami 2005c: 6-7). Similarly, the Jordanian government, represented by the Department of Antiquities, has returned hundreds of objects to the Iraqi government, including sculptures, seals and inscribed clay tablets. In addition, one



10. The warehouses hold hundreds of ceramic objects.

11. 798 artefacts returned to Jordan from Italy following operations against smuggling and illegal dealing.

piece of sculpture has been returned to Egypt and another to Syria. All these objects were recovered by the security forces, which handed them over to the Department of Antiquities.

These cases indicate the effectiveness of co-ordination between the Arab countries in preserving their cultural heritage and fighting the illicit trade in antiquities. Just as important is (1) the exchange of information about smuggled objects and returning them to their country of origin as stipulated by the UNESCO agreements and (2) co-ordination and co-operation with the international organisations and bodies that deal with the preservation of culture and antiquities. In this sphere, the role of UNESCO in preserving cultural heritage is conspicuous, by urging countries to join and sign agreements that encourage the protection of cultural property and human civilization (al-Shami 2002a: 7).

Conclusion

The questions now are (1) how can we solve the problem of illicit trade in antiquities and (2) what procedures should be taken to protect archeological sites? Is it sole responsibility of a single body, such as the Department of Antiquities, to provide the necessary protection to archeological sites? The answer of course is that the Department of Antiquities cannot do it alone, but that it can take preventative measures including:

1. Fencing the sites.
2. Assigning guards.
3. Open regional offices.

Such measures are however limited and inadequate. By way of example, the Ghawr aṣ-Ṣāfī area has the largest archaeological cemeteries in the Middle East. These measures reduced the scale of illicit excavation but did not totally stop it as the area affected is huge, extending from the southern edge of the Dead Sea to Wādī Faynān, and is in need of continuous supervision.

4. There is a need for closer co-operation between the regional Antiquities offices and the central administration at the Department of Antiquities in Amman.
5. There is an urgent need for more co-operation between the Department of Antiquities, represented by its regional offices, and the security forces in the areas most at risk.
6. The establishment of a special unit within the Police Department is also an option. Such a unit should be responsible for pursuing the theft and smuggling of antiquities, and some of its members should hold degrees in archeology.
7. The Customs Department could employ personnel with degrees in archeology and special training in the identification of archaeological objects at airports and border checkpoints.
8. Active participation by the Department of Antiquities in conferences, symposia and workshops. Examples include (1) participation in the meetings organised by UNESCO to establish the basis for combating the illicit trade in antiquities and (2) the organisation, with co-operation from the Italian Embassy at ʻAmmān, of a workshop dealing with the protection of antiquities and works of art.
9. Efforts should be made at the Ministry of Justice and within the judicial system at large to implement the penalties stipulated by the Law of Antiquities.
10. Active public awareness programs that emphasize the importance of antiquities should be conducted through the media, exhibitions, lectures and seminars. Such programs would help to develop national and cultural values amongst Jordanian citizens.
11. Urge Arab governments to exert tighter control over the illicit trade in and smuggling of antiquities.
12. Establish the necessary basis for Arab and international co-operation aimed at limiting the theft and smuggling of antiquities.

Finally, is the trade in antiquities the real reason for the destruction of archeological sites and the loss of objects, and is a ban on the trade in antiquities effective in stopping the destruction by eliminating the market? Can we come to the conclusion that the antiquities dealers cause the destruction of sites, or should we open the market for trade — within certain legal constraints — in carefully selected, commonly found antiquities in co-ordination with international organisations and concerned Arab countries, whilst at the same time making punishments for violators more severe? These questions are still open for discussion in spite of their difficulty (al-Shami 2002b: 55).

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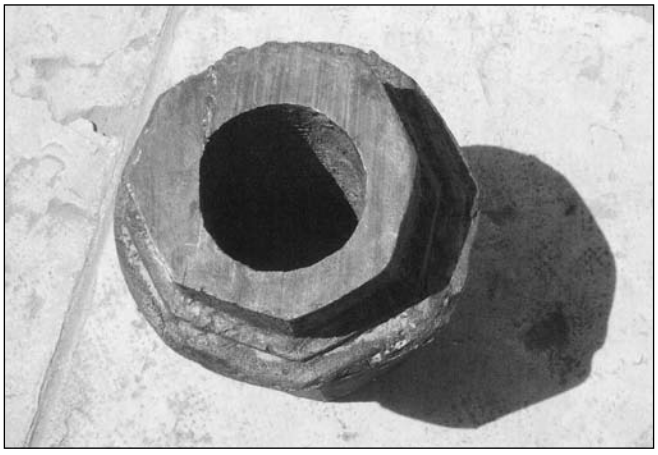
A Bronze Cannon Barrel from ʻAmmān: Physical Evidence for Mamluk Gunnery

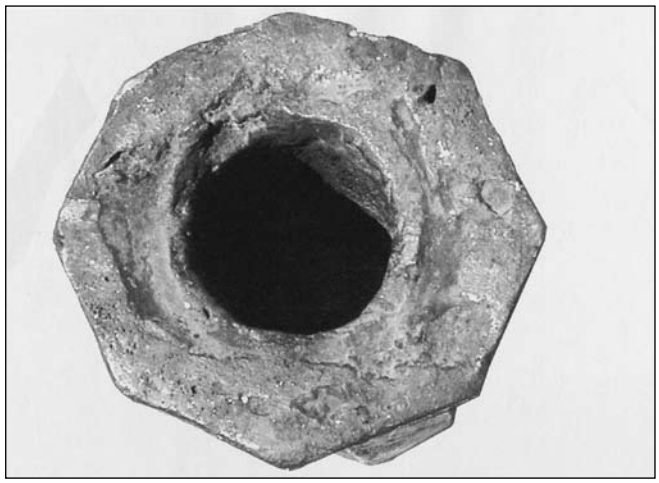
Description

The barrel is made of bronze. The exterior section of the barrel is hexagonal and cylindrically bored from interior. It has been cast in a sand mould, as indicated by the slightly rough feel of the exterior surface: impressions of the sand can still be felt. The thickness of the wall is uneven throughout its length and over the sides of the hexagonal section (FIG. 1). The two ends of the barrel are approximately flat and slightly flanged (FIGS. 2, 3). Two parallels perforated stubs stick out of the body at right angles, one located on each side (FIG. 4). They were cast integrally with the piece and were designed to act as the pivotal points for the cannon, allowing it to be fixed firmly to the base. Usually, when the cannon was fired it recoiled backwards. Without the pivots and if it was not tied down with thick rope it could career violently across the ground. The force of the recoil would have intensified the more the cannon was fired, as the barrel heated up.



1. A cross-section of the body.

2. The front end flange of the cannon.



3. The rear end flange of the cannon.

One longitudinal side of the hexagonal barrel carries an inscription in raised relief written in naskh Arabic, embraced in three oblong frames. Each frame has been dedicated to a phrase (FIG. 4). When the barrel was purchased it had already been cut into three pieces by a modern saw.

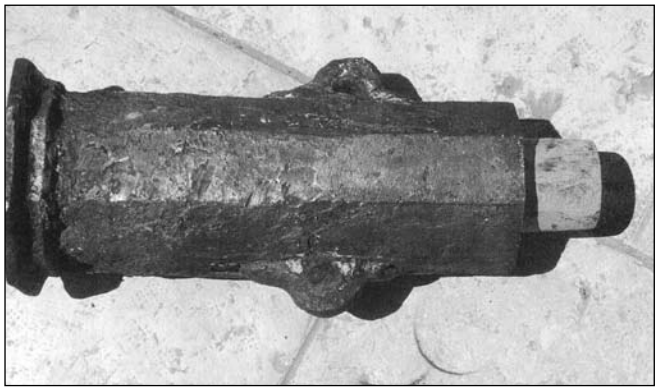
Manufacture of the Cannon

To construct the barrel, the smith probably first made a wooden cylinder, known as a mandrel, of the same length as the desired piece and with the

4. The complete barrel.

same diameter as its bore (FIG. 5). He would then have poured the molten alloy into the sand mould, into which the wooden mandrel would have been fixed. Having taken the shape of the mould, when the alloy cooled then the partly or totally burned wooden mandrel could easily be taken out, leaving a casting with a smooth bore.

As the barrel was built up on a mandrel it was open at both ends. It was probably made as a breech-loader, in which the breech was in the form of a separate chamber, into which the gunpowder charge was loaded, with the open rear end being closed by a wooden plug. The shot would have been loaded into the barrel, with the chamber inserted behind it and kept in place by a wooden wedge. A fresh plug would have been required for each round. This hypothesis is supported by the flatness and flanging at both ends. The stubs of the two ends add to this evidence; they would have fixed the barrel firmly to the base so that it could not move horizontally or vertically unless the base was moved as well.



5. A fragment with a mandrel of the barrel showing body thickness.

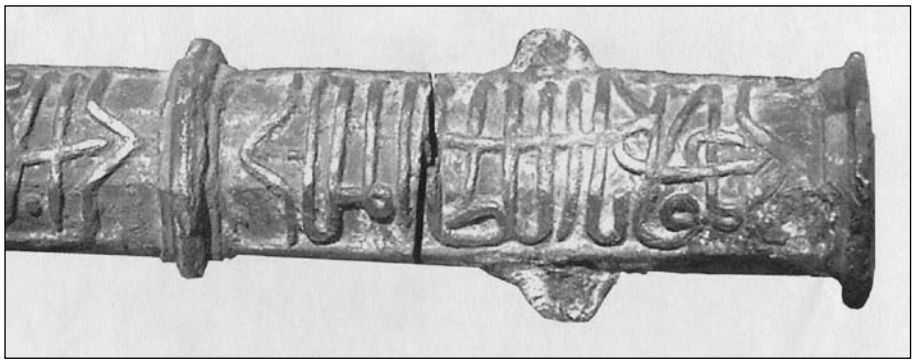
With this mechanism and method of operation, our cannon may have looked like the Alexandrian cannon described by al-Qalqashandi in his encyclopedia Ṣubḥ *al-A'sha* which was made of copper and could fire iron balls ranging in weight from ten Egyptian *Raṭl* (about 4.53kg.) to more than a hundred *Raṭl* (45.3kg.) (al-Qalqashandi 1963: 144-145).

In this case it seems that the smith found that no matter how carefully he shaped or smoothed the end of the chamber and the mouth of the breech into which it fitted, some propellant gas would inevitably escape over or through the breech. This is indicated by the roughness, flanging and flatness of both ends of our barrel.

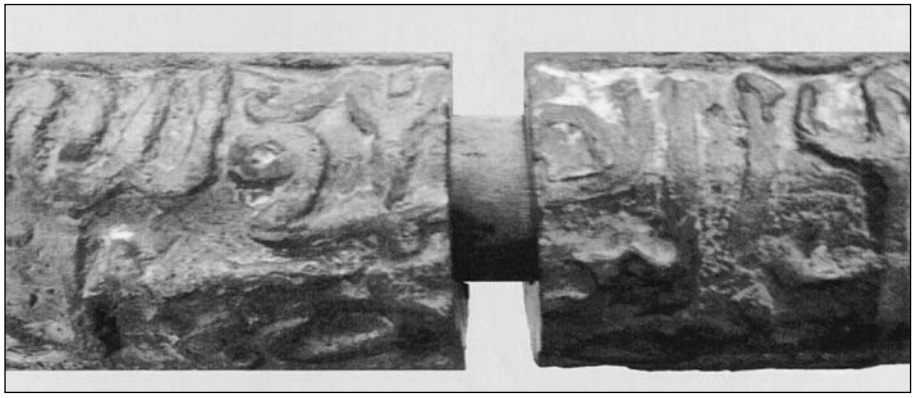
Transliteration of the Inscription (FIGS. 6-9)

1- The first frame reads in naskh Arabic as " *'Izz lemawlana al-sulṭan al-malik"* (FIG. 6).

2- The second frame reads as *"alashraf abu aln(aṣr) inal 'umrahu fi Sabīl Illah"* (FIGS. 7, 8).



6. The right end, inscribed with first phrase.



7. A detail of the middle frame showing the king's name, Inal.

8. The middle phrase included within the middle frame.

3- The third frame reads as *'amal al mu'alem al-sabbak Rajab al-Ḥamawī* (FIG. 9).

Reading the Arabic Inscription and Translation into English

1- The first frame reads translates as "Glory to our Lord the Sultan the King" (عز لمولانا السلطان الملك) (FIG. 6).

2- The second frame translates as "Al-Ashraf Abu Aln(ṣr) Inal created it for the sake of God". The two letters after the letters *aln*, which is part of the second royal nickname (Abu Alnaṣr) are missing owing to the modern saw cut (FIGS. 7, 8) (الاشرف ابو الن(صر) إنال عمره في سبيل الله)

3- The third frame translates as "The work of the expert cast-man Rajab the Ḥamawi", i.e. from the Syrian town of Hama (FIG. 5)
(عمل المعلم السباك رجب الحموي)

9. The left end, inscribed with the name and title of the manufacturer.

In Arabic, the whole inscription reads:
(عز مولانا السلطان الملك، الأشرف أبو الن(صر) إنال عمره في سبيل الله، عمل المعلم السباك رجب الحموي)

The entire translation is therefore "Glory to our Lord the Sultan the King; al-Ashraf Abu Aln(sr) Inal created it for the sake of God; the work of the expert cast-man Rajab the Hamawi".

Dating the cannon

Thanks to the mention of the proper name *Inal*, the nickname *al-Ashraf* and the two ranks of *Sultan* and *King* in the inscription, by referring to the list of Mamluk kings we find the Circassian Mamluk, Sultan the King al-Ashraf Abu Alnasr Inal, who was brought from Caucasia by 'Alaa Eddin and sold to Sultan Barqouk. After a long period, he was promoted to the rank of king for approximately eight years, between 1453 and 1461AD. Then, on account of age of 81 years, he abdicated in favour of his son, al-Shihab Ahmad. In addition to being described as merciful, just, patient and experienced in politics, Inal was familiar with gunnery and artillery, active in the construction of practical buildings and *sabīls*, and keen on the fortification of borders. Thus, our cannon should date to the period 1453-1460AD.

Brief Historical Background

It is not the purpose of this paper to review history and technology of gunpowder or cannon in detail, as this has already been the subject of much discussion and debate. I shall therefore limit myself to points that are relevant to the subject of this paper, *viz*. the development of cannon manufacturing between the 13th and 15th centuries AD, in an attempt to assess the significance of our cannon.

It is well known that cannon has played a leading role in human history over the last seven centuries. Much has been written and reported about the wars of this period and the important role of artillery therein, but there seems to be a gap in modern literature dealing with the Arabic and Islamic world that relates to the history of gunpowder and cannon development in the 13th and 14th centuries AD. This is surprising as the technology is unlikely to have been transferred between China and Europe, without passing through the Arab and Islamic lands which lay between east and west (al-Hassan 2001: 1).

With regard to the propellant, it should be noted that gunpowder is simply a mixture of saltpetre, sulphur and charcoal that is first reduced to fine powder, then granulated, dried and used as a charge in cartridges, shells, firecrackers etc. (Alsiti 1950: 249-250; Webster's Dictionary 1971: 811; Encyclopedia of Islam 1979: 1055-1056). Despite the paucity of available information, it is generally accepted (e.g. al-Obaidi 1988: 152; Kelly 2004: 22) that the Arabs preceded the Europeans in the manufacture and refining of gunpowder and that this occurred sometime in the early 13th century AD, after 1240AD but before 1280AD when Hasan al-Rammah wrote instructions for the manufacture of gunpowder, purification of saltpetre, and descriptions of gunpowder incendiaries in Arabic (Kelly 2004: 22; Partington 1999: 22).

One of the earliest known Arabic and, indeed, world-wide references to the refining of saltpetre appears in the 13th century book *al-Furūsiyya wa al-Manaṣib al-Ḥarbiyya* (Book of Military Horsemanship and Ingenious War Devices) written by Hasan al-Rammah in the 1270s (Kelly 2004: 22). It includes the first instructions for the manufacture of gunpowder that approach the ideal composition for explosive gunpowder used in modern times (*viz*. 75% saltpetre KNO_3, 10% sulphur, 15% carbon), such as the *tayyar* 'rocket' (75 parts saltpetre, 8 sulphur and 15 carbon by weight) and the *ṭayyār buruq* 'lightning rocket' (74 parts saltpetre, 10 sulphur and 15 carbon). He states in his book that many of these instructions were known to his father and grandfather before him (al-Hassan 1998: 130; Encyclopedia of Islam 1979: 1055-1056).

Regarding the cannon as hardware, it can be simply described as a strong cylinder, closed at one end and temporarily blocked by a cannonball at the other end, with a charge between the two. When the charge was ignited through the touch-hole, it quickly exploded, changing to highly compressed gas which expelled the ball to do the terrible service required of it.

Philologically, the word 'cannon' comes from its essential component, the cylindrical bore or barrel, probably from the Latin *canna*, which in turn originated from the Greek *kanna* — cane or reed — with an Italian suffix - *one*, giving us *cannone* or large tube (Webster's Dictionary 1971: 264).

The contribution of the Arabic and Islamic world to the development of the cannon can be clearly noticed from the number of Islamic artillery historians who compiled documents, which told the story of its evolution and usage. These documents

have for centuries been considered the main references for the European artillery and war historians who translated those documents into their own languages. Of the Arab historians, Commander Najm al-Din Hassan al-Rammah (died 1294), who compiled *al-Furūsiyya wa al-Manaṣib al-Ḥarbiyya* and *Ghayat al-Maqṣūd min al-'Elm wal 'Amal bihi*, deserves special recognition, as does the Andalusian cannon manufacturing expert Commander Ibrahim bin Ahmad bin Mohammad bin Ghanem bin Zakaria, who compiled a book in Spanish in 1631 which was translated into Arabic in 1639 in Morocco. It was entitled *al 'Iz wal-Rif'a wal-Manafi' lil-Mujahidīn fi sabīl Illah bil-Madafi'* and described 32 sorts of cannon; Ibrahim is thought to have gained his experience from his father and grandfather (Zaki 1973: 108-109). Other Arab historians include al-Qalqashandi (1365), Ahmad bin Fadl al-Umari (1340), Ibnu Iyas (1352), Salih bin Yahya (1342), Ibn Khaldoun (1332-1406), Ibn Mankali (1370) and Shams al-Din Muhammad al-Ansari al-Dimashqi (died 1327) (Zaki 1973: 111-115).

With regard to the manufacture and widespread adoption of cannon as a main machine of war, we find historians referring to the Mamluk Sultan al-Ashraf Qayetbay (1492) as the first king who adopted artillery on a wide scale. He established a specialised cannon force and fortified all borders and castles with cannon. His Alexandria and Rashid castles in Egypt were specially designed for this type of heavy weapon. We should also note the Mamluk cannons, including those of Qayetbay (1492) and al-Ghouri (1501AD), on display at the Topkapi Palace Museum in Istanbul; these were siezed by Ottoman forces when they defeated the Mamluks (Abu Ghaneemah 1983: 245).

In the early stages of the cannon's development, they were made in two separate parts — the barrel and chamber — which were wedged or screwed together for firing. Sometimes the breech of the gun was an open box, with the chamber wedged into it. The best cannon were cast in bronze alloy and were bored so that the stone, iron or lead cannonballs were a close fit. They were provided with trunions, or at least with rings for attaching ropes, so that they could be accurately fixed and elevated when fixed on bases or mounted on strong wooden carriages (Calvert 2008: 8-9).

Cast iron, when it became available, was a much cheaper material than bronze. It was used both for cannonballs, completely superceding stone by the end of the 16th century, and for the cannon themselves. Cast iron cannon were favored by warlords because they were cheaper, but not by the gunners who were the ones who suffered when they burst without warning, often with fatal results. Failure of bronze guns could usually be predicted in advance by the development of a bulge. Furthermore, bronze cannon were usually indicative of high rank (Calvert 2008: 8-9).

What Can We Learn from Our Cannon?

1- Our cannon would have been a physical manifestation of the status of the Mamluk king, owing to the expense involved in casting in bronze.
2- Rajab al-Hamawi, whether as a person or a workshop, would probably have been a famous smith who specialised in cannon casting. Has fame was sufficient for him to inscribe his proper name and title on the cannon.
3- Our cannon suggests that the casting and use of cannons was widespread in the Arabic or Islamic world, possibly from the beginning of the Mamluk period, which predates their introduction to Europe in the 14th century (Encyclopedia of Islam 1979: 1058).
4- Our cannon manufactured in the Syrian part of the Mamluk Sultanate.
5- We learn from the inscription that the cannon had been manufactured by casting.
6- The mention of the king's name alongside the titles and nickname of the Mamluk sultan provides a firm date for the cannon itself and for the development of gunnery in the Arabic and Islamic world.
7- The mention of the phrase *fi sabeel illah* ("For the sake of God") clearly indicates the function of Arabic / Islamic.

Comparative Analysis

Consulting the Arabic sources we note that:

1- The first portable hand cannons to appear were those used by the Egyptian Mamluks to repel the Mongols in 1260 at the battle of 'Ayn Jālūt (St Petersburgh ms. 1963: 160).
2- Ibn Khaldoun (1332-1406), in his history *Kitab al-'Ibar*, how the King of Morocco, Sultan al-Marinid Abu Yousuf "used machines of besiege some of which could blow in a combustion and heated balls of stone and iron balls were projected, with a huge recoil" (al-Zahar 1982: 6; Ibn Khaldun: 188*)* when he besieged the town of Si-

jilmasa, on the desert fringes in North Africa, in the year 1273AD.

3- In 1340AD, the historian Fadl Allah al-'Umari described the cannon that were used in the attack of walled cities in his handbook for government officials: "They throw balls that batter the tops of parapets and break the columns of arches"('Umari 1894: 208).

4- The historian Salih ibn Yahya (1342AD) mentions that "the besieged people in al-Karak mounted on its walls together with five trebuchets" (Ibn Yahya 1969: 105).

5- It is also reported that in 1352AD the governor of Damascus fortified the citadel by mounting gunpowder cannon upon it (Ibn Yahya 1969: 105).

6- Ibn Mankali, in one of his military reports of the Crusades, written sometime between 1362 and 1370AD, wrote: "If the Franks who are facing us are cavalry then we shoot at them with incendiary arrows and cannon since their horses will be frightened away and when their mobilization is in disarray then they will be chased" (Ibn Mankali 1988: 19).

7- In 1365AD, al-Qalqashandi described the siege engines then in use in his encyclopedia *Subh al-A'sha*. Concerning cannon, he writes: "Among them (i.e. the siege engines) is the gunpowder cannon (*makahil al-barud*). These are the cannon (*madafi'*) that use gunpowder. They are of different types. Some throw iron balls weighing from ten Egyptian *Raṭl*(s) (about 4.53kg.) up to more than one hundred (45.3kg.)". He also reported that "I saw in Alexandria during the Ashrafiyya State, (of Sultan) Sha'ban bin Husayn, when Prince Salah al-Din bin 'Arram, God have mercy on him, was governor, I saw a cannon made of copper and lead and bound by iron ends. A huge heated iron ball was projected from it in the *maydan* (parade square or hippodrome), and it fell into the Silsila Sea outside Bab al-Bahr (Sea Gate), which is a faraway distance" (al-Qalqashandi 1963: 144-145).

8- The St Petersburgh Manuscript, which is attributed to Shams al-Din Muhammad al-Ansari al-Dimashqi, who died in 1327, is well known. In this manuscript a cannon is described thus: "Description of the drug (*dawā'*) that you put in the cannon (*midfa'*) — its composition (*'iyāruhu*) is potassium nitrate (*bārūd*) ten, charcoal (*faḥm*) two dirhams and sulphur (*kibrīt*) one and a half dirhams. Grind it finely and fill one third of the cannon (*midfa'*). Do not fill more otherwise it will split. Then let the wood turner make a wooden plug (*midfa'*) of the same size as the mouth of the cannon (*midfa'*). Ram (the gunpowder) tightly and place on it the ball (*bunduqa*) or the arrow, and give it fire at the ammunition (*al-dhakhira*). Measure the cannon (*midfa'*) at the hole; if it (i.e. the *midfa'*) is deeper than the hole then it is defective and it will punch the gunner (*al-rami*), so understand this" (St Petersburgh ms.1963: 160).

9- It is said that many cannon cast in Egypt and inscribed with the names and titles of Mamluk kings, including Qayetbay (1492 AD) and al-Ghouri (1501 AD), are displayed at the Topkapi Palace Museum in Istanbul because they were taken there from Egypt by Ottoman forces after they defeated the Mamluks (Abu Ghaneemah 1983: 245).

10- It is said that al-Ashraf Qayetbay established a cannon force to defend the Egyptian borders and fortifications, especially at the Alexandria and Rashid fortresses. His son Mohamad devoted further attention to this type of weapon (Abu Ghaneemah 1983: 245).

Where Does the Cannon of 'Ammān Fit?

Two parallels for the Mamluk cannon can be considered. First, the bronze cannon reported by al-Qalqashandi in 1365 AD and, second, the cannon cast in Egypt and inscribed with the names and titles of Mamluk kings, including Qayetbay (1492 AD) and al-Ghouri (1501 AD), which are displayed at the Topkapi Palace Museum in Istanbul.

In this case, our cannon is known to be cast in bronze alloy and inscribed with name and title of the Mamluk king who ordered its manufacture in the middle of the 15th century. It therefore predates the Qayetbay and al-Ghouri cannon described above.

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Building Management Capacity for Petra Archaeological Park

Strategic vs Tactical

In reviewing the status of management at Petra I would like to begin by discussing the difference between strategic and tactical management.To explain look at the Table below.

By strategic management, then, I mean management that is intended to accomplish the long-term goals that define an organization. From a strategic standpoint, in our case, the overriding goals are (1) to preserve Petra unimpaired so that it continues to be a scientific and historical library, of sorts, that is of value to all mankind, (2) so that it can continue to serve as an icon of Jordanian identity and pride, and (3) to provide an on-going, sustainable source of income for the country. This last strategic goal is tied to social and political strategic goals, which provide the basis for social and political stability by increasing opportunities for Jordanians of all ethnic backgrounds and genders, while celebrating traditional ways of life. We all know that Petra is tied to important goals of this kind.

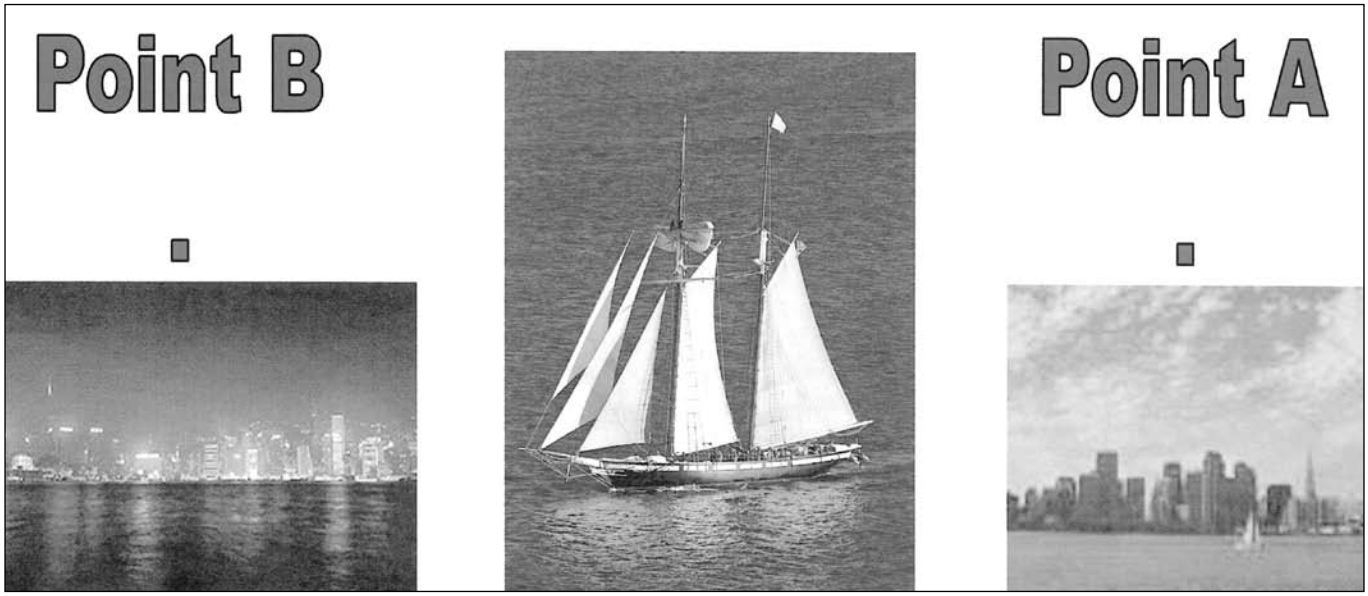
Strategic management deals with the *structure* required to accomplish goals. As an analogy, let's suppose that our goal was to go from San Francisco to Hong Kong in 1820 as quickly as possible, using the technology then available. Regarding the matter of getting from Point A to Point B (FIG. 1), in the world of mathematics the most direct and thus fastest route would be a straight line. In the real world, we must deal with specific circumstances and the best means with which to deal with those circumstances. In our example, the best available means for our task would be sailing vessels, and the best sailing vessel would be the one capable of sailing fastest and most safely under the anticipated conditions. Our choice of sailing vessel design would be a strategic one. The design and construction of the vessel would require a large investment, with only a promise of a return.

Structural vs Situational

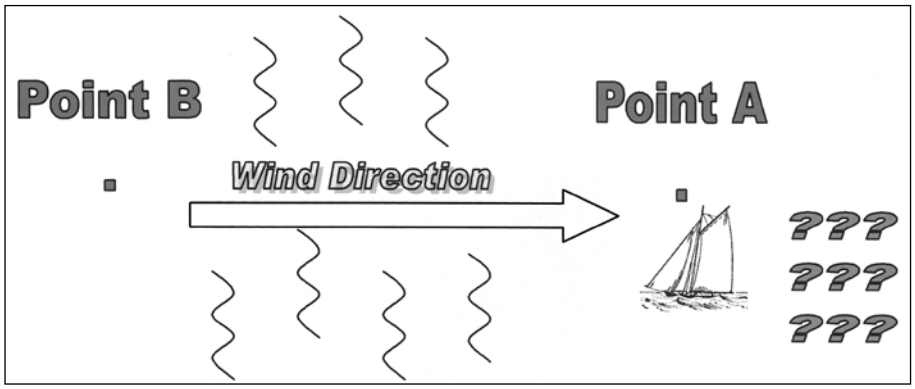
A good design — in 1820, a Baltimore Clipper — confers great potential benefit, but to realize that benefit, someone must utilize the design. This is the realm of tactics. Our ship would depend upon a captain and crew to realize the potential of the vessel. In part, this would be done by understanding its limitations and how to deal with them. Even a great sailing vessel, for example, cannot sail directly into the wind, but only 45 degrees or so away from it (FIG. 2).

As every sailor knows, the wind often blows from the direction in which one wants to go. Therefore, it is necessary to tack, to move the ship through the eye of the wind repeatedly.

Strategic Management	Tactical Management
Setting **goals** that define purpose	Employing available **means** to achieve goals
Defined by requirements	Determined interactively
Design suitable for a variety of anticipated situations and requirements that are dictated by goals	Sensitivity and adaptability to specific situations
Concerned with structure	Concerned with situation



1. Getting from Point A to Point B.



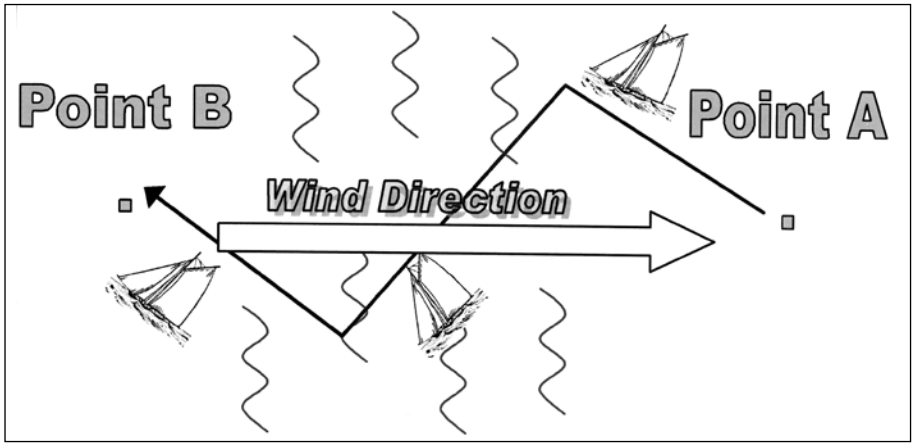
2. The Real World.

A good captain knows precisely when to do this, based upon the idiosyncrasies of his vessel and his ability to predict how the wind will shift in the future. He will be knowledgeable and capable in many other crucial areas as well. He will have selected and trained a crew capable of tacking quickly, with minimal possibility of injury to the vessel or crewmembers. He will know how to delegate responsibility, how to reward outstanding performance, how to deal with personnel that do not perform satisfactorily, how to inspire and how to listen and evaluate what his staff of specialists are telling him - in short, how to lead. All of these are the skills of a superior tactician (FIG. 3), which can be summarized as the skill to effectively move the structure he or she directs toward strategic goals under a variety of situations.

Strategy and Structure

Ultimate goals should determine the design of a management organization no less than that of a sailing vessel or any other device. In engineering terms, these would be the *requirements* for the device. Establishing requirements requires time and some experimentation. In regard to the management of Petra, the basis for the requirements is set out in the management objectives. It is important that these were established in consultation with the major stakeholders at Petra, from local communities, through the Ministry of Tourism and Antiquities, to international preservation organizations. These requirements were first drafted in the 1996 document *"Management Analysis for the Petra World Heritage Sites"* and were refined in the *"Petra Operating Plan"* of 2000.

The management structure for Petra is described in the Petra Operating Plan, which might be compared to a blueprint for the construction of a vessel. The blueprint was approved in 2001. It lays out the organization, staffing, operating procedures

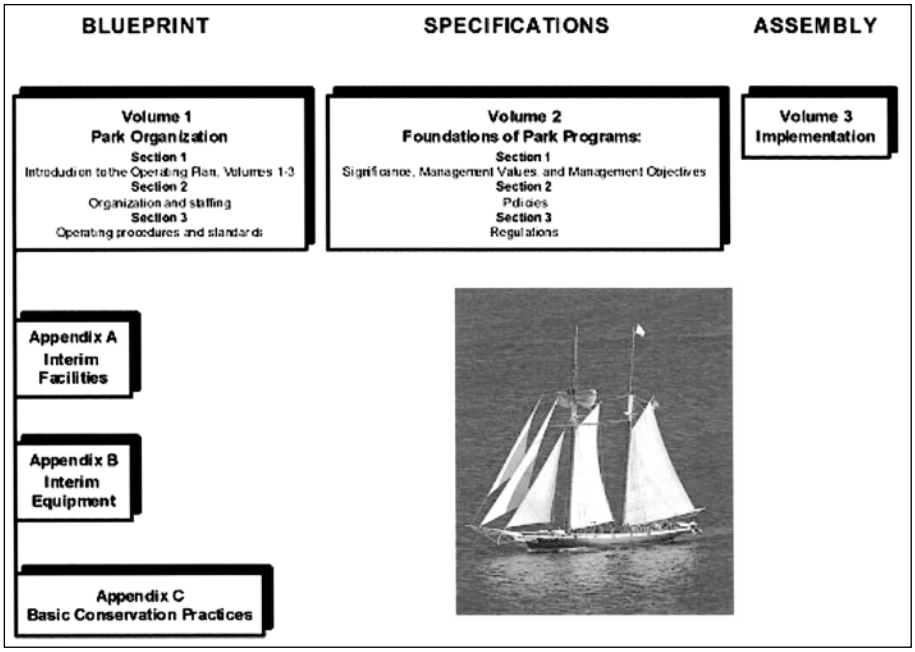


3. Successful Strategies and Tactics.

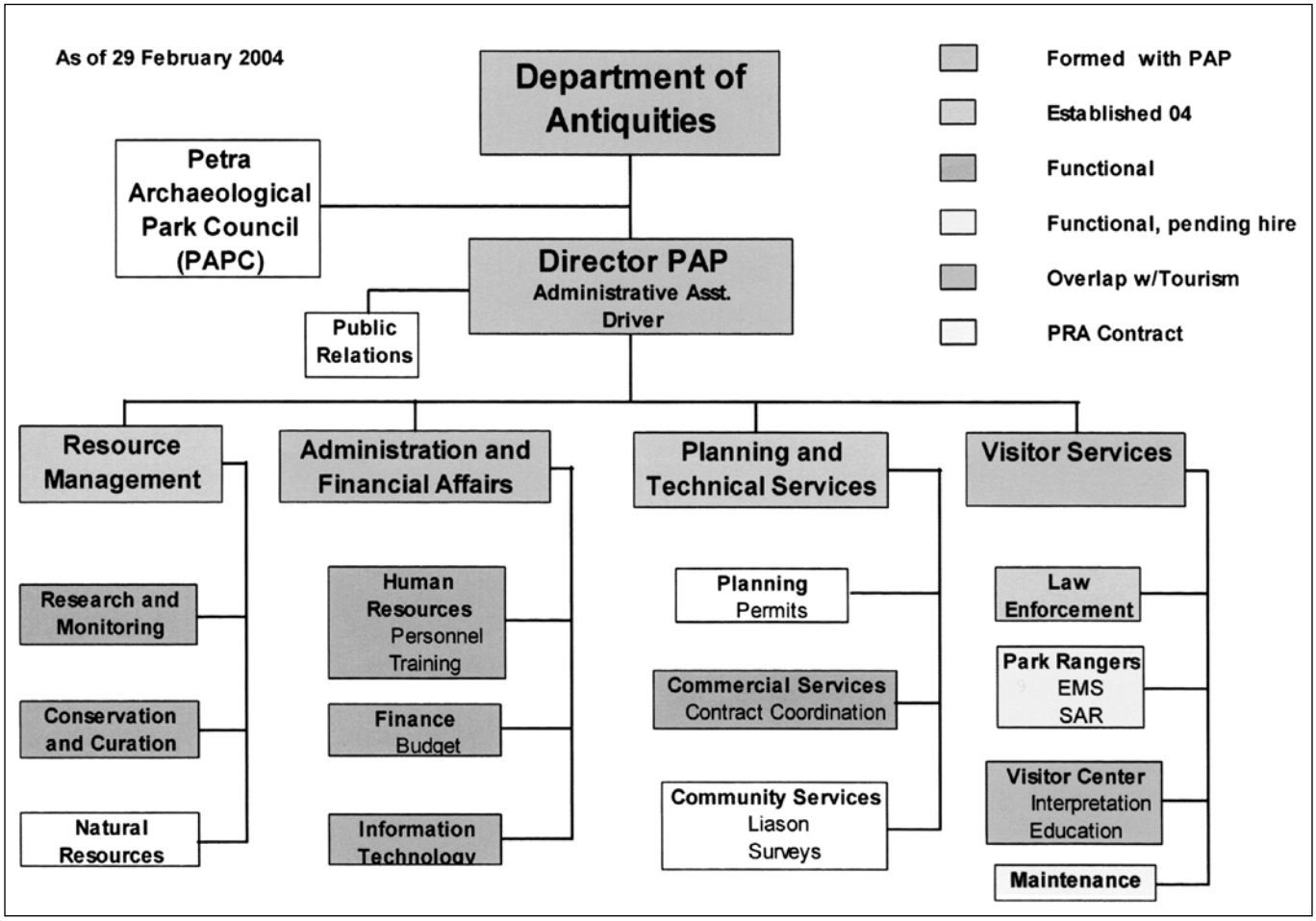
and standards, Park policies and regulations, as well as the statement of significance from which management values and objectives were defined as the foundation of the Park structure (FIG. 4). It even describes the interim facilities and equipment required and presents best conservation practices. Finally, it lays out an implementation plan.

The document (FIG. 5) remains only the blueprint for management of Petra. The actual implementation has required a process of accommodation with wider Jordanian legislative and executive bodies, and — most broadly — cultural structures. This has required time.

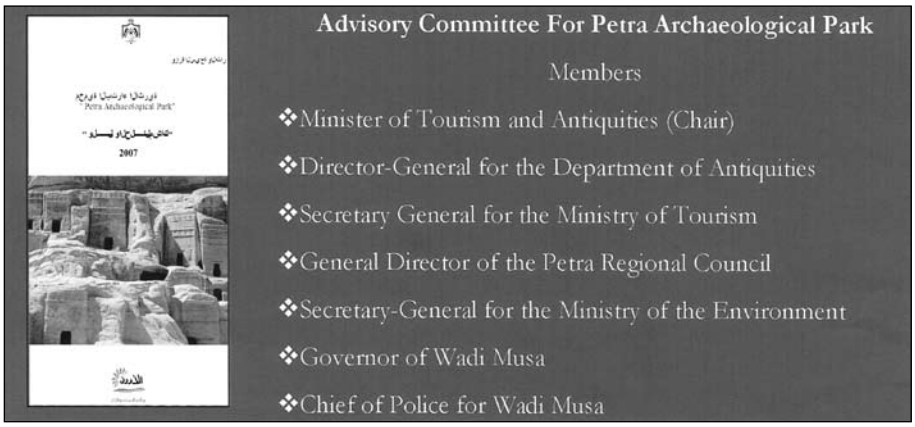
It is only recently that a comprehensive document — dealing with the management of the Petra Archaeological Park (FIG. 6), the major issues involved, recommendations on management structure, and programs to deal with those major issues — has been prepared by a committee chaired by the Minister of Tourism and Antiquities. This committee included the Director-General of the Department of Antiquities, the Secretary General of the Ministry of Tourism, the General Director of the Petra Regional Council, the Secretary-General of the Ministry of the Environment, the Governor of Wādī Mūsā and the Chief of Police for Wādī Mūsā. This document was then sent to the Prime Minister's Office. The document, entitled *"Petra Archaeological Park: Problems and Solutions"*, includes by-laws for the operation of the Park, which will form the legal basis for the operation of the Park. Amongst the most important elements contained within these by-laws is the formation of a Petra Archaeological Park Council (with the same composi-



4. Blueprint of Petra Operating Plan.



5. Organization of Jordanian Department of Antiquities.



6. Building Management Structure.

tion as the committee that prepared the *"Problems and Solutions"* document). This was recommended in the Petra Archaeological Park Operating Plan. The document also provides for the formal acceptance of the Petra Archaeological Park Operating Plan as the document that describes the organization, policies, regulations and operating procedures for the Petra Archaeological Park (FIG. 7). The plan is to be revised every three years.

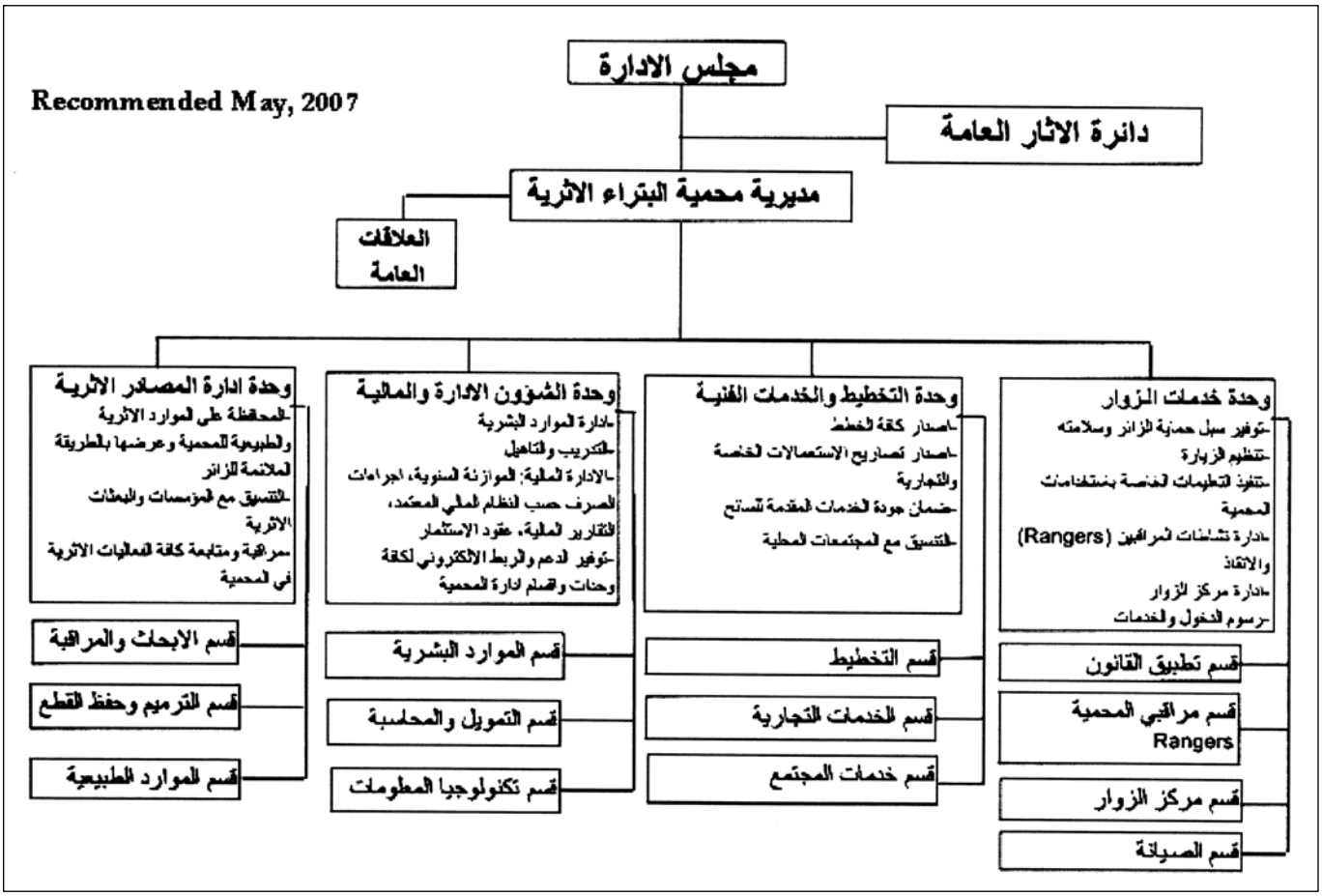
The organization chart presented in the Petra Operating Plan, then, is the one that will be used for the Petra Archaeological Park. The positions of Director of the Petra Archaeological Park, the four Divisional Chiefs and the Chief of the Law Enforcement Branch had previously been funded by a special action taken by the Minister of Tour-

ism and Antiquities and the Minister of Planning. A staffing plan that would provide funding for all of the positions seen in the Petra Archaeological Park Operating Plan was included in the comprehensive document sent to the Prime Minister.

This comprehensive document was sent by the Prime Minister to his legislative office, which then engaged in negotiations with the Department of Antiquities and the Ministry of Tourism and Antiquities for an extended period time. This time was needed because of the complexity and importance of the by-laws and the Petra Operating Plan. The legislative office has now finished negotiations and returned the comprehensive document to the Prime Minister. The Prime Minister will now put this document on the agenda for his Cabinet meeting, where it is likely to be discussed and approved in the near future [1].

To recap, it appears that the legal and administrative basis for effective management of Petra will be put in place with the approval of this document. Amongst its salient points are:

a) Granting the Petra Archaeological Park all management and financial powers necessary for overseeing all events and activities within the Park, within the remit of its authority.
b) Working for an increase in appropriations from the State Treasury for the Petra Archaeological Park.
c) Supporting the management of the Park with competent personnel.
d) Increasing necessary training programs for the qualification and capacity development of current personnel, and assignment of management and technical personnel to the Park Office.
e) Implementing the Management and Employment Plan (which provides for the hiring of staff identified in the Petra Operating Plan organization chart) and assigning its implementation to the Director of the Park.



7. Petra Archaeological Park Organization Chart as presented in *"Petra Archaeological Park: Problems and Solutions"*.

[1] The document was approved in late 2007.

f) Establishing, in writing, steps for the quick and effective resolution of typical problems or situations that may occur within the Petra Archaeological Park.

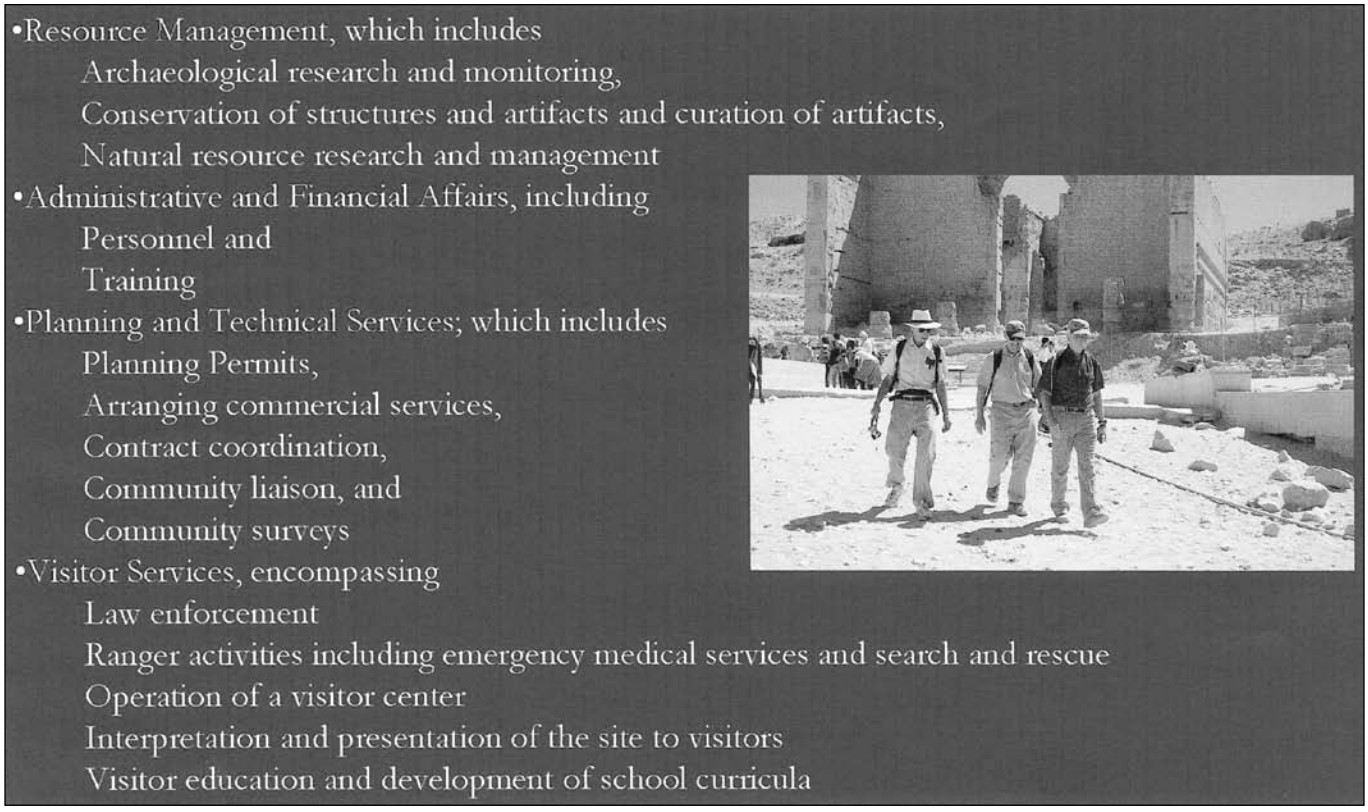
g) Strengthening the Petra Archaeological Park Office by providing for:

- The formation of a committee for the Petra Archaeological Park by the office of his Excellency the Minister of Tourism and Antiquities, in order to provide for the effective administration and management of the Park by eliminating redundancy and overlapping functionalities.
- A guarantee of increased financial resources necessary to assist the management of the Park and the employment of all its facilities and services adequately and effectively, in addition to revenue generated from the admission fees to the Park and supplementary fees for guide services within the Park. In order to ensure that allocation of funds is not dealt with on a case-by-case basis, the guarantee should be earmarked for the management of the Petra area (FIG. 8).

Tactics and Situation

While our hypothetical, well-designed ship might be capable of operating under a wide range of situations, only a well trained crew can realize the ship's potential. Similarly, the most proven and effective organizational designs can only become operational when people are trained to carry out the roles and responsibilities of each position in the organization and, in addition, to operate in a way that supports all other positions.

In 2003 *'Cultural Site Research and Management'* (CSRM) sent four retired United States National Park superintendents to Petra, where they worked with the Government of Jordan, **specifically** the Ministry of Tourism and Antiquities (MoTA), to establish four key management positions (Divisional Chiefs for Resource Management, Administration and Financial Affairs, Planning and Technical Services and Visitor Services) beneath the Director, Petra Archaeological Park. A crucial step in this process was to provide salaries adequate to attract and retain qualified and talented people in these positions and to establish a place for these positions in the yearly MoTA salary structure. Thereafter, these CSRM consultants (or Petra Archaeological Park Advisory Team, or PAPAT) advised MoTA on hiring protocols that were fair, objective and transparent. When the positions were filled, they orientated the new personnel and then



8. Building Tactical Capability.

worked alongside them to provide training. During this period, the Advisory Team also facilitated the translation of Petra Archaeological Park Operating Plan into Arabic, a task, which was eventually completed by a local consultant hired by MoTA.

Of long-term importance was the request by the Director-General of the Department of Antiquities that the Advisory Team develop protocols for involving key stakeholders in project review, review of concessionaire activities, definition of management zones, and special uses of the park. Reviews were prepared for the following specific projects and activities:

1. The Visitor Center;
2. Restaurants;
3. Electrification Project;
4. Special Events;
5. The Zoning Effort;
6. Improving Turkmaniyya Road;
7. The open excavation in front of al-Khaznah

There was agreement on the following:

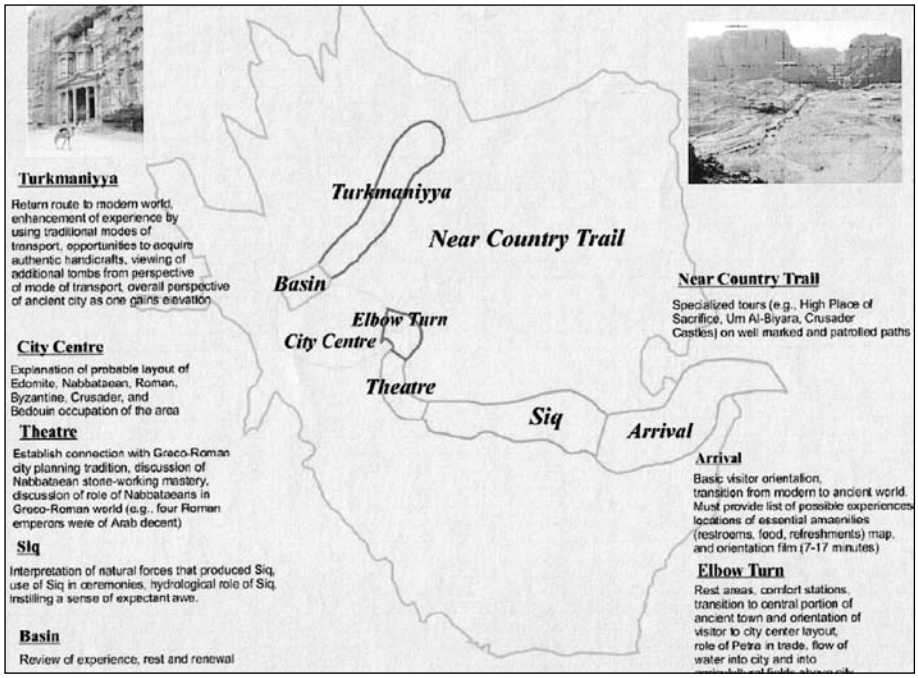
1. Review should be consistent with, guided by, and in some cases follow protocols already established by the Petra Operating Plan (i.e. in the Operating Procedures, Regulations and Policing sections);
2. It should take the form of an EIS or EIA as appropriate;
3. It should involve the key stakeholders.

Key stakeholders, other than the Petra Archaeological Park itself, were identified as being: The Department of Antiquities, MoTA, three NGOs, *viz.* the Petra National Trust (PNT), Friends of Archaeology (FoA) and the House of Nabataeans, and the local communities. The Advisory Team prepared protocols for how these stakeholders should be involved.

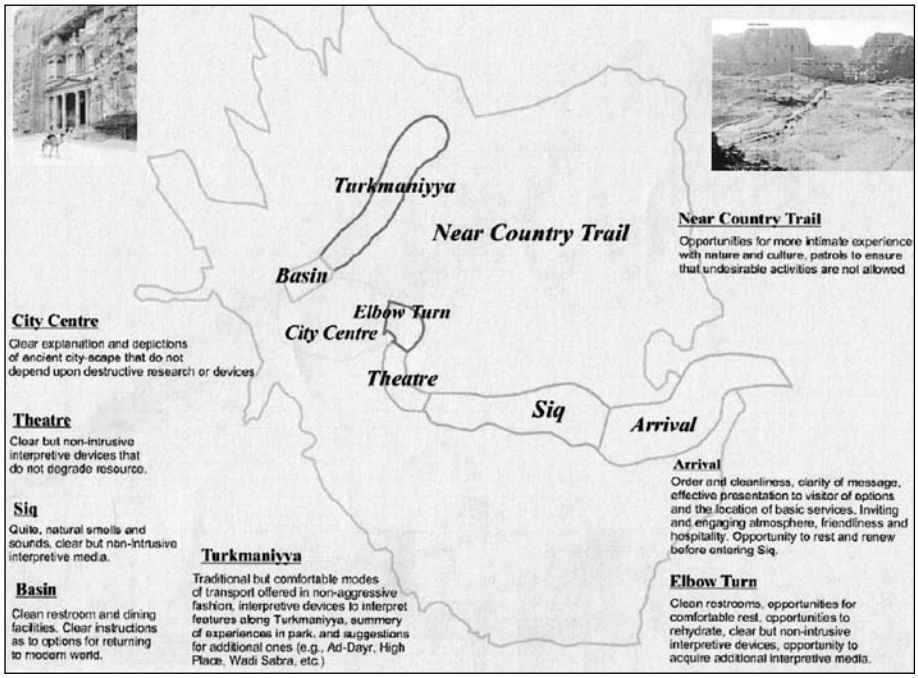
CSRM PAPAT also developed guidelines for the preparation of an EIS and EIA and how to determine which of these would be most appropriate. In addition, the Advisory Team also introduced park staff to how these documents should be prepared.

To ensure Geographical Information System (GIS) capability at the Park, the Advisory Team worked with Dr Talal Akasheh and the Hashemite University, whom MoTA had contracted the teaching of GIS and installation of GIS computers and software at Petra Archaeological Park (PAP). With this technology, we are able to create spatial models for management concepts, such as the desired uses of zones within the park and the desired conditions within those zones (FIGS. 9 and 10).

The Advisory Team also assisted in curriculum development for this purpose at the Hashemite University, where several park staff were sent on training courses. During this period, the management zones were entered into the Petra Archaeological Park GIS, as were the desired uses and conditions for these zones. To ensure the continued development of GIS capability within PAP, CSRM



9. Desired Uses for Petra Management Zones.



10. Desired Conditions for Petra Management Zones.

collaborated with US / ICOMOS through the US / ICOMOS intern training program.

Through this program, in autumn 2004 CSRM provided three months' training in GIS technology to the Acting Division Chief of the Resource Management Division at the company's Baltimore, USA headquarters. This technology is important, not only for the development of interpretive tools, but — eventually — also to put in place the monitoring scheme that will both keep the resources of Petra unspoiled and provide a knowledge base for site managers in order to facilitate decision making.

A detailed Performance Management Plan was submitted by CSRM PAPAT on the departure of the advisors in 2004. The plan detailed how annual goals become the responsibility of staff members through annual work plans that include a set of work tasks. The performance of each employee in carrying our work tasks is evaluated at the end of the rating period, which provides the basis for an overall rating for each employee. Outstanding ratings are rewarded with a financial bonus; an unsatisfactory rating is grounds for immediate dismissal.

The Future

Despite all that has been achieved, training of Petra Archaeological Park staff is not yet complete. Certain areas have been identified as being of special importance, including:

- Team building;
- Communication;
- Supervisory skills;
- Environmental Assessment;
- Basic computer skills.

While we all understand the importance of enhancing management at Petra as rapidly as possible, developing a complex management structure and a staff trained to deal with a wide range of situations is not quickly accomplished. The structure of Petra management appears to be approaching completion. Once that is done, training of staff can reasonably be expected to be completed within five years.

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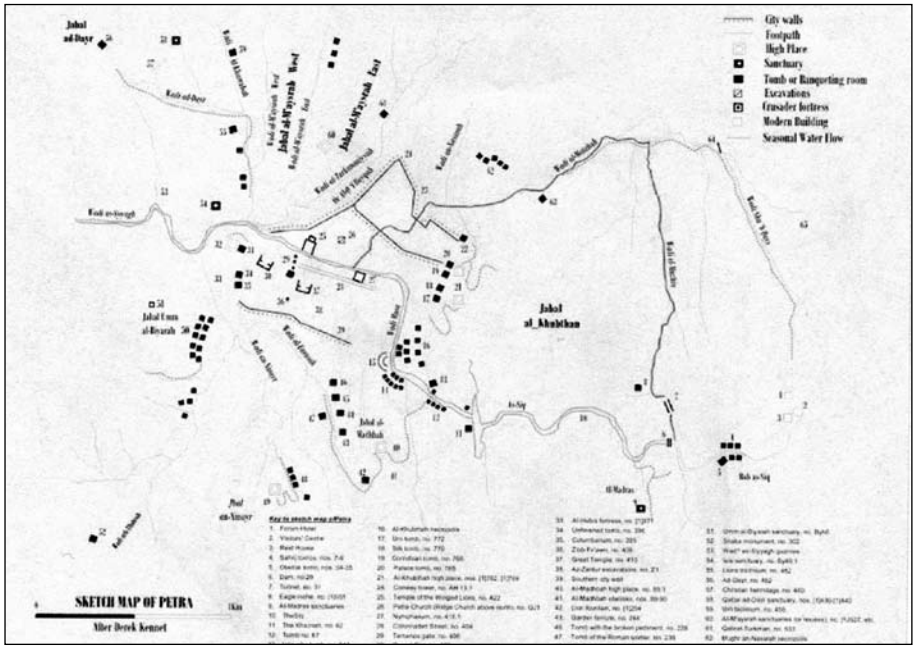

11. Sketch Map of Petra.

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A Study of the Nabataean Minor Arts and their Cultural Interpretations

International politics, economics, society and religion are directly reflected in the study of the Nabataean minor arts. The Hellenistic world during the first centuries BC-AD was in turmoil, with almost constant warfare and political instability disrupting trade and with an economy in decline. The Nabataean kingdom was by no means peaceful, but its successful expansionist foreign policies were accompanied by internal political stability and a booming economy. These differing circumstances are reflected in the relative impoverishment of the late Hellenistic minor arts repertoire and the comparative crudity of its workmanship, while within the Nabataean kingdom new pottery and other minor arts proliferate and the objects illustrated in this study are, in every case, finer and more delicate than their external analogues. At Petra, the painted pottery, for instance, approaches a peak in quality and variety towards the beginning of the Christian era and is far better than the pottery of the preceding or following periods. This period corresponds approximately to the time of Aretas IV (9BC-40-AD).

It would be strange if the sophisticated Nabataean civilization, with its distinctive architecture, religion, script, coinage and the "egg-shell" painted bowls, had not also possessed a distinctive range of minor fine arts. Generally, the characteristic Nabataean minor arts discovered at Petra and other Nabataean sites show clear signs of Hellenistic - Roman influence, although created in abundant variety within a flourishing and unmistakably local context.

This research describes some of the Nabataean minor arts, such as ink-wells, drinking vessels, piriform unguentaria, fine ware with rouletted decorations, painted ware, pottery lamps, terracotta figurines and stone cultic objects, all of which throw some light on different aspects of Nabataean culture.

Nabataean Ink-Wells

The ink-wells of the Roman period in general and their Nabataean counterparts in particular, that have been found in Jordan over the past six decades have not, to date, been the subject of detailed discussion in any publication. Two main types of Nabataean ink-well have been found at Petra, being:

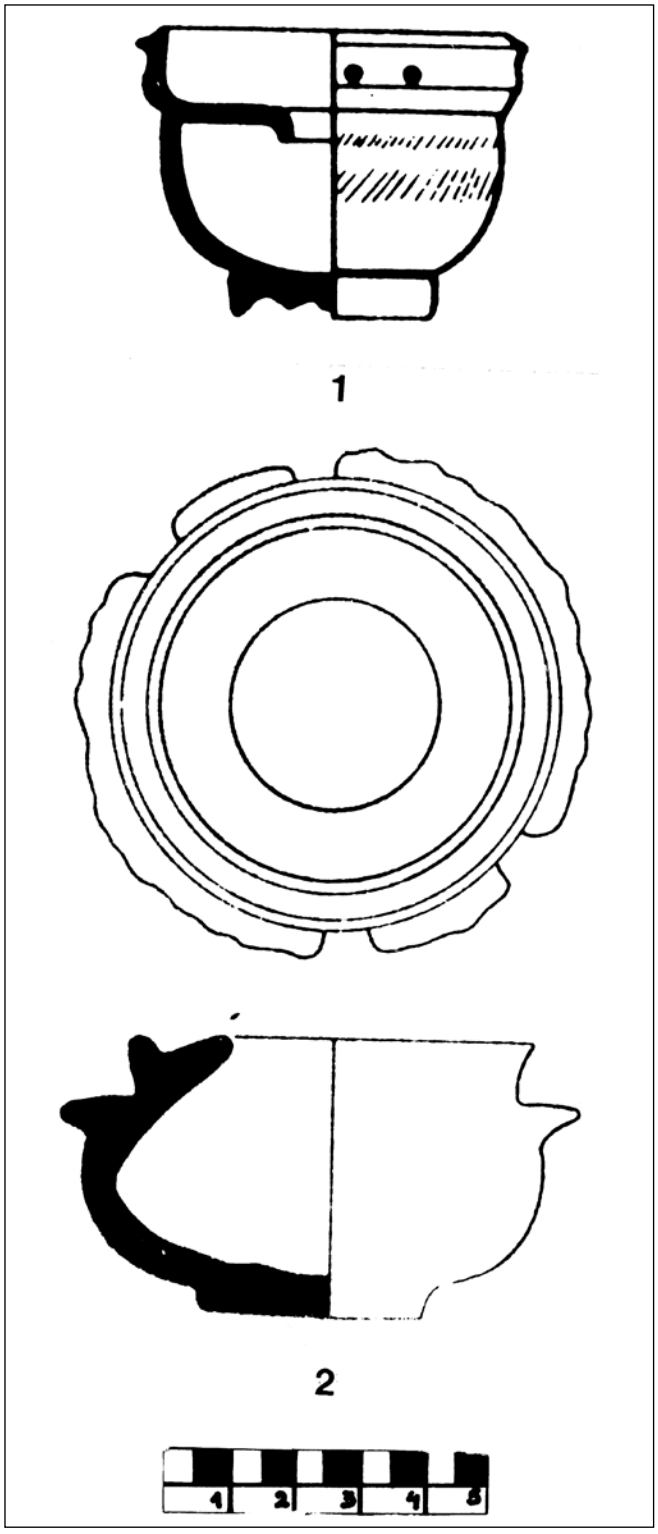
Pottery Ink-Well (FIGS. 1:1, 2:1)

Height	4.5cm.
Diameter	6.0cm.
Diameter of filling-hole	1.3cm.
Height of rim	0.8cm.

Cup-like ink-well, mended, part of rim and body is missing, flattened top, surrounded by up-standing rim, filling hole on top, two pairs of incomplete pierced small holes on either side of the rim, ring base, light red ware, darker red wash outside, two rows of incised vertical dashes on body outside.

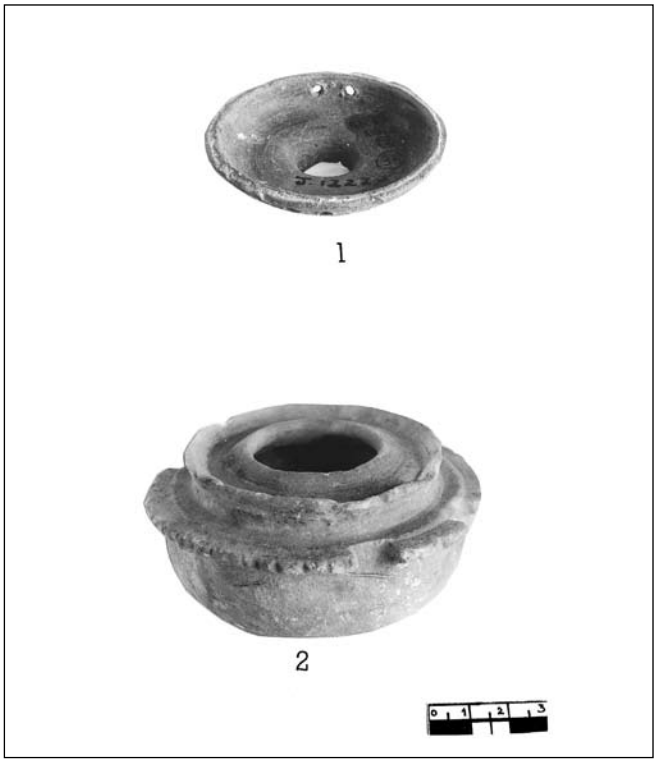
This ink-well was found by P.J. Parr during his excavations at Petra (1958 – 64). There are parallels in Terra Sigillata, comparable to examples published by Oswald and Pryce (1920: 209 – 10, Pl. LXX. 1 – 5, "early Roman"), Baur (1922: 225. No. 552, not illustrated here, but occurred in Hayes (1972: 177, Form 124.1), who suggests a "Flavian or possibly Trajianic date" for his example No.1) and Lamboglia (1958: 284 – 5, Form 16). The latter has been nicely described and redrawn by Hayes (1972: 177, Form 124.2), who attributes this type to "the second century AD". Another example has been published by Gose (1975: 14, Pl. 10, 155 – 6, which is dated to the "middle of the second century AD").

Although the Petra pottery ink-well (FIGS. 1.1,



1. Alabaster ink-well.

2:1) has a similar body form to the parallels mentioned above, there are the following differences: the parallels are made of Terra Sigillata, have a slightly concave top, shorter upstanding rim and are without non-functional suspension holes in the rim. Therefore, one might add the above-mentioned Petra ink-well to the list of typically Nabataean forms.



2. Alabaster ink-well.

Alabaster ink-well (FIGS. 1:2, 2:2)

Height	4.6cm.
Body diameter	7.8cm.
Diameter of filling hole	2.8cm.

Cup-like ink-well, intact, large filling-hole on a concave top, disk base, horizontal dented ridge (ledge) on shoulder with which to carry the object, another upstanding ridge around the top to avoid splashing the ink and to confirm its function as an ink-well. Thick white(ish) alabaster, traces of ink discoloration in places.

This alabaster ink-well was found alongside a pottery ink-well by the Department of Antiquities of Jordan at Petra in 1968. Such an elaborate ink-well was unknown amongst contemporary alabaster vessels discovered elsewhere and therefore seems to be purely Nabataean.

Nabataean Drinking Vessels

Two main types of cup can be identified amongst the unpainted pottery recovered from Nabataean sites, representing one of the commonest forms of household vessel (Horsfield and Conway 1942: 122 – 123):

Hemispherical Cup (FIGS. 3.1, 4.1)

Diameter 7.3cm.
Height 3.8cm.

Broken and mended, inclined walls, ring base, pinkish ware, grey core in places. Creamy wash around outside rim, mostly peeled.

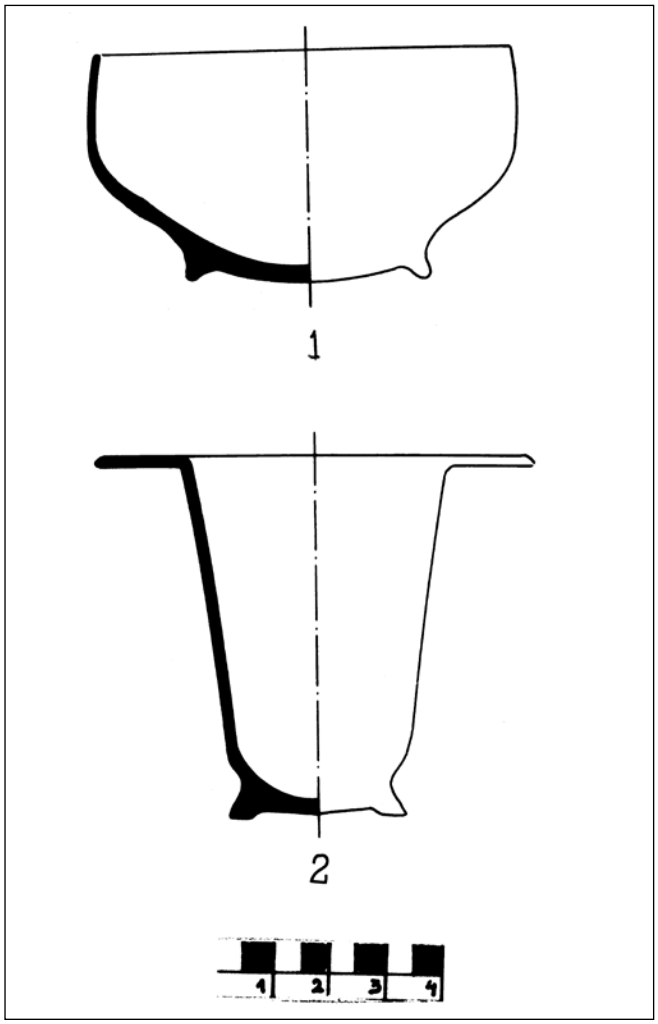
Nabataean sites offer typical parallels for the hemispherical cup which was found in the 1981 Petra excavations, including the examples published by Crowfoot (1936: 23 – 27, Pl. IV. 5), Murray and Ellis (1940: 13 – 18, Pls. VIII.4, 55 – 57. 60; XXV: 6; XXXI; 119 – 121, "undated"), Horsfield and Conway (1942: 144, Pl. XXI: 158, which was classified as "Nabataean Fine Plain Ware"), Hammond (1962: 175, 178 Class 112 (b) and (c): 4, "Nabataean"), Hammond (1973: 46, No. 78, "Nabataean"), Weippert (1979: 96, fig. 4: 12, 144 "Nabataean – Roman Ceramic") and Rosenthal and Sivan (1977: 138, fig. 1:1 – 2 "unstratified object").

Cup with Flattened Rim (FIG. 3:2, 4:2)

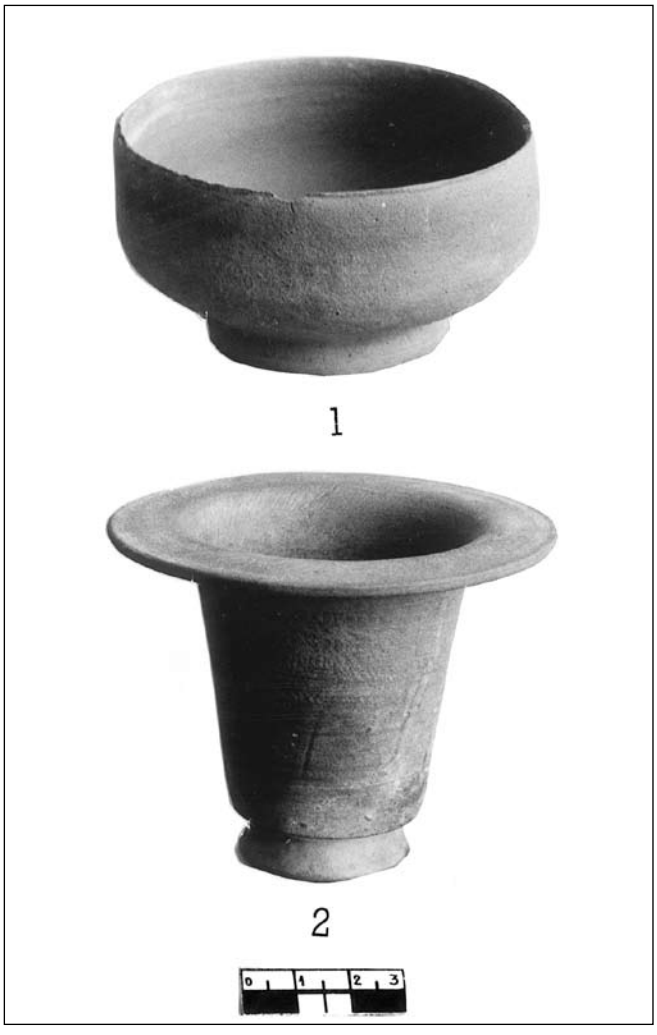
Diameter 7.6cm.
Height 6.2cm.

This cup has a flattened-out rim extending beyond the widest point of the body. Such a rim is not practical or comfortable for drinking, since it is not easy to control the flow of liquid. The body is heavy at the top and the tapers down to a ring base. Pinkish-red ware, evenly fired, well-levigated, darker pinkish engobe outside. This cup was found in the 1981 Petra excavations conducted by the University of Jordan. The only parallels for this cup appear at the Nabataean sites published by Negev (1970: 48 – 51, Pl. 32: 7 "First half of the first century AD"), Bennett (1962: 233 – 242, especially No. 241) and Hammond (1973: 33, Nos. 88 – 89, 91, "Nabataean").

The hemispherical cups recovered at Nabataean sites are comparatively small for drinking water



3. Hemispherical cup.



4. Hemispherical cup.

vessels; a thirsty person might drink several cups before being satisfied. Moreover, the inverted rim on the majority of such cups is more suited to sipping. It is therefore most probable that hemispherical cups of this type were used for more precious liquids, perhaps wine. Bearing this in mind, in the fourth century BC Diodorus wrote that the Nabataeans were nomadic Arabs who abhorred the use of wine (Diodorus, Bibliotheca Historica XIX: 94 – 95), but later on, in the first century AD, Strabo (XVI: 4. 26) offers a somewhat modified picture, describing them as a settled community living in large houses in rich cities, where "….no one drinks more than eleven cupfuls, from separate cups".

Cups with an everted flattened rim (FIG. 3:2) are neither practical nor comfortable for drinking water, or even precious liquids, from the external rounded edge of the rim. The only practical way to use this type of cup is to sip the liquid from the internal part of the rim; it is most probable that these cups were used in special social and religious ceremonies. None of the above-mentioned two types have handles, but their size fits nicely into the palm of the hand with a thumb around one side and the forefinger and middle finger around the other side.

Although the two main variants of hemispherical cup (FIG. 3:1) and cups with everted flattened rim (FIG. 3:2) have, in a few cases, been found together in the same loci, there is a general chronological development from cups with slightly inclined rounded sides to those with vertical sides. Cups with rounded sides tend to occur in contexts dated from around the last quarter of the first century BC to around the end of the third quarter of the first century AD. The majority of hemispherical cups with vertical sides have been found in contexts dated from around the end of the fourth century AD to around the end of the reign of Rabbel II (106AD). The thicker Nabataean carinated cups date to the reign of Malichus II (40 - 70AD); hemispherical cups seem to have become smaller over time and their ware is comparatively thick and coarse for the size of object. This development occurred after the annexation of the Nabataean kingdom by the Romans in 106AD and lasted into to the early third century AD.

The development of the second type — cups with everted flattened rim (FIG. 3:2) — cannot be precisely determined. Generally, early forms dating to the first four decades of the first century AD have shorter everted flattened rims than those of the second half of the first century AD. This type of cup became shorter and thicker, with a tiny everted rim during the second and the early third centuries AD.

According to the above-mentioned parallels, one can assign these two types of cup to the list of the purely Nabataean forms since their occurrence is restricted to Nabataean sites.

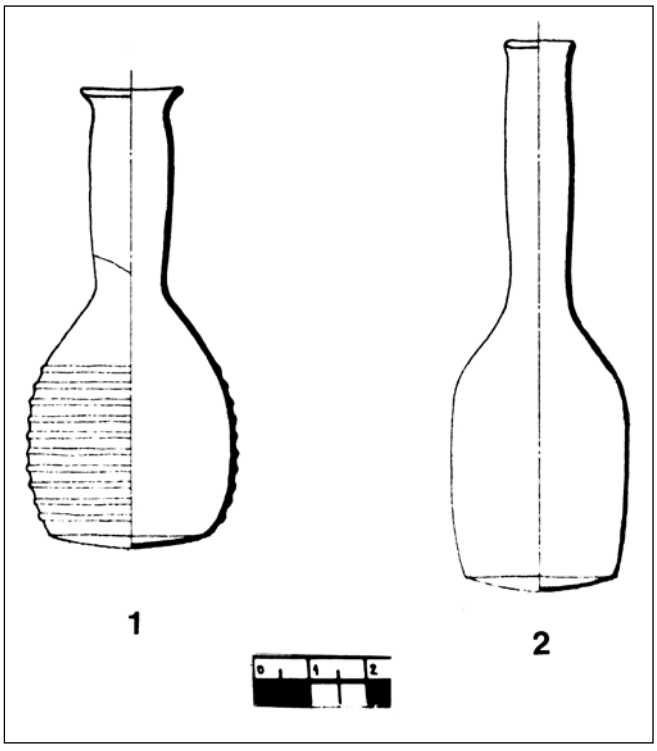
Nabataean Piriform Unguentaria

Nabataean piriform unguentaria can be classified into two main types: ribbed (FIGS. 5:1, 6:1) and unribbed (FIGS. 5:2, 6:2). Although they reflect outside influences, these artefacts have their own typical forms, which are not difficult to distinguish. It is however difficult to identify traces of foreign influence in their production:

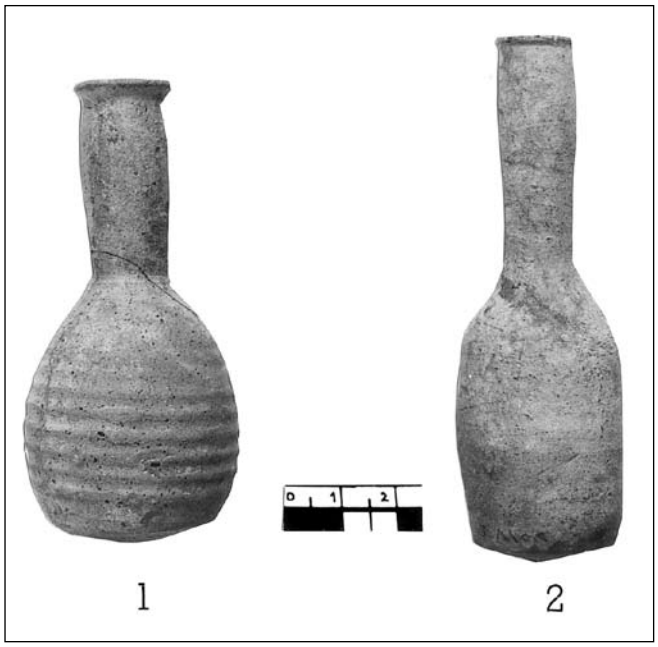
Ribbed Unguentarium (FIGS. 5:1, 6:1)

Diameter of mouth	1.9cm.
Height	7.9cm.
Width of body	3.0cm.

Broken and mended, oval body with elongated bulging neck, furnished with everted rim and cone-like base. Red ware, few limestone grits with traces of creamy slip externally, evenly fired, body ribbed from below shoulder to above base.



5. Nabataean piriform unguentarium.



6. Nabataean piriform unguentarium.

Unribbed Unguentarium (FIGS. 5:2, 6:2)

Diameter of mouth	1.1cm.
Height	7.9cm.
Width of body	3.0cm.

Tubular body with elongated bulging neck, intact, everted rim and cone-like base, creamy-buff ware with few fine white grits, buff slip externally.

Some scholars have suggested a Parthian heritage (Glueck 1965: 265; Horsfield and Conway 1942: 204). This type of unguentarium is wheel-made. Occasionally, the marks of the cutting string or tool are visible just above the base; fingerprints can also be present on the exterior of the body, but frequently these marks have been smoothed off to seal the clay pores and improve the general appearance of the vessel. No evidence of knife-paring has been noted on Nabataean unguentaria except on the cone-like bases.

Since the two unguentaria illustrated here (FIGS. 5:1, 5:2) did not come from stratified deposits, an intensive effort have been made to locate dated and undated parallels. The ribbed Nabataean unguentarium has fairly close parallels from Petra (Horsfield and Conway 1942:143, 150, Pls. 21. 155, 24. 173 "first half of the first century AD"; Hammond 1973a: 30, no. 36 "Nabataean"), Dhāt Rās (Zayadine 1970: 35, esp. 135, fig. 2:212 "AD 14 – 37"), Nessana (Collin Baly 1962: 299, A58: 38 "Pre – Byzantine) and 'Ammān (Harding 1964: 60, Pl. 20. 4 "BC 50 – AD 50").

The ribbed unguentarium (FIG. 5:2) is similarly restricted to Nabataean sites and can be compared to the examples published by Hammond (1973a: 30, Nos 43 – 46 "Nabataean") and Horsfield and Conway (1942: 149 – 50, Pl. 25. 180, undated).

It was formerly believed that these small unguentaria were designed to be placed with bodies in tombs (Thompson 1934: 473; Debevoise 1934: 87; Kahane 1952: 178). However, it now seems more probable that the unguentaria were simply popular vessels, designed primarily as containers for the transport of ointment, balsam, jasmine, koḥl, costly oil and other toilet preparations (Thompson 1934: 473; Goldman *et al*. 1950: 171; Toll 1946: 106 – 107; Debevoise 1934: 15). Therefore, the term "tear-bottles" is a misnomer (Thompson 1934: 472), even though the vessels were often used secondarily in burial deposits as dedicatory offerings.

Perfume, as a raw material, was probably produced locally or imported from other regions in the east Mediterranean, especially Jericho and the area around Petra, which were fertile and contained many gardens (Strabo XVI: 26). Diodorus mentions that the Nabataeans imported balsam from Jericho and bitumen from the Dead Sea (Hammond 1973: 68 – 69). The Nabataeans controlled these resources, which were considered amongst their most important sources of income. It may be assumed that the Nabataeans did not export perfumes as raw material, but instead controlled the perfume industry and supplied the European markets with bottled unguentaria containing, for example, balsam, jasmine or koḥl. These containers were made in different forms and sizes, to be sold at various prices (Horsfield and Conway 1942: 68 – 69). Evidence for this practice is seen in the large unguentaria from Petra (Horsfield and Conway 1942: Pl. 24: 173, ca. 29cm. High and ca. 20cm. Wide). We can assume that these large unguentaria were used by the Nabataeans for the industrial export of perfume, *contra* the view that these containers were "...never of any great size, nor more than a few inches in length" (Murray and Ellis 1940: 13).

Fine Nabataean Ware with Impressed and Rouletted Decoration

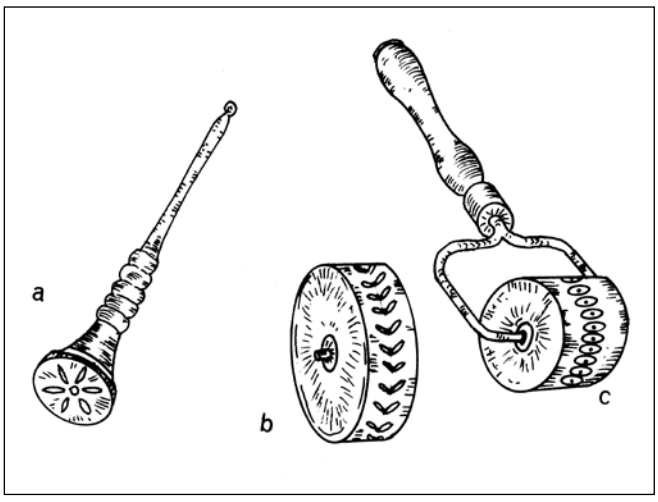
No attempt has hitherto been made to study the fine ware with impressed and rouletted decorations from Nabataean sites, nor even to draw a distinction between Nabataean and non-Nabataean pottery. Most archaeologists who have excavated Nabataean sites have concentrated on the painted

Nabataean pottery, e.g. Winnett and Reed (1964), Hammond (1968), Schmitt-Korte (1968) and Tushingham (1972). They have rarely studied the unpainted coarse and fine wares. Reed failed to identify Nabataean pottery, including the rouletted ware, and states that "the assimilation of Nabataean and Roman culture makes it impossible to distinguish certain vessels as either Roman and Nabataean" (Winnett and Reed 1964: 55).

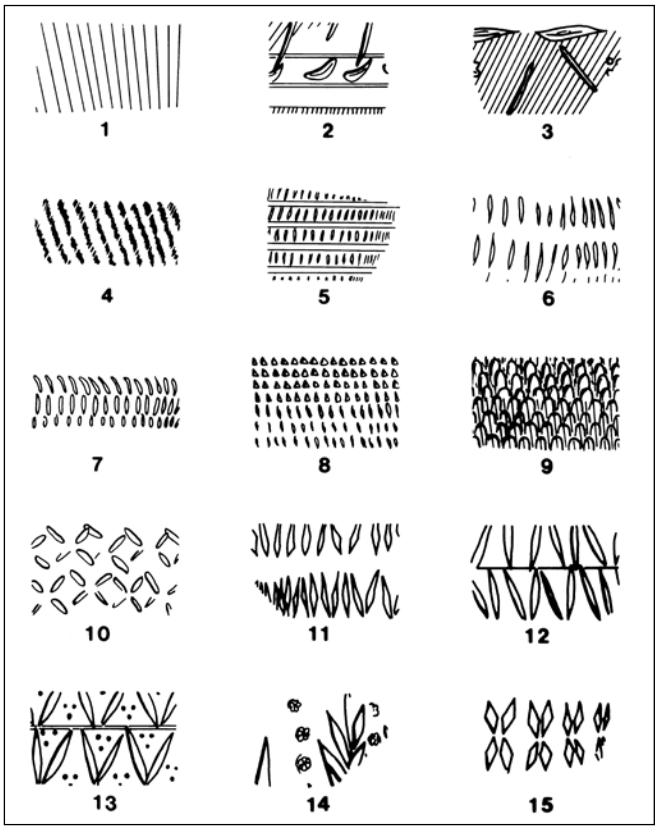
In figure 7a, b and c shows how various tools were used to give either impressed or rouletted decoration. For the former, a flat stamp seal (FIG. 7a) with an incised pattern was used. The handle enabled the decorator to control the depth of the impression. For the latter, the roulette (FIG. 7b and c) gives a continuous line of impressions where the motif is repeated. In essence, the roulette — as its name suggests — is a small wheel with handle or spindle for guidance that is rolled around the vessel. These tools were easily manufactured from stone, bone or even pottery.

The same tools could be used on both globular or straight sided vessels before the clay was completely dry, although the motif would obviously be confined to the external surface. Some sort of support would had to have been given to the inside walls.

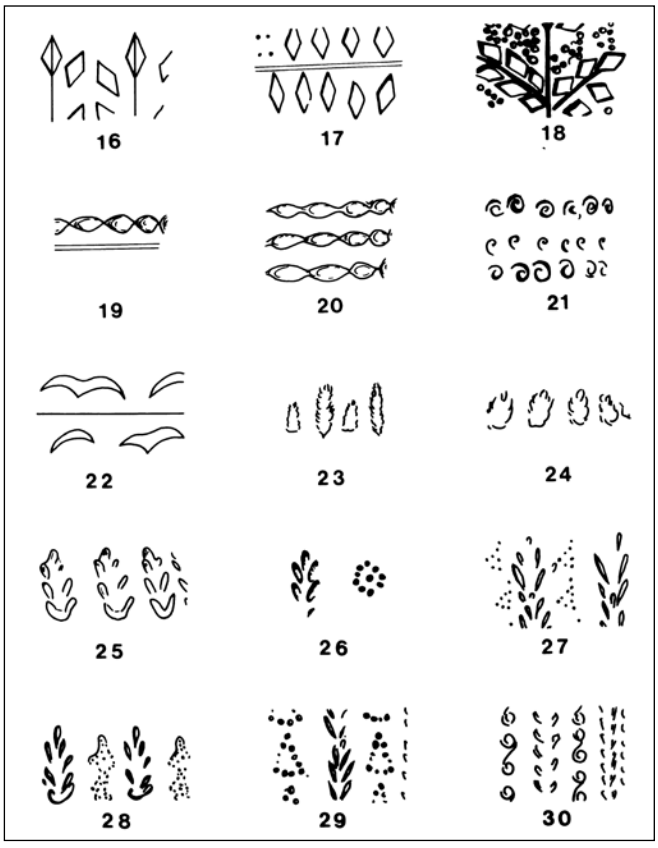
The different designs of the impressed and rouletted decoration are illustrated in Figures 8 and 9, Nos 1-30. The ware is of pinkish — red clay. It is evident that the different types of Petra fine ware, with their impressed and rouletted decoration, are most commonly found on Nabataean sites. The following artefact, found by P. J. Parr at Petra, is a fine example of Nabataean fine ware with rouletted decoration:



7. Pouletted wheels.



8. Impressed and rouletted decorations.

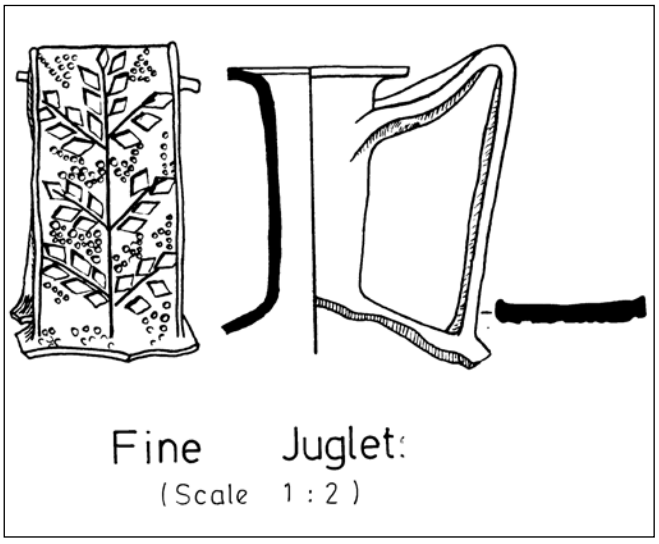


9. Impressed and rouletted decorations.

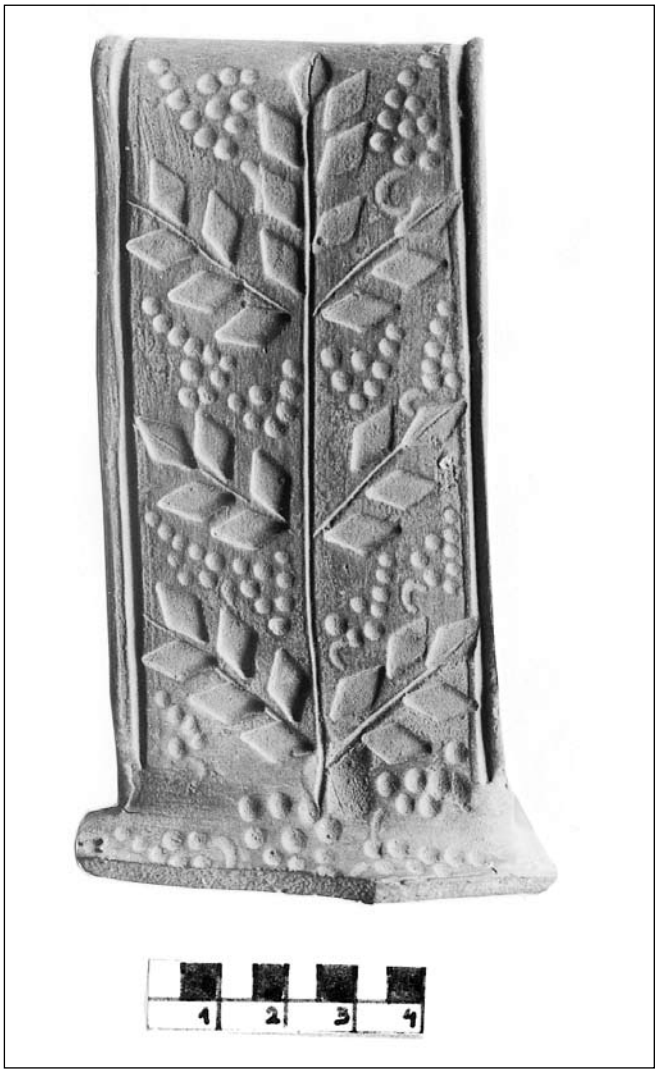
Handle with Rouletted Decorations (FIGS. 10, 11) Large fragment of rim, neck, and handle (FIG. 10), with everted rim, cylindrical neck, wide strap handle, fine grey ware, thin red outer zones, very few white grits. Handle decorated with impressed lozenges and small circles, arranged in fruit tree-like pattern, surface smooth. This form and decoration are restricted to Nabataean sites and do not occur elsewhere. Hence, this type can be added to the list of uniquely Nabataean production.

Nabataean "Egg-Shell" Painted Ware

This ware was first identified and studied in 1930 by G. Horsfield and his wife Agnes Conway (Horsfield and Conway 1930: 375), who ran the first systematic excavations in Petra in 1929. Their's was the first illustrated study (Horsfield and Conway 1942: 105 – 206) to describe the painted vessels and properly reconstruct the many decorative patterns. During the last five decades, further scholarly works on painted Nabataean pottery have been published. The three seasons at Dhībān (1950 – 53) provide us with some examples of this ware (Winnett and Reed 1964). Two chapters of Hammond's (1968) thesis concentrate on the painted Nabataean pottery. Schmitt-Korte (1968: 496 – 519) was the first to produce a study on the distribution of floral patterns on painted Nabataean bowls. However, it was Parr (1978: 202 – 209) in particular who provided a genuine contribution to the study of the painted Nabataean ware, when he dealt with the problem of the chronology and origins of this ware.



10. Handle with rouletted decorations.



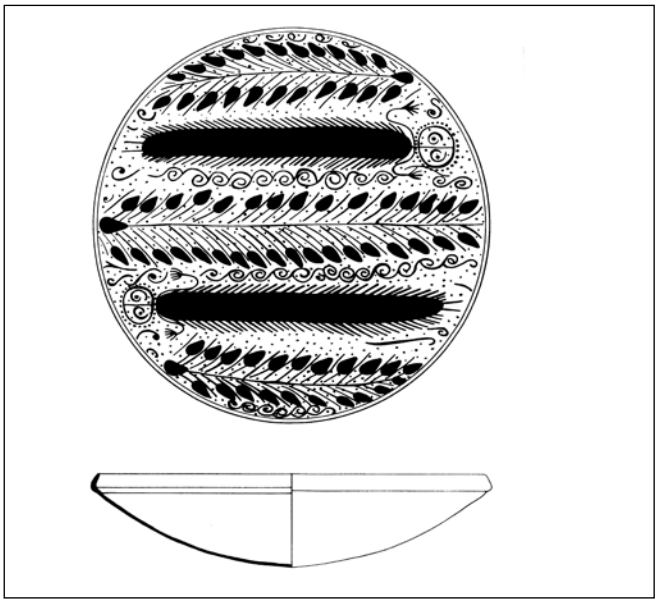
11. Handle with rouletted decorations.

Two artefacts are discussed here:

Complete Painted Bowl (FIG. 12)

Diameter 18.0cm.
Height 4.3cm.
Thickness 1.0 – 1.3cm.

Shallow bowl with rounded base and bent-up rim, pinkish — red ware, evenly fired, dark pinkish engobe with creamy slip around outside rim. The interior is decorated with a brown paint. The design is divided into two halves by a central wreath of almonds. The two halves are arranged in a head to foot "tete-beche" position. Each half containing a stylized human figure (15.4cm. in length). The head is almost circular and is surrounded by dots. It has two eyes with central pupils; the face is divided into two halves by a vertical line. The hands are raised with the palms open and the figure probably



12. Painted bowl.

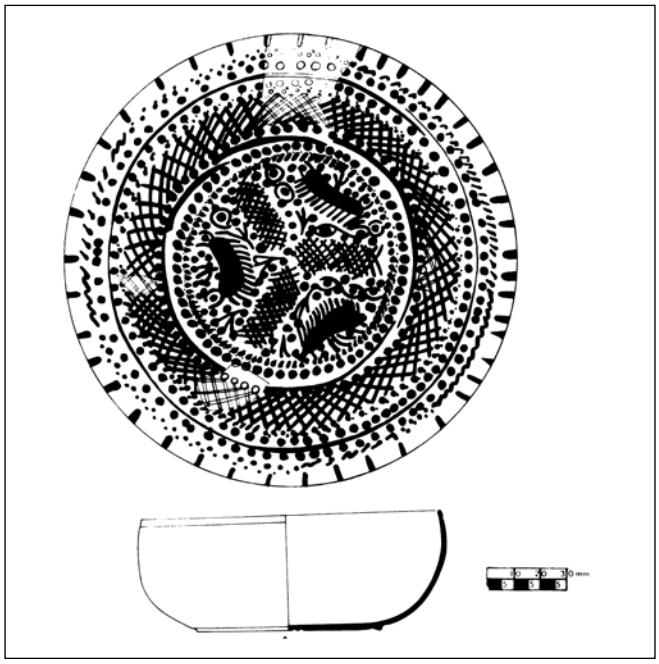
represents a worshipper. The body is in the form of a millipede with numerous legs in double pairs placed on each side of the segment.

No human figures so far appear to have been found on Nabataean "egg-shell" painted pottery. Two interpretations could be put forward for the upraised arms of figures such as those illustrated in Figure 12. They may represent worshippers receiving the god's blessing, or may be symbols aimed at protecting the user(s) of these painted bowls against evil spirits during social and religious ceremonies. Either way, it seems likely that these vessels had a religious significance and that some of them probably used in funerary meals and religious ceremonies.

Hemispherical Painted Bowl (FIGS. 13, 14)

Diameter	11.3cm.
Height	4.4cm.
Approx. thickness	1.0 – 1.5cm.

Inclined walls with sharp rim on top, pinkish — red ware, well livegated, evenly fired, smooth to touch, yellowish-white slip on the exterior surface. An incised spiral wheel finishing the base. The interior is covered with three concentric zones of decoration the inner circular zone is divided into three equal fields by three bands of trellis pattern radiating from the center. Each trellis alternates with a millipede of numerous legs and the background is covered with dots. The middle circular zone consists of a trellis bordered on both sides by dots. The outer zone is decorated with dotes of different sizes, wavy lines and tiny splashes evenly distributed on the interior of the rim. The painted decoration is dark red. The above mentioned hemispherical bowl was found during the 1981 Petra excavations supervised by the author. No exact parallels for the above-mentioned two painted bowls have been found to date. Therefore, they are uniquely Nabataean objects.



13. Hemispherical painted bowl.

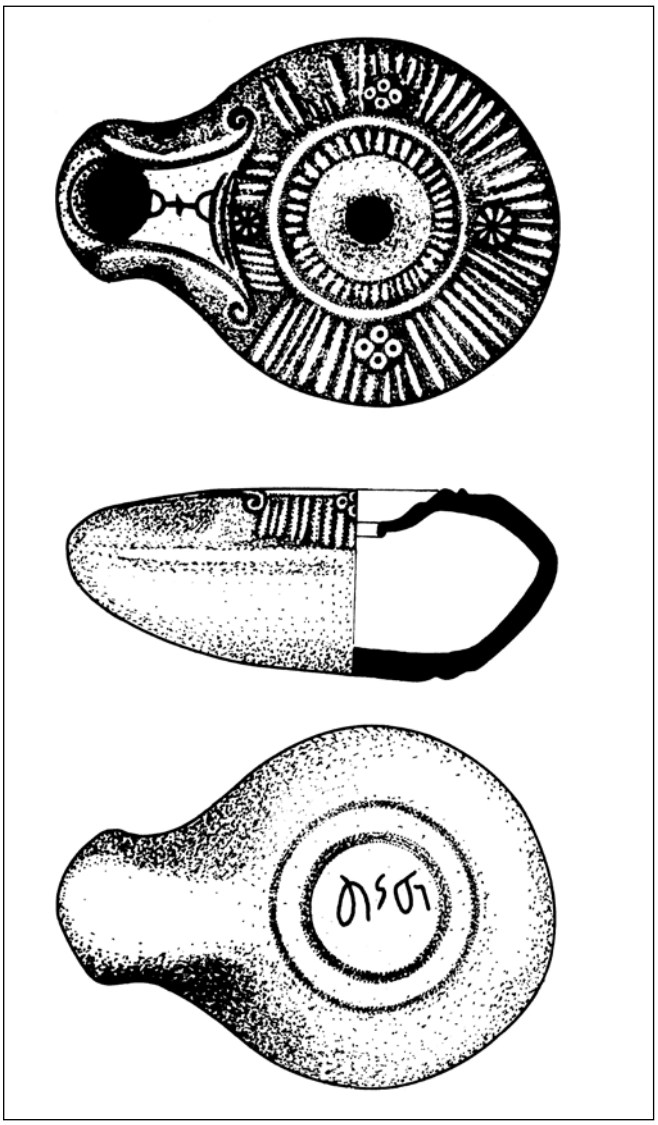
14. Hemispherical painted bowl.

Nabataean Pottery Lamps

Our information on the Nabataean pottery lamps recovered from Nabataean sites remains obscure, since no thorough study of this topic and its chronological sequence has been made. Also, until recently archaeologists have been content to attribute these lamps to broad chrolonological periods. Our primary task, therefore, is to try to separate Nabataean from contemporaneous non-Nabataean pottery lamps. Six Nabataean lamps are dealt with in this paper (FIGS. 15-20, 21-23:1-6):

Intact Lamp with Four Inscribed Nabataean Characters (FIGS. 15, 21:1)

Length	8.8cm.
Width	6.2cm.
Height	3.4cm.



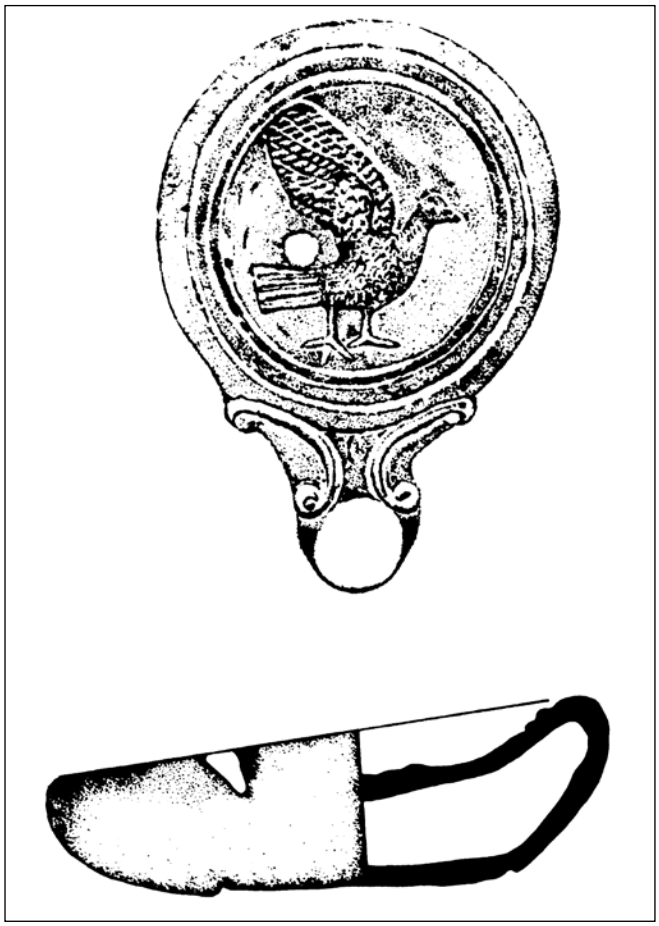
15. Intact lamp with four inscribed Nabataean characters.

Rounded body, small sunken discus, shallow ring base, two incised concentric circles separating the rounded shoulder from the discus, mainhole of 0.8cm. diameter. The shoulder of the lamp is decorated in low relief with very tight strokes representing the sun's rays, with a rosetta of four circular petals on each side of the shoulder. A third small rosetta of nine petals on the handle. On the nozzle is a symbol most probably representing a chalice with hemispherical body and trumpet base. Buff-creamy ware, few grits included, evenly fired, traces of brownish slip are visible on the upper half of the lamp, dripped irregularly in streaks on the upper part of the body, encrustation in places. The base carries four Nabataean characters in red, which were studied for George Horsfield and his wife by the Rev. Pere M-R. Savignac. His reading was TLT, which means "TLT" or the third (Horsfield and Conway 1942: 122). Hammond also accepted the TLT and quotes, but with a question mark. Albright's suggestion was that these characters are an abbreviation of "thrice blessed" (Hammond 1957: 12 – 13). Negev (1984: 115 – 120) read these Nabataean characters differently on his lamp No. 89a, from the potter's workshop at Oboda, as ALT, which is the name of a major Nabataean goddess, "Allat". However, the correct reading appears to be neither TLT nor ALT but RAYT (Khairy 1984: 115 – 119), since the inscribed word consists of four characters and not three, which means "I saw" or "I have seen". I believe that there is a direct and logical relationship between the functional purpose of the lamp itself — as a means lighting up the darkness of the wilderness, tombs, dwellings and caves — and the meaning of the word. Such lamps are common at Nabataean sites, especially Petra, but seem not to occur elsewhere.

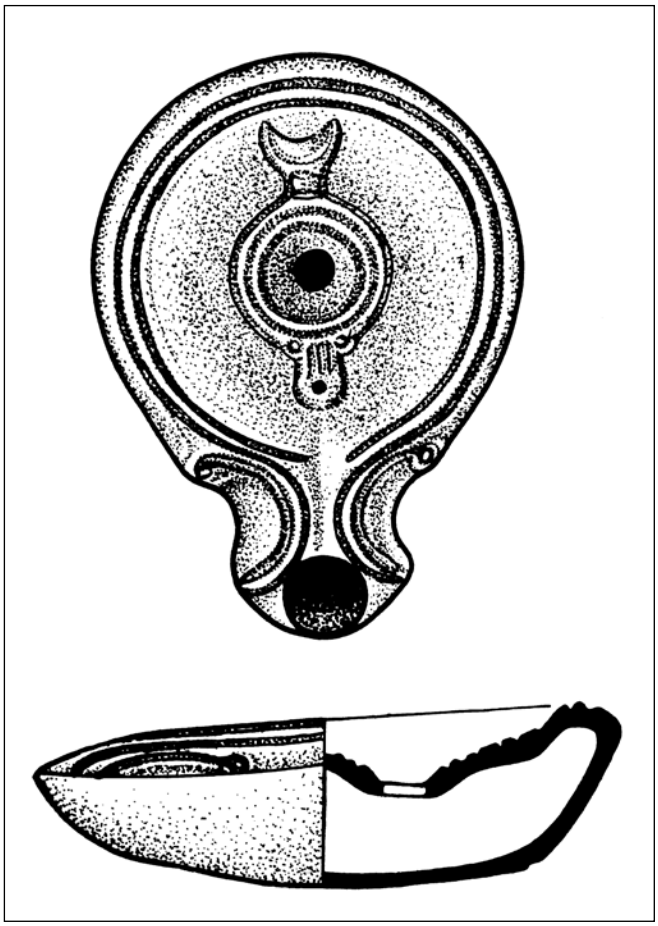
Intact Lamp with Decorated Sunken Discus (FIGS. 16, 21:2)

Length	9.3cm.
Width	6.3cm.
Height	2.7cm.

Three incised concentric circles separating a narrow shoulder from sunken discus, flattened base, nozzle surrounded by two volutes, a bird — probably a dove — looking right with open wings. Filling-hole of 1.2cm. diameter pierced above the bird's tail. Grey ware, well-levigated, no visible porosity, black slip on top of the lamp falling in streaks on to the lower half. Right side of upper



16. Intact lamp with decorated sunken discus.



17. Intact lamp decorated with the shape of lamp with crescentic handle.

part of lower half of lamp incised with the Nabataean characters "SLM QWAK", which probably means "God give you strength / power". The bird, which appears on the sunken discus of this lamp may represent an escaping soul (Fletcher 1961: 217); additionally the fish and dove were sacred to Atargatis. One version of the myth informs us that Atargatis fell into a pool and was saved by a fish; according to another version Atargatis turned into a fish and her daughter Semiramis into a dove (Diod. Sic. 2.4 2 – 6; 2. 20. 1 – 2).

It is obvious that the above-mentioned lamp should be added to the corpus of Nabataean lamps, since it carries inscribed Nabataean characters.

Intact Lamp Decorated with the Shape of a Lamp with Crescentic Handle (FIG. 17, 22:3)

Length	9.8cm.
Width	7.1cm.
Height	2.8cm.

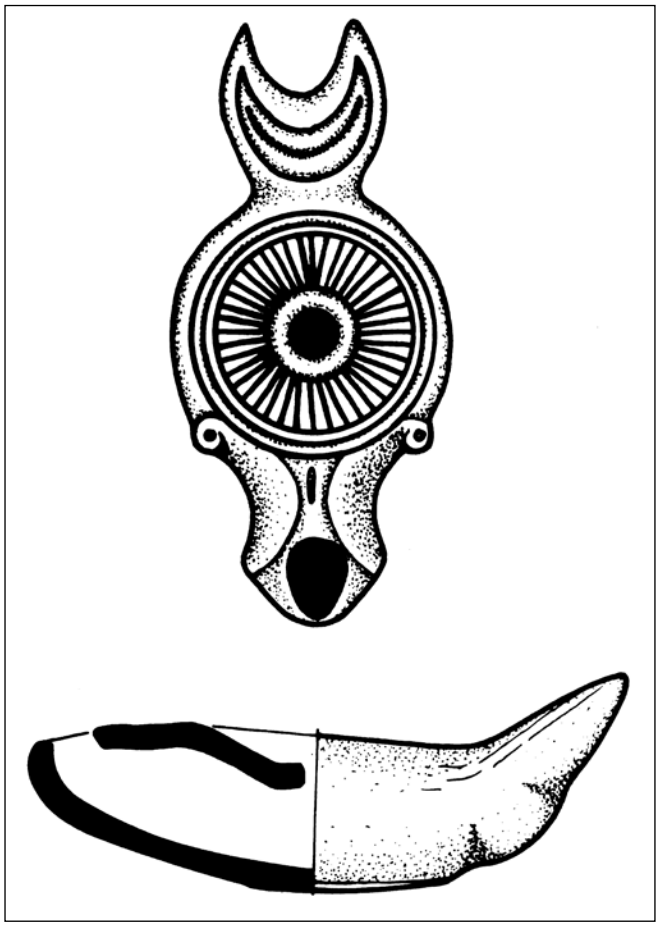
Rounded body with two volutes separating nozzle from body, two incised concentric grooves surrounded sunken discus, which is decorated in low relief with the shape of a lamp with crescentic handle, flattened base marked with circular incision. Buff-red ware, evenly fired, well levigated, traces of creamy slip on the exterior surface.

For parallels see Loeschcke (1919: 399, Pl. XVII. 461 "Roman") and Deneauve (1969:116, Pl. XXXIX. 338 "early first century AD"). The ware and shape suggest that this lamp was made in Petra.

Intact Lamp with Crescentic Handle (FIGS. 18, 22:4)

Length	10.0cm.
Width	4.6cm.
Height	2.5cm.

Rounded body with two volutes around nozzle, three incised concentric circles on tiny shoulder with sunken discus, decorated with tight incised strokes representing the sun's rays, flat base surrounded by incised circle, finger-impression on center of base, creamy ware, well levigated, evenly



18. Intact lamp with crescentic handle.

fired, pinkish slip on exterior surface.

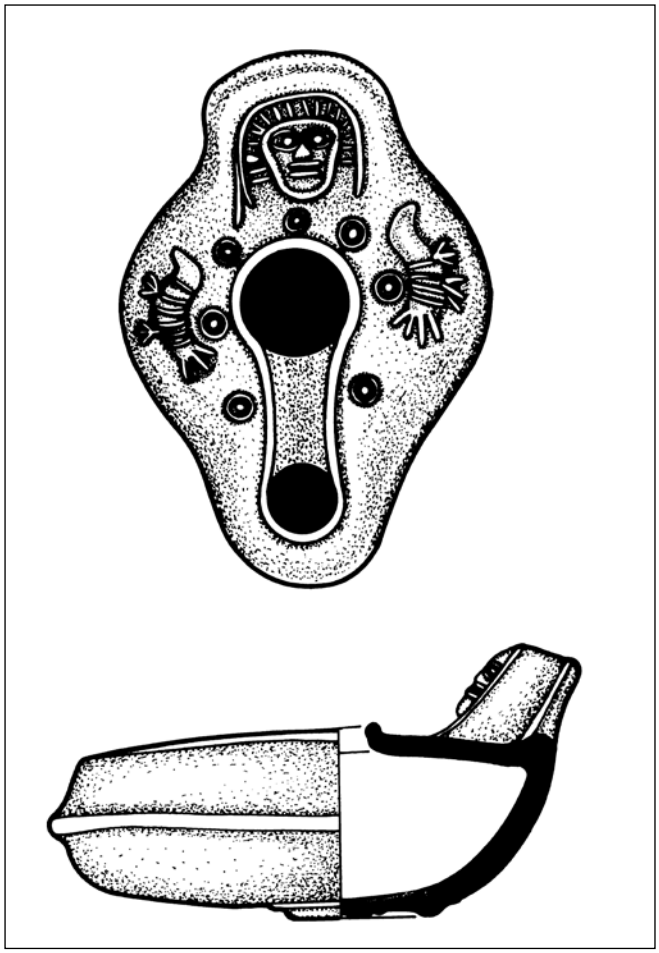
This lamp is frequently mentioned in the literature and is comparable with examples published by Walters (1914: 127 – 128, Pl. XXXVI. 837 – 850, but each of the latter examples has two nozzles), Loeschcke (1919: 224, fig. 4. 1 2 "first century AD"), Broneer (1930: 169, Pl. VII. 396 "Type XXI"), Waage (1934: 62, Pl. VIII, 1927, classified as "Roman Group I"), Robins (1939: 55 – 56, Pl. XII. 8), Iliffe (1945: 21, Pl. VII. 128), Goldman *et al.* (1950: 95, Pl. 102: 203, which is attributed to "Group XVI" and dated to the first century AD), Vessberg (1953: 117, Pl. 11.17 "first century AD"), Menzel (1969: 26 – 29, No. 88 "early Roman"), Vessberg and Westholm (1956: 123, fig. 38. 17 "Roman"), Deneauve (1969: 145 – 146, Pls. LVI. 544 – 545, LVII. 551 – 552, LX. 589 "first century AD"), Oziol (1977: 172 – 173, Nos. 521 – 523 "first century AD"), Rosenthal and Sivan (1978: 19 – 21, Nos. 42, 49 – 50, which are classified as "Roman Imperial Lamps") and Bailey (1980: 205, Pl. 28. Q 1002, Type D, Group II "The first half of the first century AD").

Although this lamp (FIG. 18) with crescentic handle was locally produced, it is of a type well-known inside and outside the Nabataean kingdom, especially during the first century AD. This date does not contradict the chronological attribution of this lamp, which was found during the 1981 Petra excavations and belongs to Phase II (40 – 70 AD).

Intact Lamp with Anthropomorphic Handle (FIGS. 19, 23:5):

Length	10.0 cm.
Width	6.8cm.
Height	3.8cm.

Oval body with broad nozzle and bent-up tongue handle in the form of a human head, probably a female with head-covering, her hands tied on both sides of the lamp's shoulder. Defined ridge around comparatively large filling-hole of 2.1cm. diameter extends on to nozzle, forming a trough connecting the filling-hole with wick-hole of 1.3cm. diameter. Shallow ring base, seven tiny circles in low relief



19. Intact lamp with Anthropomorphic handle.

around the main-hole, creamy-buff ware, fine grits included, body evenly fired, traces of dark buff slip noted in places.

This lamp was found at Petra and published by N. Glueck (1965: 148, Pl. 66. a – b). No published parallels can be cited for this lamp. Therefore, it could potentially be added to the list of purely Nabataean production.

Incomplete Lamp with Anthropomorphic Handle (FIG. 20, 23:6)

Length	10.0cm.
Width	6.6cm.
Height	2.7cm.

Flute-like shaped lamp, two defined rosettae on either side of a female head, each rose consisting of ten petals, curly hair, nicely arranged on forehead. The female head probably represents Atargatis. An olive wreath shown on each side of the discus refers to the fertility deities. Two pierced vents of 0.2cm. diameter and a filling-hole of 0.8cm. diameter on discus. Pinkish ware, evenly fired, darker pinkish slip on top of lamp. This lamp was found in Petra and is not paralleled elsewhere.

20. Incomplete lamp with Anthropomorphic handle.

21. Nabataean lamps.

Nabataean Terracotta Figurines

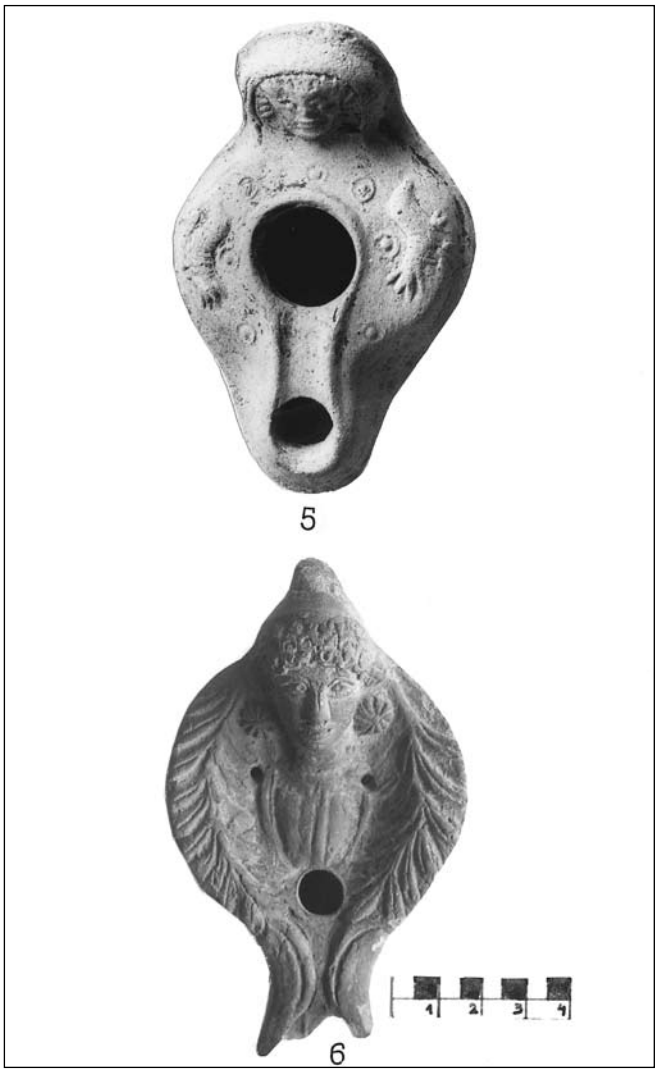
The majority of terracotta figurines found at Nabataean sites are in a fragmentary state. Four examples are described in this paper:

Upper Half of Female Figurine (FIGS. 24:1, 25:1)

Ex. Height	4.7cm.
Width	3.0cm.

Nude female figurine, most probably representing "Atargatis", the Nabataean goddess of fertility, right hand in gesture of benediction with fingers closed. The raised right hand with open palm symbolizes the bestowal of blessings, happiness, prosperity or success upon her worshippers. The wrist of the raised right arm wears a bracelet. The hair is arranged with plaits very similar to the Hathor wig, which reaches the shoulder. Facial features indicate that the goddess is young and physically attractive.

22. Nabataean Pottery lamps.



23. Nabataean Pottery lamps.

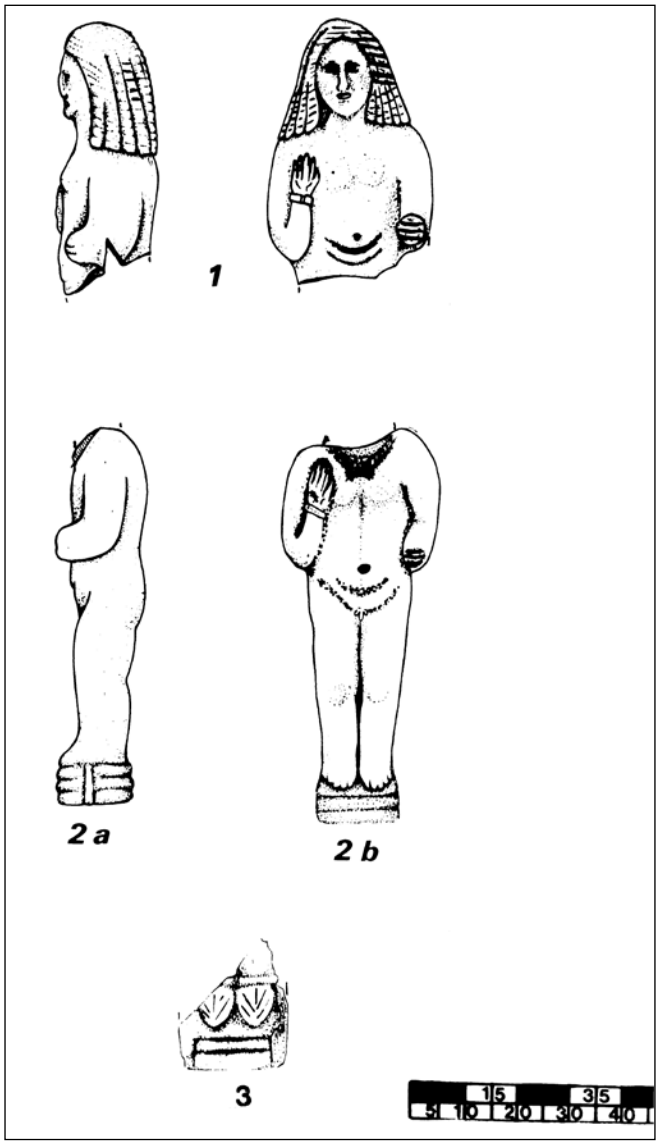
The ware is pinkish — red with a darker pinkish external slip, evenly fired and polished.

A very close parallel to the above-mentioned figurine is an example from Petra (Schmitt-Korte 1976: 43, Pl. 26, third object to the left). This example is seated on a pedestal and identified as "Nabataean". Glueck published similar figurines, which are also attributed to the Nabataeans (Glueck 1935: 64, Pl. 30 B: 12; 1965: 508, Pl. 81).

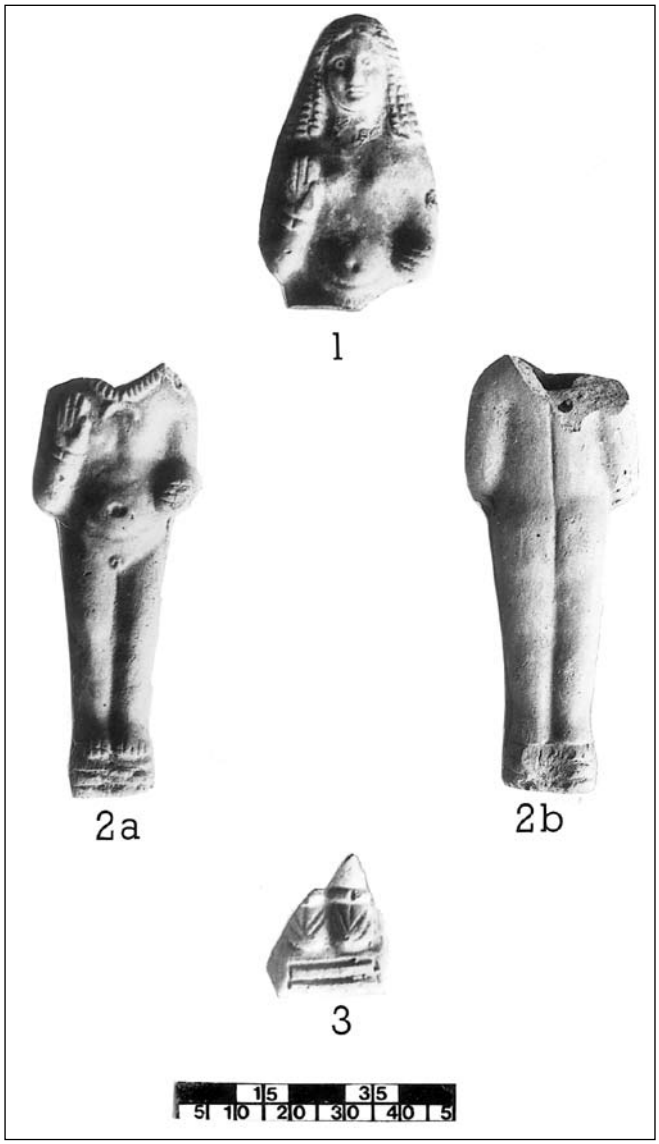
Headless Hermaphrodite Figurine (FIGS. 24:2a and b, 25:2a and b)

Ex. Height	7.7cm.
Approx. Width	3.2cm.

This figurine represents a hermaphrodite, neither totally male nor female. Head missing wears necklace of small beads with a crescentic shaped pendant in an inverted position, which probably has religious significance. The crescent appears as a cultic symbol in different forms in the ancient Near East. For a clear idea of the missing head's details and its facial features, one might refer to Figurine No. 1 (FIG. 24:1), while Figurine No. 3 (FIG. 24:3) may shed light on the details of the missing feet. The legs are close together. Parallel examples are typically barefooted and standing on a shallow plinth. Greek myth informs us that one of Aphrodite's children was Hermaphroditus, whose father was Hermes (Huyghe 1963: 68). The Greeks recognized in Atargatis a form of Aphrodite (Hammond and Scullard 1979: 136). I therefore assume this figurine, with its hermaphroditic features, represents the counterpart of Hermaphroditus, son of the Nabataean goddess of fertility Atargatis. The ware is creamy-red, well levigated, evenly fired, with some traces of traces of an external pinkish slip.



24. Nabataean Terracotta Figurines.



25. Nabataean Terracotta Figurines.

There are fairly close parallels from Petra (Horsfield and Conway 1942: 198 – 199, Pl. XLVII. 445; Schmitt-Korte 1976: 43, Pl. 26, the second object on the left).

Fragment of Two Feet on a Plinth (FIGS. 24:3, 25:3)

Ex. Height 2.1cm.
Width 2.0cm.

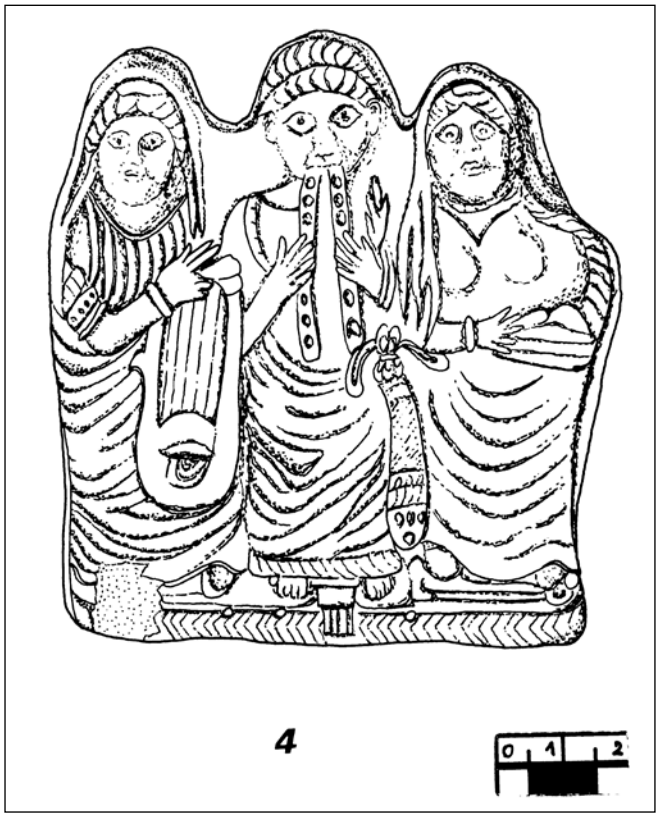
Legs broken off, feet together, standing on a plinth, wearing anklets and pointed slippers decorated with upper folds. Light pinkish ware, evenly fired, traces of pinkish slip in places.

This fragment is comparable to an example from Petra (Glueck 1965: 508, Pl. 81).

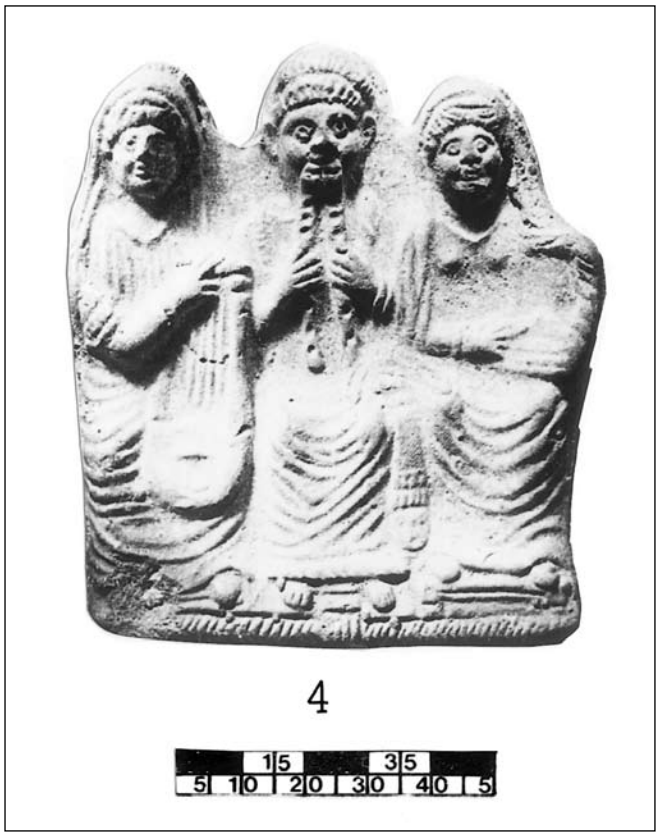
Figurine of "The Three Nabataean Musicians" (FIGS. 26, 27)

Height of the middle figure 9.2cm.
Height of the surrounding figures 8.6cm.
Width across shoulders 8.6cm.
Base dimensions (approximate) 7.9 x 2.4cm.

Three seated musicians; a man in the middle plays a double flute, each punctured with eight holes. He is flanked on either side by female musicians who appear younger in age and slightly smaller in size than the middle male figure. The woman on his right plays a musical instrument similar to a harp with rounded ends; the lower side is slightly heavier than the top, and its upper two-thirds are furnished with five strings. She holds the harp on



26. Three Nabataean Musicians.



27. Three Nabataean Musicians.

her left side and is plucking at the upper part of the strings with her right hand. The male figure is blowing the double flute and using all his fingers to achieve the desired notes. The female on his left side appears to be beating a drum-like instrument under her right shoulder. The hair of the middle male figure is arranged in double bands around the forehead, each band consists of many tight vertical plaits. The back of his head wears some sort of head-covering. The hair style of the females is almost the same; divided from the middle into two equal halves. Both female heads wear a heavy oriental covering. Each of the three figures wears a chiton and mantle. Each chiton has a v-like collar, with tight vertical folds on the upper part and wavy horizontal folds on the lower part. The male's chiton ends in a tassel-like pattern. Each female wears a bracelet on her right wrist. The male is barefoot, while the females are wearing leather-like shoes. The feet of the three figures rest on a plinth, which is decorated with a chevron-like pattern. A small branch or, more probably, an ear of grain is in the left hand of the male figure; this symbolizes fertility and is associated with worship of Atargatis. What appears to be a woolen sheath or pouch for the double flute hangs from the left side of the male figure and is tied at his waist with an elaborate knot; it is decorated with two bands of tassels.

This figurine was made in two halves, poorly joined together as the back was slightly split before firing. The rough joins are still visible in places. The figurine base is slightly warped, so the object is consequently somewhat unstable. This figurine is made of red - pinkish ware, with light grey core and medium size white limestone grits included. The exterior surface is dark pinkish except for a small creamy patch of discoloration.

This figurine sheds new light on a hitherto unknown aspect of Nabataean culture and social life. For the first time, we have a clear idea about Nabataean enjoyment of music. Three different musical instruments (harp, double flute and drum) are used simultaneously. Such musical instruments are still used today in most countries of the Middle East, especially in Palestine and Jordan. One can also infer that Nabataean men and women played together in the same muscial groups, participated in the same social events and worked together as a single team, which indirectly reflects the existence of an open and developed Nabataean community, especially at the beginning of the Christian era and into the first

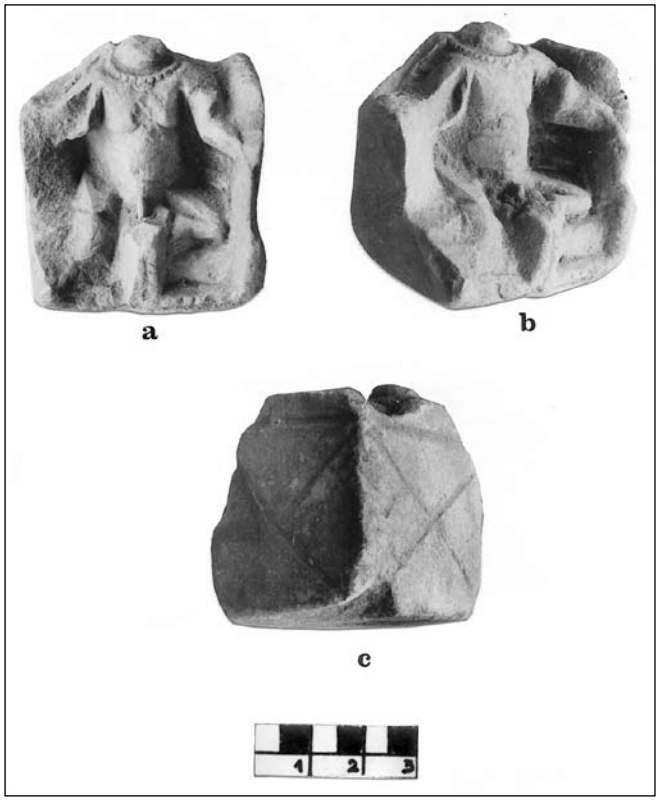
two centuries AD.

Harding (1958: 15) states in his note on "Recent Discoveries in Jordan" for the years 1955 – 1956 that Diana Kirkbride found a well-preserved tomb which yielded pottery objects including a figurine of the same description as this figurine. As the Jordanian Archaeological Museum records do not give us any information about this object, other than that it came from Petra, I believe that this figurine is the one found by Diana Kirkbride during her 1955 – 1956 excavations at Petra.

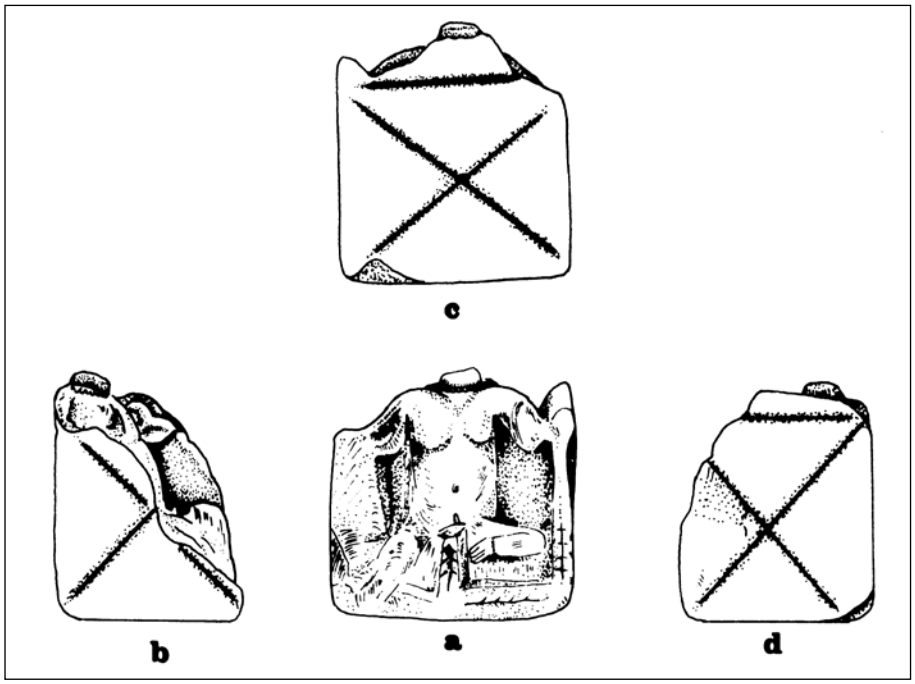
The God "Bes" from Petra (FIGS. 28a-d, 29a-c)

Height	4.1cm.
Width	4.0cm.
Thickness at base	3.3cm.

A limestone cube representing a nude seated male with missing head. The lower part of the neck is visible and wears a necklace of thirty two raised dots representing beads. A pendant hangs at the front of the necklace. The right hand is missing, while the left one rests on the left side of the seat. The body is plain and does not show any physical features, except for the navel and phallus, which is shown between two frog-like legs. The seat is cube-like and furnished with a couch beneath the seated figure. With the exception of the chair's base, each of the three external flattened sides of the chair is decorated with two incised lines crossing each other diagonally. The stone is a soft yellowish limestone with grayish deposits of calcite encrustation in places. There are also faint traces of red paint on external surfaces. This object represents the Egyptian god Bes seated on a high-backed chair or throne. Hammond has published a differ-



29. God "Bes" from Petra.



28. God "Bes" from Petra.

ent example of the god Bes, which was purchased at Petra. The latter object was made of pottery and shows Bes with a large head and pronounced phallus (Hammond 1973: 37, photo No. 155 on page 49). Murray and Ellis 1940: 15, Pl. XIV. 15) illustrate a piece of decorated pottery from Petra which is identified as "possibly head of a figure of Bes". Furthermore, three cube-like stone incense altars were found at Petra and published by G. Horsfield and A. Conway (1942: 165, Pl. XXXII. 277 – 279).

Bes played an important role in Egypt, especially from the New Kingdom period until around the Christian era (Baines and Malek 1980: 214). He is usually depicted as a dwarf, typically with a large head and stylized legs. It was believed that every Egyptian family had to be protected by placing his figure or idol on a pillar, stele or in a niche to avoid harm or danger from, for example, harmful spirits, snake bite or scorpion stings. He is often associated with child birth and was also regarded as the god of marriage (Viaud 1978: 39). The frequency of this figure at and around Petra indicates that the Egyptian god Bes probably played a similar role among the Nabataeans, and this practice survived in neighboring countries until as late as the first half of the first century AD.

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Feasting at Tall al-'Umayrī in the Late Second Millennium BC

Animal bones from Early Bronze and Late Bronze/ Iron I Age deposits at Tall al-'Umayrī number over 50,000 and constitute an exceptional collection to assess the social dynamics responsible for animal husbandry, animal exploitation, pastoral products, trade, paleo-environment, and paleo-diet (Peters, Pollath and von den Driesch 2002). Ḥisbān faunal remains, from about 1200 BC – AD 1450, studied by von den Driesch and Boessneck (1995) provide a comparative collection. Results of the sex, age, and mortality rate of animals from the LB/Iron Age pit can inform on the social circumstances that led to the slaughter of so many sheep/goat and cattle over a relatively short period of time.

Tall al-'Umayrī

South of the 'Ammān, the small mound of Tall al-'Umayrī (1.5 hectares) stands at 900m above sea level casting a low shadow on the rolling foothills. Yet, it is a site of excesses. There is an embarrassment of richness in glyptic, ceramic, storage, architectural, cultic and faunal remains (Franken and Abu-Jaber [1979] 1989: 418-9) surveyed the site and found seals and figurines in addition to sherds. During the 1984 initial fieldwork of the Madaba Plains Project, a seal of Ammonite script comes from topsoil (Geraty *et al*. 1987: 196).

Excavations in alternate years by the Madaba Plains Project (Geraty *et al*. 1989; Herr *et al*. 1991, 1997, 2000, 2002) produced over 30 seals and impressions spanning the Bronze, Iron and Persian periods. They include reference to "Ammon" and personal names of prominent officials of the Persian Period (Eggler *et al*. 2002; Herr 2002a). Although these post-date the LB/Early Iron transitional era, together with the administrative building they portray remains of an Iron II provincial center for the region.

For the LB/Iron I period, seal impressions with an irregular grid pattern are plentiful and mimic those found in the western highlands (Tell Beit Mirsim, Mt. Ebal, el-Gib, Bethel) and Negev (Arad and Masos) and Jemmeh (Eggler *et al*. 2002: 246, 260). The spring at al-'Umayrī is the only natural water source between the towns of 'Ammān and Mādabā. It enticed settlers and visitors throughout the ages.

Ceramics: (Herr 2000a: 275) differentiates among the ceramics to delineate phases within the LB II, LB/Iron I and Iron I. The ceramics show strong morphological and functional similarities with assemblages in the highlands north of Jerusalem (Herr 1999: 74), although of local manufacture according to petrographic and INAA analysis (London, Plint and Smith 1991: 435). Herr (2000b: 176) compares highland site ceramic assemblages, on both sides of the Jordan Valley, and finds over 75% of the pots are utilitarian in nature. Specific shapes such as the "Manasseh bowl", defined by Zertal (1986-87: 147) and once thought to typify the western highlands sites, much as the collar rim store jar, are frequent at al-'Umayrī. Mineralogical and chemical analyses show that the jars and bowls excavated at al-'Umayrī are products made in the central plateau region of Jordan.

Ceramics at al-'Umayrī include a large collection of collar rim store jars not duplicated anyplace in Jordan or Israel. For an ordinary house to offer storage facilities comprising 50 or so large jars of any type is exceptional. The jars vary in fabric and precise manufacture (Clark and London 2000: 104-5), but their exact number remains to be determined given their potential use-life of minimally 100 years. The jars could have been produced and used for decades if not for a century. Replacement jars might stand inside broken jars. Nevertheless,

the storage capacity was beyond the normal needs of a family and perhaps even an extended family.

Architecture: In terms of structural design, the outer wall of buildings in Fields A and B belongs to a casemate wall encircling the site and stands over 2 meters high. Building B represents the immoderation typical of al-'Umayrī: it is the tallest, largest, and best-preserved four-room structure (FIG. 1). It housed the 50 plus collar rim store jars, the largest known storage capacity of the period. Adjacent are plausible sacred spaces or shrines with standing stones, baked and unbaked figurines of LB and LB/Iron I dates (Bramlett 2004). Building A consists of several rooms and shares a long east-west wall with Building B. In Room A2 a flagstone floor area with an oval piece of smoothed limestone rests in front of a standing stone of the same type of limestone, which differed from the norm. The excavators cautiously interpret this as a possible 'cultic corner' (Herr 2000a: 277) although no other undeniably cultic artifacts were found in front of the standing stone. The absence of such remains is mitigated by the complete lack of artifacts on the paved floor. Elsewhere in the building, Room A1 is a dirt-paved courtyard with a hearth, storage bin, bench, ground stone tools, collar rim jars, bones of birds, small mammals, of a horse with butcher marks (Clark 2000: 78). Cattle bones come from a possible extension of Building A (Clark 2002: 56). A large number of animal bones come from ca. 0.80m above the floor of Room AI where remains of a partially articulated mammal with butcher marks, portions of small mammal, bird bones are found along with a piece of metal slag and a lamp (Clark 2000: 78).

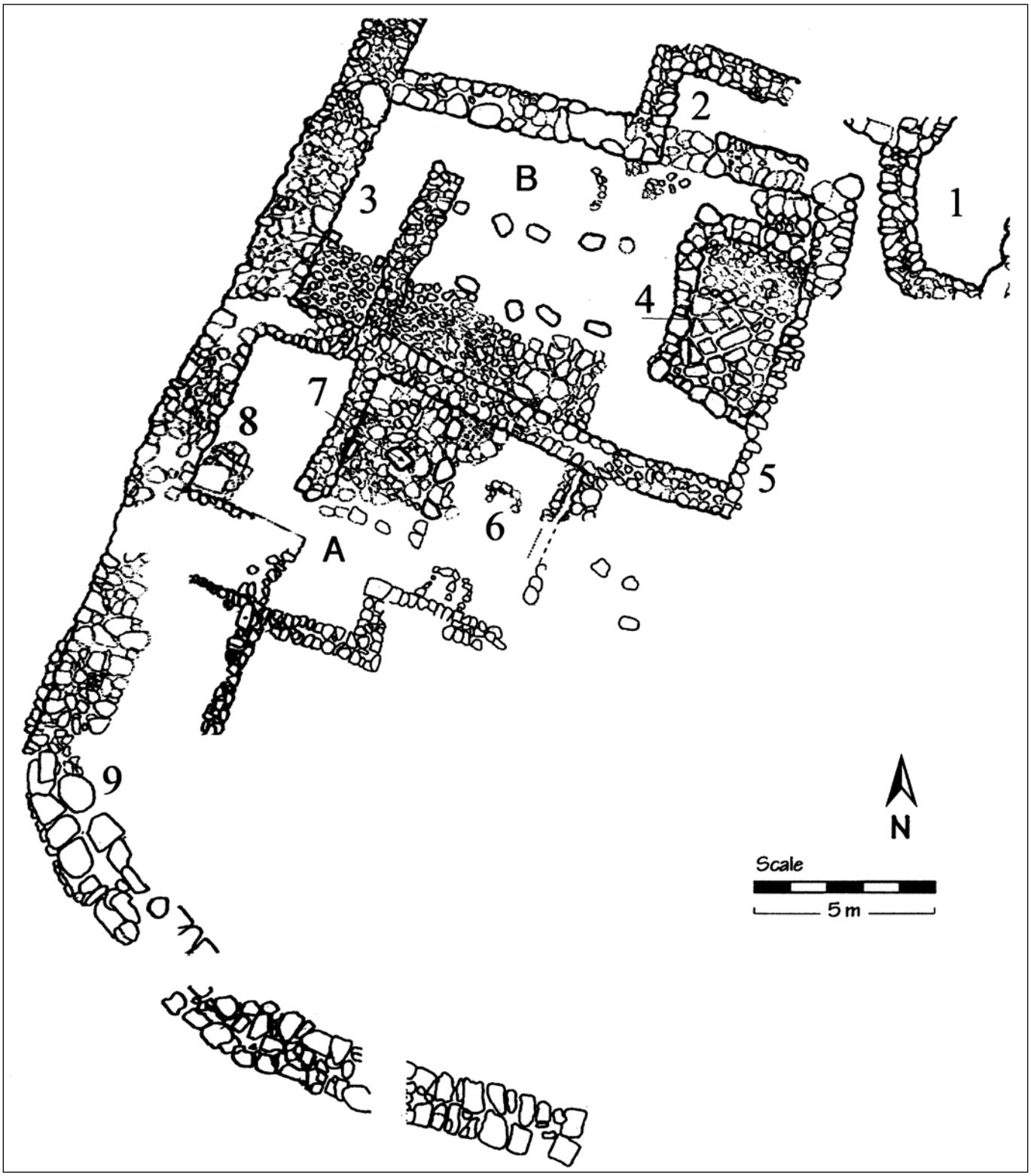
In Building B the floor again was clean above the two areas of flagstone paving. Room B1, a small paved rectangular (2.8m by 3.6m) area at the south end appears to be an anomaly for four-room structures at other sites and perhaps was an animal pen (Herr *et al*. 1996: 68 and Herr 2000a: 279). The excavators designate the entrance to Building B in the eastern part of the north wall where a substantial door and anteroom lead to the area of the refuse pit filled with animal bones to a depth of over 2 meters (Herr 2000a: 279).

Cultic Finds: Artifacts cultic in character include baked or unfired figurines of people and animals (Dabrowski 2000), moulds for the latter, standing stones and the proposed cultic corner. Although the finds range in date between the LB II through Iron II, they attest to use of the space for sacred activities over hundreds of years. Room B1, covered with flagstones, if not an animal pen could have been a butchering area for animals slaughtered as part of a ritual feast and celebration. No artifacts remain on the floor of B1, although uneaten cuts of meat were found in Building B.

Rather than ordinary "domestic dwellings" and storage facilities, collectively the LB/Iron Age finds suggest an official/community-wide ritual use of the space, while at other hill country sites, most of which are smaller than al-'Umayrī, the four-room structures might serve the needs of an extended family or clan social structure (Herr 2000a: 277, 281), not at al-'Umayrī. Nor are these the later 'classical four-room houses' Faust and Bunimovitz (2003) describe. The evidence for use of the site and structures by a broader community includes the excessive number of jars that create a vast storage facility which stands adjacent to sacred spaces and a deep refuse pit directly outside the door and anteroom. The large deposit (5m long by 2m wide) contains homogeneous material, as if deposited over a relatively short period of time. Minimal exposure to the elements or scavenging characterizes the remains in contrast to the appearance of EB bones (Peters *et al*. 2002: 305). The paleozoologists conclude that the deposit contains remnants of kitchen and cooking activities. The quantity of animals suggests that this was not the remains of ordinary family meals.

Differences among highland sites: Beyond similarities in the ceramics, seals, and basic architectural features of the four-room structures, there are important distinctions between al-'Umayrī and the other hill country sites. Exotic imports, infrequent or absent from many other sites, include Mycenaean sherds, alabaster, and Nile perch at al-'Umayrī. The fish came dried or smoked to the site (Peters *et al*. 2002: 329). Only al-'Umayrī boasts a major wall and moat system in sharp contrast to the other sites which also tend to be smaller in size. At Giloh is a unique solid rectangular tower as is a possible defense wall enclosing dwellings and animal holding pens (Mazar 1990b: 92). The outer wall appears to have been the work of different groups of people working in slightly different techniques (Mazar 1982b: 168). The construction could involve different groups working roughly at the same time, or seasonal work carried out by different people.

The diversity of late second millennium artifacts at the al-'Umayrī four room structures imply a site



1. Buildings A and B at Tall al-'Umayrī: (1) deep pit containing over 25,000 animal bones deposited in the LB/Iron 1 era; (2) ante-chamber and possible entrance to Building B; (3) inner and outer casemate walls create a room, partially paved with cobbles, and containing over 50 collar rim storage jars; (4) paved area of an animal pen; (5) southern entrance to Building B; (6) area of beaten floor and food preparation implements; (7) possible cultic installation with an altar (at arrow point) resting in front of a tall standing stone in the wall: altar and standing stone are made of the same type of stone which differs from the walls; (8) room in building A and inner casemate wall; and (9) outer casemate wall.

function that extended beyond an individual residence unless the family exercised considerable political, economic, and social powerful. In contrast the limited categories and quantities of artifacts in the hundreds of west highland sites restricts their activities to food production: cultivating, harvesting, processing, cooking, preparing, preserving to storing. Animal bones, when present, are sparse, yet herding pens and grazing were available. At Giloh, cookware and store jars of all sizes represent 80% of the ceramics although there is neither arable land nor water in the immediate vicinity (Mazar 1982b: 168-69). A good number of hard limestone saddle querns and flint or limestone pestles at Giloh were used as hammers or grinders, perhaps for processing acorns from forest trees (Mazar 1990b: 89). Other sites, such as Mt. Ebal have similar stone tool equipment in a region where an oak and terebinth forest stretch over the hills. The densely forested slopes in some areas constitute an impediment to settlement and agriculture (Aharoni 1978: 158).

Faunal remains: Outside Building B, a garbage pit containing some 20,000 animal bones informs on the events that led to their deposition. An analysis of 5989 animal bones, of which 73% were identified to species and/or genus level, finds that the majority belongs to domesticated sheep/goat (Peters *et al*. 2002: 306). Ethnoarchaeological research can account for three circumstances resulting in large animal bone deposits: sacrificial, hunting or feasting rituals. In the absence of burning from intense heat due to roasting the bones, the remains did not constitute a sacrificial offering. Few were wild animals (> 1%) and the absence of complete, articulated wild animals eliminates a possible hunting ritual offering to assure future success. Animals associated with such rituals should be perfect specimens in order to obtain ideal specimens again (Brown 2005: 142). The third situation resulting in an accumulation of animal bones is feasting and evidence derives from multiple sources, including butchering and cut marks found on broken bones.

Both from the pit and from inside Building B further proof that the meat was eaten or intended for a meal is the division of animals into conveniently sized portions for distribution and cooking. Two shanks of butchered large mammals remain uneaten in the building (Herr 2000b: 174). Fragmentation of bones at both ends indicates that people could extract and eat marrow from the long bones, which were stewed or boiled rather than roasted (Peters *et al*. 2002: 306). Crushed and cracked bones are atypical of animals offered as hunting ritual. All sheep/goat and cattle body parts, large and small, are present and indicate that their slaughter took place near the pit not too far from the point of consumption. Nothing was lost. One of the only distinctions in bone type is the slightly higher representation of hind limbs over forelimbs for sheep/goat (33% vs. 20% and cattle, 28.4% vs. 18%). Hind limbs contain more marrow leading greater shattering than forelimbs (Peters *et. al*. 2002: 16) and again point to slaughter for meat consumption. Among the Druze of the Golan Heights, distribution of animal bones depends of food preparation techniques: bones bearing the most meat, including the fragmented hind limbs, are processed in a courtyard or backyard where food is prepared rather than eaten (Grantham 2000: 13). In south Jordan, two hearths at a site coincide with a meal involving meat. Ordinarily there would be one hearth unless a *mansaf* took place (Banning and Kohler-Rollefson 1986: 164).

Animals age and sex statistics imply differences in the use of animals for the EB and LB/Iron deposits according to the paleozoologists. In the latter deposit, cattle were raised primarily for beef production and no longer for tilling fields as in the EB. Cattle bones in the pit belong to young calves and juveniles, who would reach their maximum meat weight between 1 ½ - 2 ½ years. The few mature cows apparently were kept for milk. Calves may have been slaughtered to make cow milk available for human consumption and to give more pasture space to the economically more valuable sheep (Peters *et al*. 2002: 316-7, 327).

According to Peters *et al*. (2002: 317-25) among the sheep/goat, which account for 85% of the LB/Iron I domestic stock, 45% were slaughtered during their second year at their peak body weight. Male rather than female goats were killed as kids or juveniles. Of the mandibles, 35.5% belong to adults, (2 to over 4 years) who would provide the best and most wool. Sheep/goat increase at the expense of cattle, implying that wool manufacture intensified in importance during the LB/Iron I times. Sheep outnumber goats in a pattern preserved regionally throughout the Iron Age until the Byzantine period. Goats rose in prominence at Ḥisbān during the Ayyubid-Mamluk period, suggesting a deterioration of the landscape with a decline in available food for sheep, but not for the less particular goat.

Goats manage to find food in a sedentary setting, tolerate bitter foods better than sheep and under transhumant conditions give more milk than sheep (Swidler 1999: 25).

Sheep size was stable throughout the EB, but late second millennium sheep are bigger and significantly taller when compared with MB and LB remains from other sites. Both the sheep and goat breeds probably differ from their EB counterparts. Adult female goats outnumber male goats 1:6 and were maintained primarily for milk production. The dearth of horse, donkey and mule bones result from their demise outside the site. There is a single camel rib bone; it has cut marks (Peter *et al*. 2002: 311, 320-326).

Al-'Umayrī catchment site sustainability - The paleozoologists express their reservations about how the immediate al-'Umayrī catchment area might have sustained year-round pasture for the sheep, especially given their large size. In the late second millennium, the presence of certain wild animals suggests that the area supported a more diverse animal population. Younker (1989) describes the current temperature and rainfall as capable of supporting denser vegetation that the current dwarf shrubberies. In a study of the plant ecology of the nearby Ḥisbān region, Lacelle (1986) reaches the same conclusion. A greater array of floral and faunal specimens is likely given that the current precipitation range of 300-500mm annually, suffices for the National Forrest planted on a hilltop opposite al-'Umayrī can thrive (Geraty *et al*. 1987: 7). *Terra rosa* soils are found in the wadi bottom and cultivated fields, but originated from the adjacent slopes where the parent rock can be found. Younker (1989: 36) assumes that the soil developed under a dense forest, but once people and grazing animals removed this original vegetation, the soil washed down to the lower, flatter spaces.

The paleozoologists conclude that in order to maintain a constant herd size it was obligatory to herd the animals seasonally perhaps at a great distance from al-'Umayrī and find food. Furthermore, sheep/goat "herding must have been integrated into a regional pattern of land use…. This is, however, difficult to prove on the basis of animal bones" (Peters *et al*. 2002: 322). The LB/Iron I Age larger and taller sheep/goat population were particularly suited to trek long distances between food sources and might have been selected for their ability to travel independent of their ability to produce more and better fleece (Peters *et al*. 2002: 322). Although the bones provide no clue regarding where the herds grazed, there is other archaeological material culture to support this idea as presented below along with an assessment of three questions concerning the faunal remains: 1) why are so many bones found in close proximity to a building and what are the implications for site use and function?

Scheduled Seasonal Use of a Versatile, Multifaceted Landscape

The interior land formations on both sides of the Jordan River present enormous geographic and topographic diversity. Microenvironments abound. Precipitation patterns, temperatures, bedrock, water sources and soils vary considerably east to west and north to south. Most rain or snow falls between November – April, although sensational anomalies and flash flooding can occur in early Spring or Fall. In the Judean Hills (1000m above sea level) receive 600-700mm annual precipitation while in the Jordan Valley, the lowest terrestrial land on earth, dipping down to -390m below sea level, rainfall ranges between 50 – 100mm annually. The Judean Foothills receive 400-500m precipitation each year in a transition zone ranging 100-400m from west to east (Orni and Efrat 1966:53, 85 and 95). The northern highlands of Gilead in Jordan are comparable ecologically to the Judean Hills, but receive less rainfall, 550mm (Palmer 1998b: 2).

Salinity and overgrazing are constant threats as is water shortage. Topographic and environmental differences offer seasonal opportunities for those willing or required to utilize them to their advantage. In the more fertile plains and river sediments, dry farming succeeds, but elsewhere agriculture is risky, unpredictable, but always a possibility. In the Negev, two in every four years brings drought (Abu-Rabia 2002: 206). To the north, in the region of 'Ajlūn, the wheat harvest fails once every five years (Palmer 1998b: 2). Successful utilization requires appropriate patterns of land use geared to the specific area, yet flexible enough to accommodate annual or seasonal fluctuations. Vegetation available for sheep/goat herds blooms at different times in the disparate regions and can support herds moving slowly from one area to another periodically. Semi-arid areas blossom after a single rainfall and can result in a field of grain (Hobbs 1992: 45). Regardless of the drought years, Negev Bedouin consider crop cultivation economically useful and rely

heavily on the dew accumulation rather than rainfall (Abu-Rabia 2002: 206). Dew is an important factor throughout the region and collects in large quantities practically every night near al-'Umayrī (Cole 1989: 41). In the Judean Hills, dew falls 100-180 nights (Orni and Efrat 1966: 121).

Herding animals - People who travel with their herds, as pastoral nomads, are considered successful in their adjustment to an ecologically difficult environment (Moghadam 1988: 391). The idea of moving with the herds as the seasons change maximizes the available geographic diversity of the interior regions bordering the Jordan Valley. Bedouin tend to raise more animals than the land seems capable of supporting because they live with the notion that someplace soon there is fodder for the herds (Hobbs 1992: 37). Semi-pastoralists can navigate their territory to accommodate the needs of herds and crops, both cultivated and more ephemeral farming that takes place wherever water puddles and seeds burst into life after a brief, but infrequent rainfall. Bedouin roam within the Negev ecosystem exploiting the abundant wild plants and occasional ephemeral barley harvest (Abu-Rabia 2002: 208). Spring grazing blooms in the wadi bottoms where flashfloods coax seeds to germinate.

Food for herds is a constant challenge, but never more problematic than in the summer. The Negev Bedouin allocate and reserve certain areas for summer use exclusively. They punish anyone who uses the dedicated summer grazing patches too early in the season. Tribal law strives to prevent overgrazing and aims to replenish natural vegetation for fodder (Abu-Rabia 2002: 209). In antiquity, summer in the hill country north of Jerusalem and in northern Jordan meant access to the forests, wheat stubble and straw, and water. Herders living in tents or outside on rooftops, would help to harvest and process wild and cultivated crops. Until recently, herders sleep in caves and receive their family as weekend visitors (Abu-Rabia: 1994: 74).

Interdependence of animal and crop husbandry- Farmers in northwestern Jordan, who persist with traditional farming strategies and little machinery or fertilizer, consider many different factors, including their animals, in deciding what to plant and what to leave fallow. The decision influences crops of the following year, in the plains (500m above sea level) or in the hills as high as 1100m at the 'Ajlūn massif. Crops grow in the valley bottoms below terraced slopes and grazing takes place in the rough patches between the fields and forest clearings. The flatter plains are ideal for agriculture, but as elsewhere in the region, the soils lose fertility after long periods of use. Precipitation is unpredictable and often insufficient. One in every five years the wheat crop fails. Crop rotation to some extent depends on the presence or absence of livestock. Those farmers with sheep or goats tend to include a cycle of lentils as animal feed, which has the ability to stabilize nitrogen levels in the soil to improve the crop planted in the following year. Manure from the livestock likewise dramatically helps to revitalize soil (Palmer 1998b: 1-6). Fields left to fallow offer space for animals to graze while instantly fertilizing the soil.

In the past, laborers hired as herders would receive one of every three or four lambs in addition to cereal grains. Today's laborers prefer cash and have become too expensive for the farmers who simply chose to eliminate their livestock despite the concept of animals as wealth and necessary for religious feasting (Palmer 1998b: 4, 8). Legumes are suitable for sheep, goat and cattle, but animal fodder is a constant problem for the farmers. As in the Negev, only in the Spring does natural growth suffice. As a consequence, farmers grow plants specifically for fodder: wheat chaff and straw, barley, bitter vetch, lentil straw and white sorghum until recently. Bitter vetch, the "child of 40 days" is the last winter crop sown, but the first harvested, after just over a month. Legumes are less detrimental to the soil given their short growing period, but they require hand sowing, weeding and harvesting.

As a result of recent technological and social changes, some farmers who divested themselves of livestock nevertheless grow lentil straw to sell to nomadic pastoralists who visit in Spring and summer. Animals graze on the Spring vegetal growth plus the stubble following a harvest. Similarly in the Negev, Bedouin deliberately herd their animals to wadi beds in the morning to graze on green vegetation. In the evenings, the flock eats stubble in the field in order to prevent overgrazing (Abu-Rabia 2002: 208). Sheep and goat require constant herding to grazing and browsing areas and prevent them from intruding on crops. In contrast, cattle require less maintenance.

In terms of crops, following bitter vetch in March, barley harvesting in April/May coincides with the annual sheep shearing before the summer heat (Borowski 1998: 63). Miller (2001: 7) sug-

gests that in antiquity barley production increases through time as animal feed rather than for human consumption and would provide adequate stored fodder before fresh Spring vegetation accumulated in the wild. Barley was abundant at al-'Umayrī in both buildings (Herr 2000b: 173; Clark 2000: 78). The short growing period of bitter vetch means an early Spring harvest, before barley. After the harvest, the herds clean way all barley stubble.

From late April to the end of May, wheat follows the barley harvest. Next on the schedule is goat shearing which takes place once a year in May/June (Borowski 1998: 63). Goat hair provides for tents and sacks, goatskins for scrolls, clothes, liquid containers, and water rafts, many of the portable items useful on a migration. In contrast, sheep wool was made into clothes and textiles (Borowski 1998: 70). A water source is useful for washing the sheep prior to shearing. Washed fleece sells by weight, but unwashed fleece, heavy with dirt, goes by the piece. Goat hair is not pre-washed, but regardless of the operational details, shearing was a major endeavor that brings together large numbers of people to control, shear and process the animals, first the sheep and then the goats.

Migrant herders, whether or not they owned the animals, establish ties with sedentary people, perhaps, their own family members, on both sides of the Jordan River. The highly specialized activities of pastoral nomads require that they engage in sociopolitical and economic ties with sedentary populations (Moghadam 1988: 397). Each community needs the other to survive within the particular environmental niche they consider as their territory. The question arises concerning the identity of the people who traveled with the herds. Ethnographic studies from throughout the Middle East reveal that animal owners hire people to shepherd their flock (Aronson 1980: 177). Herd owners can be of the same or different families, clans or tribes as their hired herders. In northern Jordan, an entire village, especially those on the plains, would hire nomadic pastoralists to care for animals (Palmer 1998a: 160).

Given the overall health benefits of a vegetarian diet, Miller (2001: 7) explains why people bother to domesticate and raise livestock who require constant attention? For several reasons livestock is part of the ancient Near Eastern economy. Domestic animals offer the security of a mixed agricultural economy. Livestock can move to fresh habitats whereas there is no way to salvage a dead plant. Seeds survive one year. Areas adjacent to sites and suitable for farming can be in short supply, but land inferior for cultivation might to support an animal population. Finally, the plant-eating livestock consume plants inedible for people while producing food suitable for human consumption. Herds that migrate through agriculturally marginal territory allow people to make use of difficult microenvironments and semi-arid areas home to relatively few people.

Sinai Bedouin, who rely on wage labor, maintain their 'unproductive' economic alternatives, such as raising meager crops and herding animals, in order to keep their economic alternatives alive. In doing so, they foster the social relationships to maintain both horticulture and herding (Marx 1980: 111). Trade in medicinal grasses, plants and herbs, supplements wage labor, herding and gardening where feasible, but for the younger men, jobs in Egyptian towns keep them away from their families for long stretches of time (Marx 1980: 114). Certain Karak residents in the 19h century would live outside the town for part of the year, cultivating crops or herding animals based on ethnographic accounts described by van der Steen (2004: 109).

Feasting at al-'Umayrī

Feasting involves a larger group of people than normal who share a ritual of special food and beverage to achieve and inspire an attitude of loyalty, belonging to a group and leader (Wright 2004: 133). It is more formal than a normal meal and involves communal partaking of food/drink to celebrate important events (Weismantel 2003:142). Reasons to hold feasts include the beginning or end of an action or to tell stories or histories (Sherratt 2004: 308). Feasts maintain networks and social ties between people and groups of people while social transactions take place (Bray 2003: 1). Such events maintain critical social relationships that involve access to resources, labor and security. They can establish subsistence and defensive alliances.

Both positive and negative social situations are stimuli for a feast. Periods of food shortages or potential shortages are deemed times to feast. Greeks and Romans obsessed about food due to common food shortages (Garnsey 1999: XL) although ancient authors do not describe famine, but episodic malnutrition and hunger (Bray 2003: 2). Food crisis threaten political, economic and social stability

of society as a whole and as a result, conspicuous consumption becomes necessary in societies experiencing food uncertainties and an overall lack of plenty (Bray 2003: 3). Given the vagaries of precipitation from year to year in the semi-arid region of ancient Israel and Jordan, food shortages might have been an issue, if at best temporary. As a consequence social networks became ever more critical during periods of food shortages or uncertainties (Garnsey 1999: 41).

The region-wide political and economic upheavals of the late second millennium BC, the interior hill country cut by the Jordan Valley lost most Mediterranean coastal links as detected in the dearth of imported Mediterranean or Philistine pottery at highland sites. It became essential for basic survival to further develop inland ties. Inhabitants of the interior invariably included sedentary and non-sedentary elements. LaBianca (1990; LaBianca and Younker 1995) characterizes the periodic shift from urban-centric society to expansion of the non-sedentary element of the population throughout the history of the region. The ceramic and architectural similarities of late second millennium BC hill country sites on both sides of the Jordan Valley present evidence of links stronger than before. As diverse people came together at certain times of the year, they assured their mutual survival in a politically and socially evolving precarious situation. Unpredictable rainfall and storage possibilities led to the inevitable potential for shortages of food and feed. Feasting was an ideal mechanism and necessary to commemorate the successful seasons and to guarantee the future.

The animal bones from the al-'Umayrī pit offer evidence of feasting. Organic debris is abundant in the pit (Herr 2000a: 279). Bones resulting from feasting activity should be numerous, long bones broken at both ends, and display cut marks, all features of the refuse pit deposit. Hind limbs, with their greater meat source, out number fore limbs. Juveniles were killed in high numbers resulting in the availability of milk for human use and meat to eat. Animals killed towards the end of their immaturity have reached peak meat weight with minimal investment by the herder (Borowski 1998: 57). The latter not only avoids feeding young animals, but the mother is at maximum milk production, which will last for several months. The age distribution and nature of the bone fragments result from butchering animals for food. Finally, among the bones were cooking pot sherds found in greater frequency (35%) than elsewhere (20%) at the site (Peters *et al*. 2002: 327).

Steel (2004: 281) describes food as 'anthropogenic' because as it is culturally transformed from its raw state into an edible artifact, it informs on those involved in the various stages of production and use. At al-'Umayrī, the huge refuse pit in close proximity to buildings. Ashy deposits with Iron I sherds in Field C, outside the wall, suggest the remains of a garbage dump, but has no animal bones (Battenfield 1991: 85). Rather than dispose of all the bones immediately at a location away from the buildings, or feed them to animals, they were practically protected from dogs and pigs, possibly as an attempt to ensure the future of the herd by recycling or ritually planting the bones of eaten animals. The juxtaposition of the pit with likely cultic spaces in Buildings A and B could represent a sacrificial stage of the secular ritual.

Herd owners raise livestock, but consume little of their marketable resource according to ethnographic research (Hobbs 1989: 34). Borowski (2003: 67) describes the ancient diet as largely vegetarian. To slaughter an animal requires political ceremonial, ritual, or social events, often involving a large group of people, to benefit from the slaughtering (Hobbs 1992: 34). The large number of animal bones implies the presence of a sizable number of people to eat the meat. Otherwise it spoils. In south Jordan, Bedouin consume meat on special occasions only. Depending on the number of people, usually a male goat(s) is slaughtered. As many as can four fit into the pot. For a wedding, a female goat might be killed as well. The long bones are chopped to allow marrow to escape into the pot. Bones are tossed to dogs as the women take their turn after the men finish eating. Some bones are put at a distance from the tents where the dogs find them easily and devour or scatter them around the camp (Banning and Kohler-Rollefson 1986: 163-64).

Between the ages of 1 – 3 years is the optimal time to butcher animals due to the need to cull the flocks to accommodate the carrying capacity of the land and to benefit from the efforts already invested in feeding younger animals. Animals killed before age three are associated with a meat economy in which animals were slaughtered near where they were raised or brought to a site for consumption (Borowski 1998: 59). Young male animals consti-

tute a large part of the al-'Umayrī refuse deposit.

The onset of Spring, is an appropriate time to slaughter young animals to reduce the overall size of the herds prior to the dry summer months when available vegetation diminishes throughout the region. Borowski (1998: 214) associates the slaughter and resulting feast with the beginning of the *raḥīl*, the Springtime seasonal movement of herds to greener areas than the drier semi-arid zones. Greener patches sprout wherever Spring or Fall flash floods fill the dry wadi beds. Often the best places to take herds are known water sources where a sedentary population might reside. The confluence of vegetation for animals, grains grown in seasonal wet spots, potable water and sedentary population with their cultivated crops, result in an occasion to mark a successful recent or future sojourn. The slaughter and feast prior to the wandering period constitute a form of sympathetic magic instigated to provide good fortune during the migration. After the migration, another feast is in order. A Spring feast at al-'Umayrī, after a winter in the Jordan Valley, is in order given the large quantity of barley harvested in April/May.

Any large assemblage of people, before or after the seasonal migrations is time for a feast, including animal meat. In the al-'Umayrī refuse pit hunted animals form less than one percent of the bones. There is hardly any evidence of hunting to gather meat for the feast. Hunted meat was consumed on the seasonal migration route when the opportunity arose. A lone phalanx represents the remains of a lion (Peters *et al*. 2002: 311). In contrast, the region is considered rich in domesticated animal resources and has been exploited for millennia by Egypt and Assyria. Wall reliefs and texts enumerate recurring transfers of livestock to the political rulers without depleting the local flocks (Borowski 1998: 68-9, 79). The native vegetation, although sparse at times, allows livestock to flourish. Among nomadic or semi-pastoralists, a season and a stretch of territory (Hobbs 1992: 84) can be identical.

Who Participated in the Seasonal Migrations Culminating in Feasting Rituals and Who Crossed Jordan Seasonally?

Hapiru and Shasu - From towns and cities in Egypt and Cana'an the Tel el Amarna letters and Execration Texts blame roving mercenaries, soldiers, outlaws, and robbers, named the 'Hapiru' for their problems. The deliberate use of these terms would likely scare anyone into submission or action. The Hapiru were an easy target to accuse, but van der Steen (2004: 18) notes that the same people are elsewhere listed as messengers, entertainers, jewelers, scribes, workers, soldiers, and servants in the Palace, temple or private homes. Moran (1987) considers the term generic for the enemies of Egypt. Those enemies changed throughout the years.

Shasu, another term denoting enemies of Egypt, were mercenaries, rebels, highway robbers, etc., and refers to non-sedentary people, not unlike Bedouin, from the negative perspective of sedentary peoples (van der Steen 2004: 20). In turn, the sentiment is reciprocated thousands of years later by the Khushmaan desert dwellers inhabiting the region between the Nile Valley and the Gulf of Suez. They refer to Egyptian sedentary people as "peasants" and "strangers" (Hobbs 1992: 24).

Regardless of how texts derived from an urban-centric society describe people who lived outside the settlements, the identities, subsistence, livelihood, actions and activities of these people changed through time. In addition non-sedentary peoples as others, have multi-identities. They were part of a family and the larger groups to which it claimed loyalty. Outsiders would call the group by yet another name. For example, the Egyptian government issues cards to the Khushmaan Bedouin permitting them to buy foodstuffs at government controlled rates. The cards list the Khushmaan's occupation as 'farmer' although none of the tribe would agree with that designation (Hobbs 1992: 24). For the Judean and Samarian sites, Dever (2001: 118-9) divides the region and suggests the term "Proto-Israelite" for the 12th-11th century "village culture" given that the area later became Israel and assigns the sites in Jordan to the Shasu-bedouin. Alternatively is a perspective that considers the hill country on both sides of the Jordan River as a viable and necessary unit of study (Parr 1982: 127; Herr 1999; Younker 1999: 204; and van der Steen 2004).

Predominantly young and male - If one abandons the negative perception of those named in the texts, the activities of the Hapiru and Shasu call for a largely youthful and male population. Occupations listed above, such as soldiers, mercenaries, servants, and wage laborers imply a fairly young group of men, although there undoubtedly were exceptions. Young men, capable of soldiering, raiding, etc. could have garnered their strength and youth to engage in seasonal tasks wherever needed, for crop

cultivation and harvesting, or animal herding and shearing. They could toil as laborers in fields and/or travel with animals not their own while existing on the edge of urban and rural society, at times sympathetic to one or another community or political entity. One might not know on whose' side they stood. Groups might join forces at one point for a specific purpose and once achieved, disband immediately (Moghadam 1988: 397, 405). They might become involved in raids to plunder towns or to grasp grazing lands for their flocks. As migrant herders, they observed information of use to absentee rulers who could buy their services. They provided the type of information only natives could acquire thanks to their intimate familiarity with the terrain. Conversely, they could forewarn locals of impending military actions.

They constitute a necessary evil in a physical environment known for uncertainty and a political system in upheaval. They moved from north to south and east to west seasonally to exploit the highly varied geography in order to benefit from the scheduled use of resources. Their power lay in their youth and the information they might provide to the highest bidder. An easy target for all sides to blame them for any mischievous and unlawful act. They could accommodate the needs of different masters, at different times. Perhaps some were innocent apprentices learning a trade. Bedouin hire apprentices as herders (Abu-Rabia 1994: 47) who travel with the flocks, but stay in contact with their families and with those who own the flock.

Ethnographic and ethnoarchaeological studies of Bedouins, semi-pastoralists, and nomads, inform on issues relevant for understanding interaction between sedentary and non-sedentary population (e.g. Swidler 1999: 23-4 and refs. in Hopkins 1993: 205). Herders can have strong family ties to the people resident all year in towns. The Khushmaan of the eastern desert of Egypt, work as guards, road builders, salt miners, wage laborers and collect herbs and wild fruits to sell in markets in addition to their traditional animal and dairy products. This multi-resource nomadism involves women who stay with the youngsters and tend the crops while the men migrate with the herds, hunt, or collect wild plants. Normally they resort to odd jobs as laborers during drought (Hobbs 1992: 30-32, 39). In the 19h century Karak residents would leave the town to cultivate crops or care for animals (van der Steen 2004: 109).

Whatever name we confer to the seasonal workers who might migrate with herds, or cultivate and harvest the crops, it surely is not what they called themselves. A group of young men might belong to different families. They belong to a region-wide movement of people and what took place in the highland bordering the Jordan Valley was "…a marginal feature of this movement, which changed the entire ethnic and political order of the eastern Mediterranean and the lands of the Fertile Crescent" Aharoni (1978: 157). There can be a tendency to emphasize historical texts whose rhetoric might overplay the role of Egypt in local events. Pastoral nomads are a normal part of the human landscape and can live peacefully with agriculturalists. Another instance of mutual collaboration is in Chad, where despite the Mamluk Egyptian historical records of major political events and attacks against nomadic Arab tribes, life among the nomads was peaceful (Holl and Levy 1993: 174). They utilize lands no one else could and willing gave tribute, in the form of animals, to the rulers. As for the LB II/Iron Age I pastoralists, call them what you will, they were young, landless, male and likely went by many names. Their families, the women, children, older segment of the population and the wealthier leaders traveled less or not at all.

Ancient sites correspond to the temporary, seasonal division of population. The approximately 300 very small sites (Dever 2001: 110) in the western highlands, visited by animal herders, lack substantial buildings or maintain a few supplied with ground stone, and ceramics suitable for crop production, food processing and some storage. In contrast is al-'Umayrī with a greater diversity of population, artifacts, buildings, and almost an excess associated ritual, cultic, and storage facilities. The contents of Building B at al-'Umayrī include tools to process and preserve foods (stone grinders), weave clothe, tents or rope, luxury items (alabaster container and bronze figurine peg) and several bronze weapons (Herr 2000b: 177-9).

LBII and LBII/Iron Age I workstations — Some of the small and very small sites of the hills north of Jerusalem, functioned initially, more as workstations than as permanent settlements based on the limited utilitarian artifacts and meager construction (London 2003). At sites smaller than al-'Umayrī, the artifacts are predominantly utilitarian ceramics, abundant ground stone, and even flint tools, including an Iron Age rectangular sickle with sickle gloss

(Rosen 1982: 41). Collar rim storage jars exist, but capacity never attain the scale of al-'Umayrī. Sites with cultic apparatus of one type or another include: the Bull Site (Mazar 1982a: 33-4), possibly at Mt. Ebal (Zertal 1986-87: 113-18), Kh. Raddana with its bull headed krater (Callaway and Cooley 1971: 18), and Shiloh (Finkelstein 1988: 220-34, 291). In the Jordan Valley is Dayr 'Allā (Franken and Kalsbeek 1969; Franken 1992) and other sites cultic in nature, Umm ad-Danānīr plus burials such as Saḥam (Fischer 1998). Despite a lack of settlements, there is confirmation of people in the area (Younker 1999: 194). This is the evidence van der Steen (2004) gathers to demonstrate people traveling through the Jordan Valley en route to the highlands. In the absence of settlements, tents and caves suffice. LB burials, far from settlements, on both sides of the Jordan Valley, are another aspect of scheduled, seasonal use of the land (Gonen 1992: 12, 18, 148-9).

Pottery at the hill site workstations in part perpetuates LB traditions. Similarly, figurines and drawings of bulls continue to represent the Canaanite god El (Dever 2001: 152). LB villages might be poorly preserved, ploughed under, or misidentified as later in time. Pits characterize the earliest deposits at new sites, as at Masos (Str. IIb), Beer Sheva (Str. IX), and Hazor, for storing grains or ovens for cooking (Herzog and Bar-Yosef 2002: 164-5). The poorly built structures that follow, as at 'Izbet Sartah, Giloh and Tel Masos (Mazar 1990a: 337, 1990b: 92) includes the minimal effort to level the bedrock at Giloh (Mazar 1981, 1982b: 169). Rather than evidence of nomads lacking a building tradition, seasonal visitors to the sites had little incentive to improve or invest in the sites until at a later time, when more people lived there permanently in the Iron I period. The small number of LBII/Iron Age I people were otherwise occupied with herds, gathering wild fruits and nuts, and harvesting crops. Another possibility is that the earthquakes responsible for destructions at Dayr 'Allā and al-'Umayrī, impacted the LB II population to the extent that they preferred to live in tents.

Differentiation between LB and Iron I Age pottery remains a thorny issue (Kletter 2002: 33-5) given the overall morphological continuity in combination with a dearth of decorated wares at stratified habitation deposits. Large store jars and cooking pots, the two shapes most abundant at sites of all sizes, offer conflicting dating information: jars have the longest period of use and cookware has the shortest. The range is 100 years for jars and about two years for cooking pots based on ethnoarchaeological research (Longacre 1981: 63; London1989: 78). van der Steen (1997) convincingly demonstrates that changes in pottery morphology or technology are inadequate to determine who was using the pots. Many cooking pots types can overlap with the same jars. As a consequence dating remains difficult despite all the efforts of ceramic typology. The paucity of other artifacts at the sites reflects an absence of potentially datable finds, but also the restricted range of activities carried out by the limited number of residents who were busy collecting wild plants and tending crops and grazing herds outside the site. Whatever they tended or produced might have been used on route or taken to fresh grazing land where they met family members.

Scheduled burial deposits – LB II multiple burials deposits are plentiful in the western highlands and can contain hundreds of ceramic pots, including the decorated and imported pieces lacking at hill country sites. At Duthan, Ta'anach, Shechem, Hebron, Jedur, and Gibeon, tomb deposits could belong to the LB/Iron I transitional period. The tombs tend to be dated LB II based on decorated wares and imports. However, people curate ordinary pots destined for their burial, based on ethnoarchaeological study in Cyprus. I observed utilitarian jugs placed above recent burials in village cemeteries display decorations that went out of use years earlier. Older women save a jug for their tomb, whether or not they were former potters. In another instance, on the burial of a former potter is a jug her daughter made.

Terrace agricultural field systems - While Egyptians myopically viewed the area as consisting of the coastal strip and the less penetrable hills of the interior (Gonen 1992: 37), did the local inhabitants feel the same? If none of the hill country sites were used in the LB II, the implication is that the Late Bronze Age population of the lowlands feared the foothills and mountain ranges. Their herds never strayed in search of food, herbs and flowers that grow in the upper elevations, but not in the lowlands or foothills. They preferred the hot humid summer of the coast and periodic bouts of malaria.

If people from the coast and lowlands did wander up to the hills for a summer time picnic, the archaeological remains would be non-existent. If they did venture up to the highest hills and look

down, did they never wonder what sparkled in the depths of the Jordan Valley?

If people had no prior experience with terrace agriculture, the alternative requires that they master it as soon as/while they built houses "with amazing swiftness" (Aharoni 1978: 162). Terraces belong to the EB and MB landscape (Gophna and Porath 1972: 197; Edelstein and Gibson 1985; Gibson 2001). If they fell into disrepair during the LB, they were functioning once again in the Iron I (Stager 1985: 6). Gal (1992: 92) considers LB II villages as Canaanite on the edge of the Jezre'el Valley, including Tel Qiri, Tel Qashish, and Tel Shadud. Agricultural products grown in such foothill and mountain during the Late Bronze Age could escape detection and taxation by Egyptians, yet supplement the lowland crops and make feasible Iron I settlements to follow.

Dating agricultural terraces is as difficult as creating them. The differential weathering of limestone of various composition and hardness results in a natural stepped formation on the hills. However, the same limestone erodes and produces soil very slowly. Construction of terraced fields initially requires time or effort to import soil, and build stonewalls. Would people cut stone to erect buildings in the highlands with the mere hope that crops could grow on the terraced slopes, or did they know in advance, based on years of experience? Without plants, trees or walls, the soil washes down the slope with each rainfall. Lowdermilk (1944: 42) attributes malaria to the breakdown of terrace agriculture. As stone walls decay, the system slips into disrepair as the soil and stones laboriously carried up the mountainside washes down to clog the streams and prevent adequate drainage. Did they know that once established, terraced fields require minimal, yet diligent year-round repair? They knew from experience that instead of small individual terraces, the configuration of the deeply carved Judean Hills suited construction of large-scale systems of terraced slopes (Ron 1966).

Initially the hundred's of hill country small sites served as workstations where a small group lived year-round responsible for cultivating and maintaining the terraced fields. They might experience a periodic in flux of people in the Spring and summer months when extra hands helped to harvest the crops and shear the animals, before the sojourn to the Jordan Valley to winter the animals in a warmer environment. In the 19th century, people sought the milder temperatures of the Jordan Valley during the winter lambing season (December/January) and would then slowly climb the mountains, east and west, to find summer residences in caves of tents in a route that might have functioned in antiquity (van der Steen 2004: 110; 124) as well. McGovern (1986: 6) similarly suggests Spring migration routes between the al-Baq'a Valley via Wādī az-Zarqā'. Only later did settlers build more substantial constructions at the former workstations. Hopkins (1993: 210) considers the rounded enclosures of those sites, as well as Hazor, and Beer Sheva, as meeting seasonal needs of pastoralists. Subsequent to the initial deposit at Masos, Beer Sheva, Giloh, 'Izbet Sartah, etc., later buildings display better building technique (Herzog and Bar-Yosef 2002: 164-5). The precise migration route cannot be known given the ecological, political and economic constraints semi-pastoralists contend with regularly. In any given year, people might decide to move or stay at a place where fresh vegetation grows (Abu-Rabia 1994: 12).

Importance of Feasting in Late the Second Millennium

After the hard work of harvesting and shearing subsides, the periodic assembly of livestock and people at highland sites could culminate in a celebration feast. Borowski (2003: 23-5) considers cultic celebrations as appropriate after shearing and harvesting, possibly followed by social transactions. Ritual slaughtering of ideal specimens might have also taken place to assure successful future herds. People with livestock wintering in the Jordan Valley, where green patches sprout weeks earlier than elsewhere, would travel east or west to the hill country in the early Spring. They would find fodder for animals available slightly later, first bitter vetch in March, and then the barley harvest in April and May coincides with sheep shearing season. Shortly afterward is the wheat harvest and goat shearing time. Summering in the mountains allows man and beast to benefit from the cooler temperatures than in the Jordan Valley. As summer progressed, the fruits would be harvested until the grapes and finally the olives were harvested and processed by September/October or even early November. Rather than endure the cold, wet hill country winters where snow is feasible, the Jordan Valley and Negev offer a warmer refuge for all. The occasional flash flooding creates opportunities for ephemeral

farming of grains etc. If they ripen, someone will be there to benefit. Wild fruits, herbs and seeds are also available.

Feasts impress people, create cooperative relationships between social groups and households, organize labor, and extract surplus produce from the general population for use by community leaders. Agriculturalists and semi-pastoralists, using al-'Umayrī as a storage and ritual center, would join the seasonal feasts. In drought years, low crop yields left the storage jars unfilled, empty of barley seed for fodder and future crops. Years of low grain harvest unequivocally meant the slaughter of animals to survive winters. When possible, people would feast in the face of potential food shortages.

At Tall al-'Umayrī people in various subsistence activities could congregate given the availability of a natural water source. Crops would grow in the vicinity and animals can find vegetation at nearby green patches within a day's walk. The sacred spaces at the site, with the remains of many animals, suggest a rare feast of animals raised outside the al-'Umayrī catchments basin. One function of al-'Umayrī and Dayr 'Allā was of regional market (van der Kooij and Ibrahim 1989: 79-80) involving people from more southerly areas as well (van der Steen 2004: 283). Perhaps they are responsible for the single camel bone found at al-'Umayrī. In addition to the above reasons for people to meet there, the presence of Early Bronze Age settlement and tombs at the foot of the mound gives the site an aura of tradition, antiquity during an earlier, possibly less complicated era. It could afford to the leaders a sense of legitimacy. The earlier remains are immediately below the surface and perhaps still visible some six centuries later. If not, the LB II shrine and cultic accouterments present a recent memory.

Leaders, religious, political, or social, who would respond to local conflicts that might arise as a result of infringement on territory, access to the limited usable resources such as grazing areas and water. In addition to resolving internal fighting, there was the larger external threat of Egypt. The latter helped to mobilize and reinforce allegiance within the group against the common enemy. With the breakdown of social norms in the late second millennium, new ties, new spheres of interaction, new alliances with new people could flourish and benefit from a display of striking abundance in the face of food shortages, uncertainty and insecurity.

Conclusions

Whatever they called themselves and whatever names others used, young people performed a range of services involving all aspects of subsistence strategies to prevail during a period of region-wide political turmoil and accompanying power vacuums. They contributed to community survival, during uncertain political times in an unpredictable environment, by moving with the herds systematically to exploit the versatile landscape on both sides of the Jordan Valley. Conspicuous consumption of animals in an economy that relies on herds celebrates the start and finish of successful passage from one region to another despite the ever-present potential food shortages in years of negligible precipitation or if the herds did not reach grazing destinations in time. The feasts would bind together those who came to al-'Umayrī as traders, herds, farmers, and family.

Feasts were not new, but did gain a greater importance due to political, economic, and social changes. Similarities of the pottery and architecture on both sides of the Jordan Valley represent the movement of people in a pattern suggested by van der Steen. Semi-nomadic pastoralists would wander with their animals or hire herders and as a consequence, families would separate for part of the year. Families split part of the year, due to an ecosystem in which various patches of land bloom in rapid succession, is not conducive to a symbiotic relationship with sedentary populations and yet, interaction between the two groups secures their future. "Relationships require maintenance" (Marx 1977: 39) and feasts can satisfy many of the requirements for mutual cooperation.

To maintain the relationship for economic security, social ties benefit from ritual reinforcement of group membership. Among the Sinai Bedouin, the date harvest brings everyone together on their own territory. They visit family and friends, share food and news, and make their presence visible. They use annual visits to graves sites or shrines as a secular ritual, as do the Egyptian Khushmaan (Hobbs 1992: 85). Marx (1977: 44) describes the protocol as tribe members meet at a shrine. While sitting in a circle, an announcer calls out the name of each man for all to hear. A portion of meat, wrapped in flat bread, passes from hand to hand until it reaches the announcer who hands it to the individual. A visit to pay respects at a shrine has the impact of reinforcing community membership.

Bedouin communities in different geographic areas sacrifice sheep and goat at certain shrines in the similar manner, perhaps following ancient customs. The sacrificial animals are young, male and under 2 ½ years of age, precisely as in the al-'Umayrī excavated pit. The sizable barley stores at the site could provide feed for animals in early Spring and when necessary, food for people.

People coming from diverse locations, for different reasons, would meet at Tall al-'Umayrī with its permanent water source to partake in a feast that involved religious/cultic ceremonies, not to mention economic, social, and political eventualities. The LB II shrine was a recent memory. Any leader who could convene people in the ritual landscape surrounding al-'Umayrī, with the aura of numerous highly visible EB and MB dolmen, legitimized his authority by reconnecting to a setting known by millennia of previous generations.

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New Light on the Palaeolithic Landscape Around Mount Nebo

Between 1992 and 1998 an intensive archaeological survey was carried out in the Mount Nebo area by a group of Danish archaeologists from the University of Copenhagen and the Danish Institute in Damascus. This survey, which was followed by excavations between 2000 and 2005, was begun at the invitation of Professor Michele Piccirillo and conducted under the auspices of the Department of Antiquities and the Franciscan Archaeological Institute at Mount Nebo (Mortensen and Thuesen 1998 and 2007; Thuesen 2004). Centered around Ṣiyāgha, the survey covered an area of approximately 35 square kms. The main topographical features are the escarpments of the Transjordanian plateau, which drop away into the Jordan valley, and the two large wadi systems of Wādī Jadīdah and its continuation as Wādī Kanīsah to the south of Ṣiyāgha and Wādī ʻUyūn Mūsā to the north.

The purpose of the survey was to locate, describe, register and map the archaeological sites around Mount Nebo, so that the most important might, in the future, be protected from destruction caused by building development, road construction or agricultural activities involving the use of tractors and bulldozers.

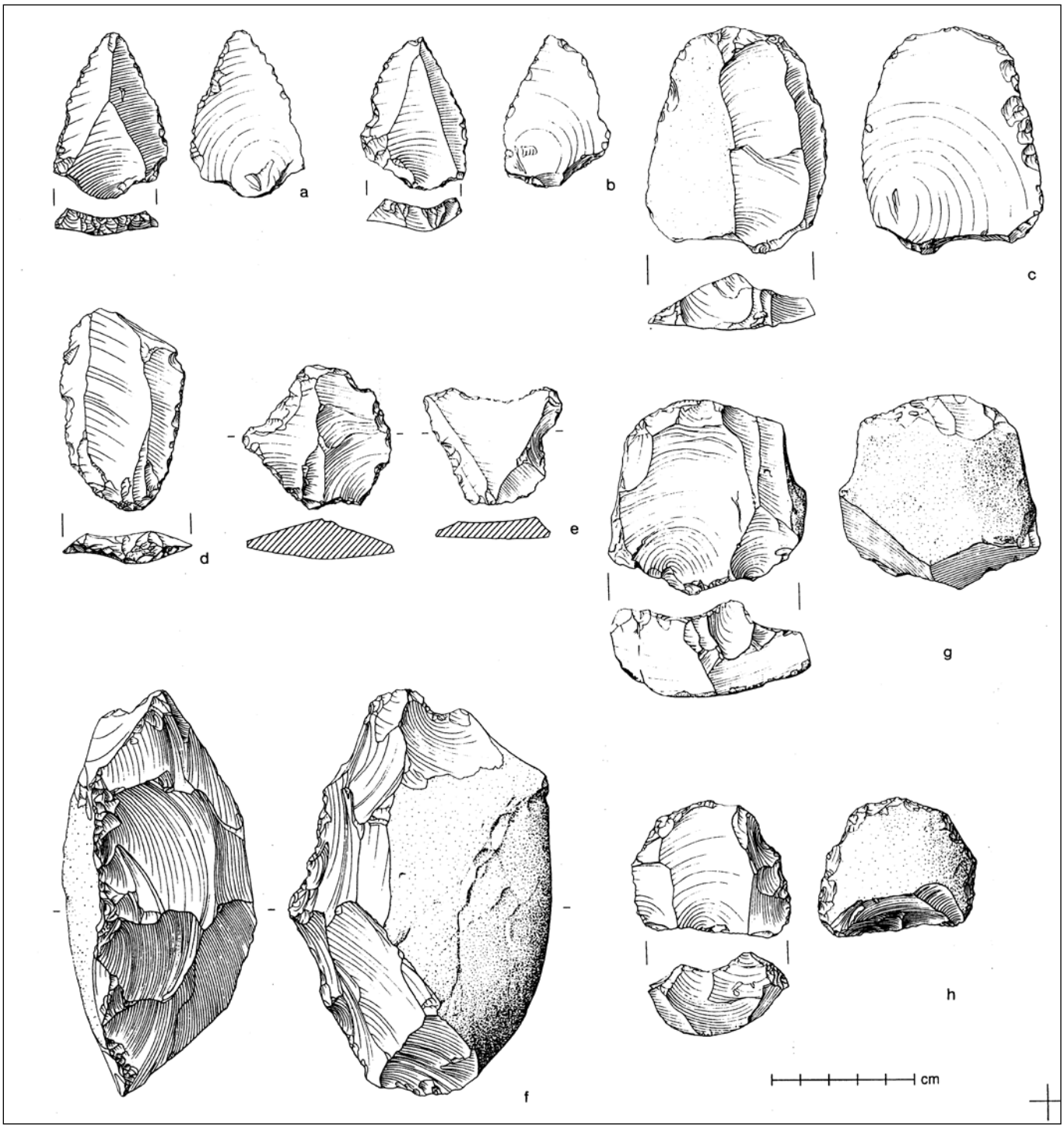
Furthermore this type of intensive survey, within a limited area, can yield important information regarding changes in settlement patterns and the exploitation of natural resources throughout time.

During the survey 747 locations, including sites, monuments and single finds, were registered, ranging in date from the Lower Palaeolithic — more than 400,000 years ago — to the early 20th century. The publication of the Mount Nebo Survey is now in progress, and the first volume will cover the 108 Stone Age locations we recorded. One of the problems facing us in this context is the apparent lack of Upper Palaeolithic occupation in the region.

The Pleistocene terraces along the wadi systems are rich in Palaeolithic flint artefacts. They are often found on slopes in formations of clay or sand that were secondarily deposited during alluvial periods. However, there are also examples of Lower and Middle Palaeolithic open-air sites with artefacts found *in situ* on re-exposed Pleistocene terrace surfaces (FIGS. 1-2). It should be noted that although we found a few hand axes and several Middle Palaeolithic artefacts, e.g. Mousterian and Levallois points near caves and shelters, we have not been able to document any Lower or Middle Palaeolithic occupation in the caves of the Mount Nebo region. One reason may be that most of the caves face north, a direction, which Near Eastern Neanderthals may not have found attractive for permanent or even seasonal settlement.

Before dealing with the problem of the apparent lack of Upper Palaeolithic sites, it should be noted that in two cases traces of Epipalaeolithic occupation were found at tiny south-facing shelters north-

1. MN 360. A Middle Palaeolithic open-air site found on the surface of a Pleistocene terrace along Wādī Jadīdah, 560-580 metres above sea level. The artefacts are still *in situ*, alongside nodules of flint (September 1994).



2. Middle Palaeolithic artefacts from MN 360, including Mousterian points (a-b), retouched flakes made on a prepared platform (c-d), two scrapers with a concavo-convex edge and two end scrapers (e-h), and a core with chop marks along one edge (f).

east of ʻAyn Jadīdah. However, like the Neolithic settlements, most of the Epipalaeolithic open-air sites were located in the hilly landscape above the wadis not far from the springs of ʻAyn Kanīsah and ʻAyn Jadīdah.

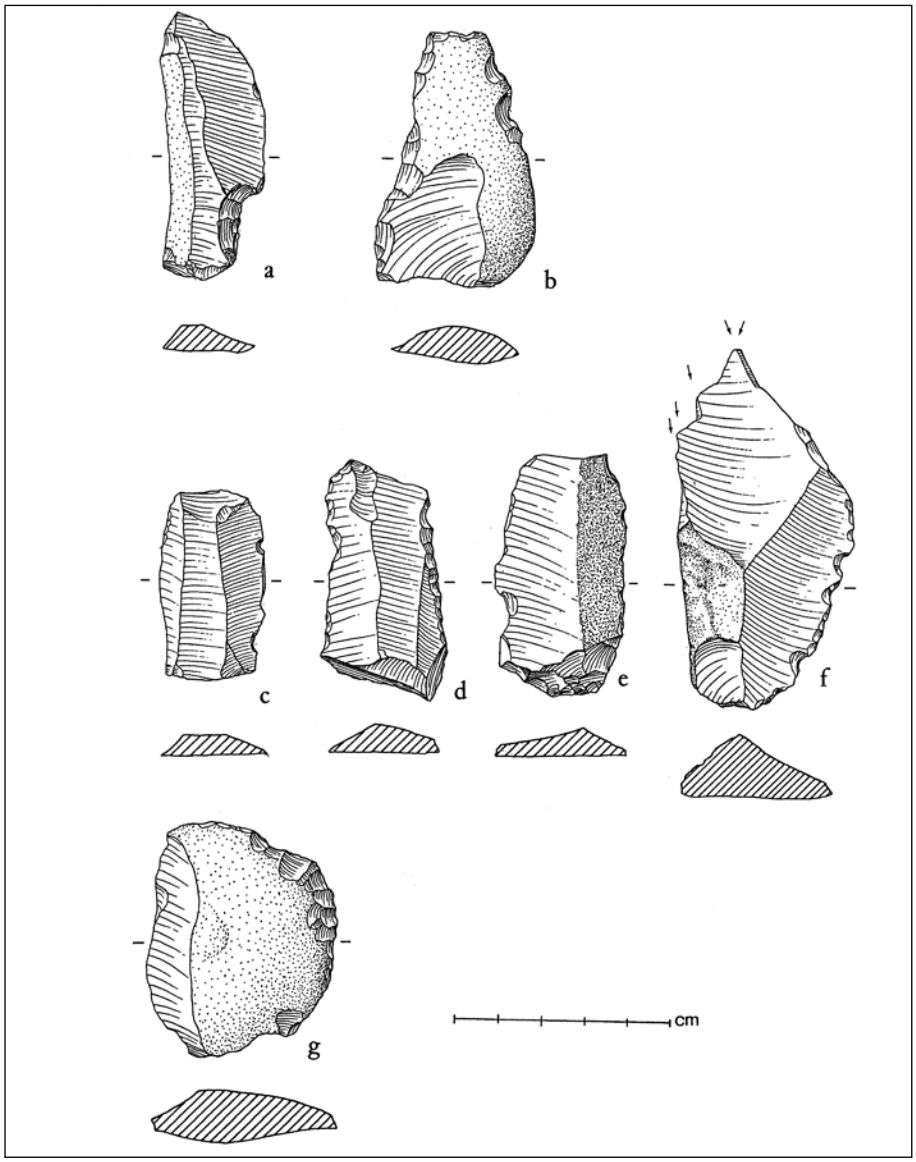
Looking at the Stone Age sites found in the Mount Nebo region it is understandable that the Middle Palaeolithic and Epipalaeolithic periods dominate with 43 and 25 locations respectively (TABLE 1). But is the Upper Palaeolithic completely absent? The only two possible candidates seem to be: 1) nine pieces of grey flint found below

TABLE 1. showing the number and distribution by period of Stone Age locations found during the Mount Nebo Survey.

MOUNT NEBO SURVEY 1992 – 1998	
Number of Stone Age locations:	
Lower Palaeolithic	15
Middle Palaeolithic	43
Upper Palaeolithic	(2 ?)
Epipalaeolithic	25
Pre-Pottery Neolithic	17
Pottery Neolithic	6

the Byzantine monastery at ‘Ayn Kanīsah, including two fragmentary blade cores, two long blades, a pointed blade with indications of a retouched shoulder and a nosed scraper, and 2) a scatter of 37 flints from a terrace south of ‘Ayn Jadīdah, which includes a number of fairly regular large blades or blade fragments, two side scrapers, one dihedral burin made on a large flake and three asymmetrically shouldered points like the one illustrated in Figure 3a.

Our first question, therefore, is whether or not these two flint scatters can reasonably be interpreted as Upper Palaeolithic? I think that the only evidence which may — with some reservations — lead us towards that conclusion is the presence in both collections of points with a retouched tang or asymmetrically shouldered points. In Europe these



3. (?) Upper Palaeolithic artefacts from MN 312 and a terrace south of ‘Ayn Jadīdah: a shouldered point (a), a retouched flake (b), segments of large regular blades (c-e), a dihedral burin made on a large flake (f) and a side scraper (g).

artefacts, known as Font-Robert points, are common within the Upper Perigordian and they appear, albeit infrequently, in the Levantine Aurignacian, e.g. at Kebara and Ksar Aqil, and in Upper Palaeolithic contexts from Yabrud and Umm al-Tlel.

However, regardless of whether or not these two small assemblages represent the presence of hunter-gatherers of the Levantine Aurignacian tradition, it is clear that Upper Palaeolithic occupation appears scarce in the Mount Nebo region, especially when compared with the Middle Palaeolithic and Epipalaeolithic occupations of the same area.

In the inland, eastern landscapes of Jordan and Syria, the Upper Palaeolithic also seems to be poorly represented when compared with the Lower and Middle Palaeolithic. One possible reason may have been that Upper Palaeolithic groups were forced, by increased aridity during this period, to exploit larger territories than their Middle Palaeolithic counterparts and that this may have led to more dispersed settlement patterns.

Another uncertainty is linked to the definition of the Upper Palaeolithic in the area. It is now generally accepted that the technological change from flake-based to blade-based traditions cannot be directly linked to the appearance of *Homo sapiens sapiens* or, in the Near East, to the transition from the Middle to the Upper Palaeolithic (cf. e.g. Clark, Coinman and Neeley 2001: 49 ff.). As expressed by James Potter and others, "...artifact morphology in the Levant cycled back and forth through time between flakes and blades" (Potter 1995: 506).

For the time being, this might lead to the suggestion that in the Mount Nebo region — as well as in other inland parts of the Levant — there may have been a longer Mousterian tradition which extended beyond the end of the Middle Palaeolithic, as known from other regions. If this was the case, it might at least partially explain the apparent scarcity of Upper Palaeolithic sites in the Mount Nebo region. Further analyses of our own Mousterian material and of late, stratified Mousterian **deposits** from inland Jordan and Syria might possibly elucidate that point.

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Mādabā Archaeological Sites: Bridging the Gap Between the Living and Once Living Sites of Mādabā

Introduction

The archaeological sites of Mādabā are scattered within the sprawl of the nineteenth and twentieth century town. Several efforts have been initiated to preserve this cultural heritage, involving the Studium Biblicum Francescanum, American Centre of Oriental Research (ACOR), the Department of Antiquities of Jordan (DoA) and the local authorities. Funding has been provided by several local and international donors, including the Italian government, USAID, the World Bank and, most recently, the ongoing Siyaha project at Madaba Archaeological Park (MAP).

In the absence of a comprehensive management plan agreed upon by all stakeholders, much of the effort and study related to protecting and interpreting the present archaeological landscape of Mādabā falls short.

This paper aims to bridge the gaps created by the present boundary of the Madaba Archaeological Park (MAP), the visitors' centre and urban islands of ruins (e.g. the western tall, cathedral etc.) and the local Madabites in an attempt to reunite 'the living and once alive sites' of Mādabā.

Edges and walls can become barriers, creating — whether intentionally or not — islands of ruins of no immediate interest to most of the residents. The role of the edge as…

1. Physical barrier/edge,
2. Information barrier,
3. Time edge, i.e. past / present,
4. Activity limitation,
5. User limitation,
6. Limited collaboration by the different institu tion(s) involved, ...shall be explored and their role as part of the whole shall be redefined.

This paper attempts to evaluate the current situation of MAP and present the related policy and management objectives that are necessary to manage the archaeological resources of MAP / Mādabā, *viz.* protection, planning, interpretation and education, tourism management objectives etc..

The two main questions that need to be addressed here are: (1) can the archaeological sites become an integral part of the development of the living soul of the city and (2) can there be a link between the 'living' and 'once alive' sites of Mādabā?

History of Mādabā

Mādabā has a long history, dating back to as early as a settlement of the Bronze and Iron Ages.

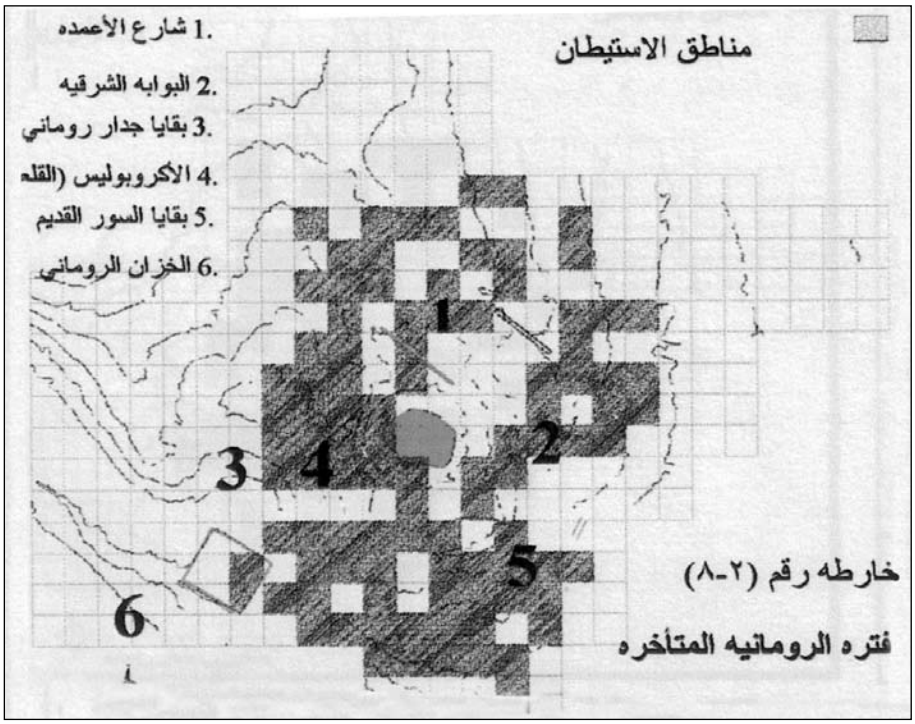
Several layers of history can be traced from Figure 1:

- Roman Mādabā
- Byzantine Mādabā
- Early Islamic Mādabā
- Late Ottoman Mādabā
- Hashemite Mādabā

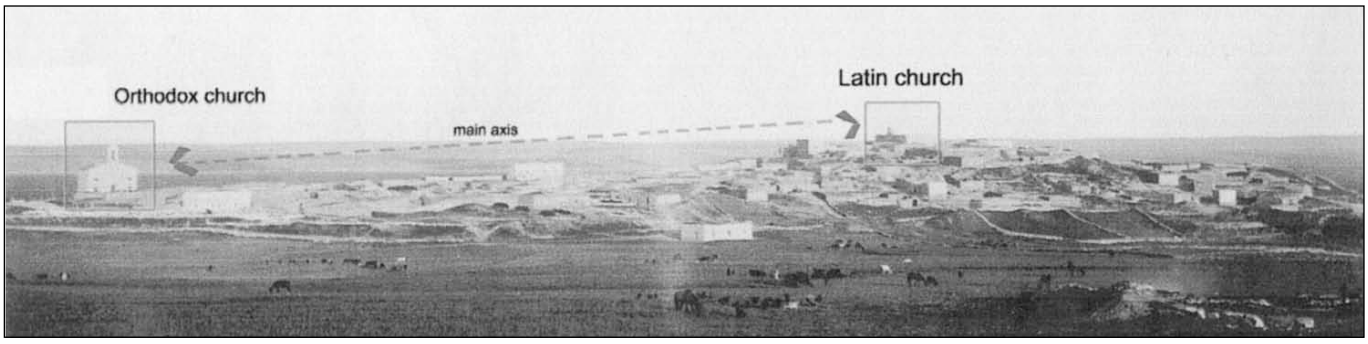
Stories of Resettlement and Rediscovery

Modern Madabites settled on and around the historic tall of Mādabā. The Latin Church and al-Saraya occupied the tall itself, once the acropolis, while the Orthodox Church / St George's occupied the plain (FIG. 2). This formed the main axis along which the present city developed.

- The present Mādabā Museum contains *in situ* Byzantine mosaics that were part of the al-Twal houses of the 20th century, in addition to other collections of mosaics.
- The Church of St George was built on top of the site of a Byzantine church.
- The Khoury Speer, al-Sunna' family residences, and al-Ma'aiyah Hosh are located over the remains of the Roman road.



1. Late Roman occupation of Mādabā (Source: Cultural Heritage of Mādabā / ACOR).



2. Mādabā in 1905 (Source: Cultural Heritage of Mādabā / ACOR).

- Al-Bajjaly Hosh (currently the visitors' centre) lies on top of early Islamic remains.

This archaeological heritage is widely dispersed in hidden pockets surrounded by the urban fabric of modern Mādabā (FIG. 3).

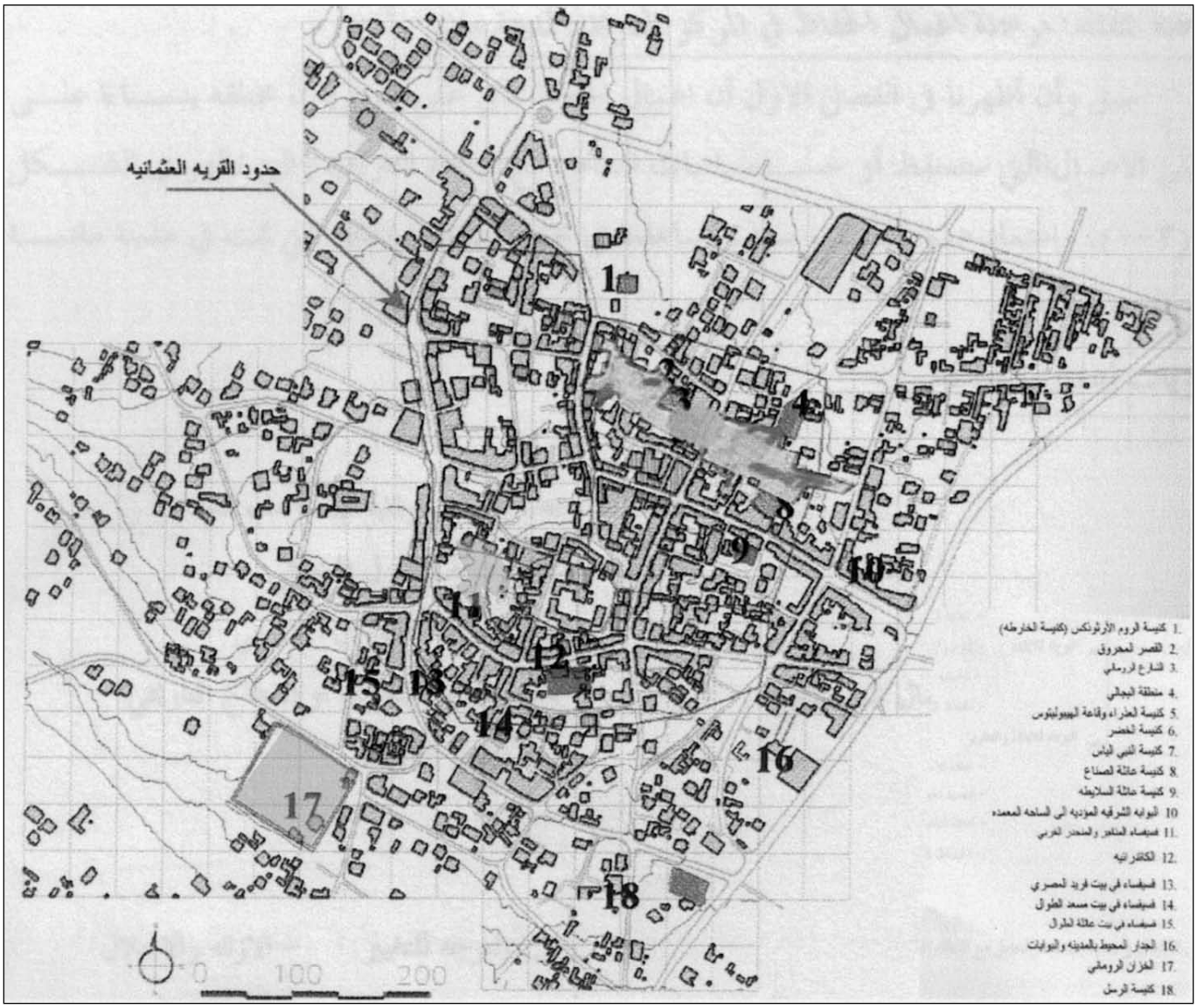
Tourism

In 2005, approximately 137,000 foreign visitors visited St George's Church (i.e. the 'Mādabā Map'). 1 in 13 of those visitors toured the DoA-managed Archeological Park, Museum and Apostles Church. Little time and money is spent by the tourists who visit Mādabā — less than one hour and 4JD per person. Although 180,000 foreign visitors visited Mt Nebo in 2005, with most passing through Mādabā *en route*, fewer than 1 in 17 of those visitors stopped at the Mādabā / DoA archaeological sites, including MAP.

Tourism Development and Cultural Heritage Projects and Studies Undertaken in Mādabā

Over the past decade, several studies and projects have been conducted to develop and / or protect the cultural heritage of Mādabā.

- The projects that were chosen and are being currently implemented by the Second and Third World Bank Tourism Projects, amongst other donors, mostly advocate cosmetic treatment rather than the establishment of institutional set up and framework for heritage protection, such as suitable planning tools and legislation, financial set-ups and capacity building within the local authorities.
- As currently advocated, the protection of single



3. Cultural heritage of Mādabā and the present urban fabric (Source: Cultural Heritage of Mādabā / ACOR, adapted by the author).

buildings is being undertaken as part of the new tourism development projects. Priority is not being given to the implemention of an integrated urban conservation plan.

Second World Bank Tourism Project

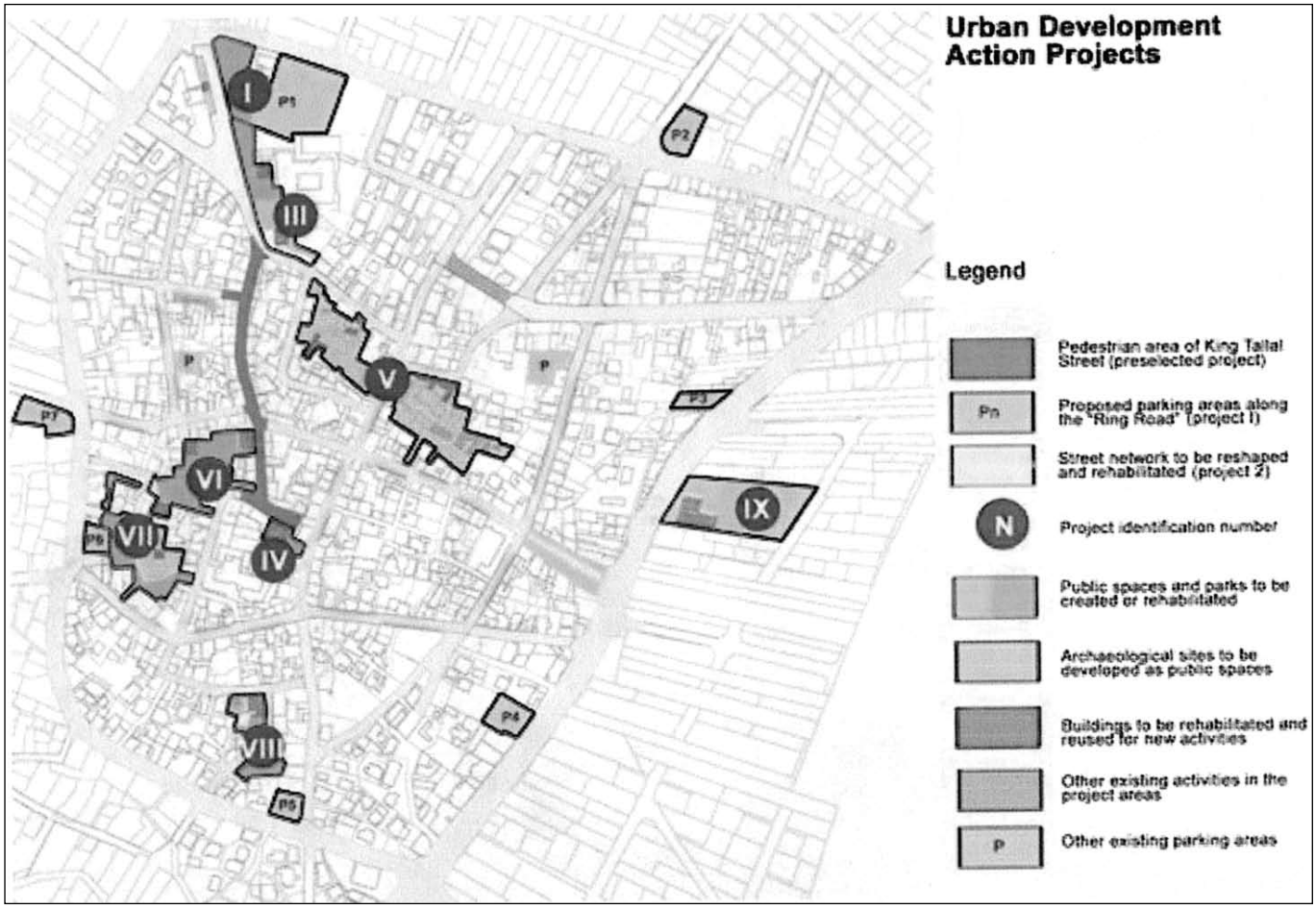
By the end of 2003, the "Preparation of Urban Regeneration and Tourism Development Plans, Programs and Action Projects for the City of Mādabā" study had been developed as part of the Second World Bank Tourism Project. This was a joint venture involving Lufthansa Consulting, Lahmeyer ERM International and Sigma (Consulting Engineers) (FIG. 4).

Siyaha

Siyaha is a USAID-funded project; one of its components is to develop the Tourist Visitor Experience in Mādabā. It is currently being implemented with the following objectives:

- Design and development of the "Walking Tour" project concept (FIG. 5) and related business planning, with assistance in targeting private sector participation (PSP) opportunities.
- Technical assistance (TA) for "Walking Tour" operators, relating to site interpretation, tourism management and the maintenance of services and facilities.
- Integration with and support of the World Bank urban revitalization project, including program-

4. Artists' impressions for a street in Mādabā as part of the Walking Tour, before and after (Source: Siyaha Projects, 2007-8)



5. Action projects selected for the development of the historic center (Source: Preparation of Urban Regeneration and Tourism Development Plans, Programs and Action Projects for the City of Mādabā).

ming and investment promotion.
- Supporting the DoA in heritage conservation and management planning.

Madaba Archaeological Park: Towards a Management Plan

Introduction

MAP includes several structures from the Roman and Byzantine periods, e.g. palatial buildings and churches, that are primarily aligned along the Roman road. Many of the most important mosaics and archaeological discoveries have been protected by shelters.

The park is divided into two parts by Prince Hassan Street, a busy commercial throughfare with a heavy vehicular traffic. It is surrounded by very ordinary buildings and is not visible from the urban fabric of the modern town, but rather from openings in a wall along Prince Hassan Street. As a result, visitors have to leave one section of the park and cross an intersection in order to get to the second part of the park.

At the eastern end of the park, the Madaba Mosaic School complex and Visitors' Centre area have been developed.

Heritage Works (Undertaken and/or Planned)

MAP was established in 1992, following a series of excavations and research undertaken in the 1970s and 1980s by the Studium Biblicum Francescanum at Mount Nebo, under the direction of M. Piccirillo. The work was completed by a joint team comprising the same institution and ACOR, in co-operation with the DoA, with funds provided by the Italian government and USAID. The aim of the project was to preserve important archaeological remains, while re-vitalising the core of downtown Mādabā by expanding its potential for tourism, thereby bringing economic benefits and employment opportunities to the local community.

As part of this project, shelters were constructed over a series of Byzantine churches and other buildings that flanked the old Roman road, with the sole exception of the Church of the Martyrs and the Church of the Sunna Family — both owned by the Greek Orthodox Church — which should form an important part of the park. The other sites, *viz.* Church of the Virgin, Hippolytus Hall, Burnt Palace and Church of the Prophet Elias, have all been restored, sheltered and presented to the public. These show different and sometimes contradictory architectural approaches to the issue of site presentation, whilst at the same time creating a new urban landscape.

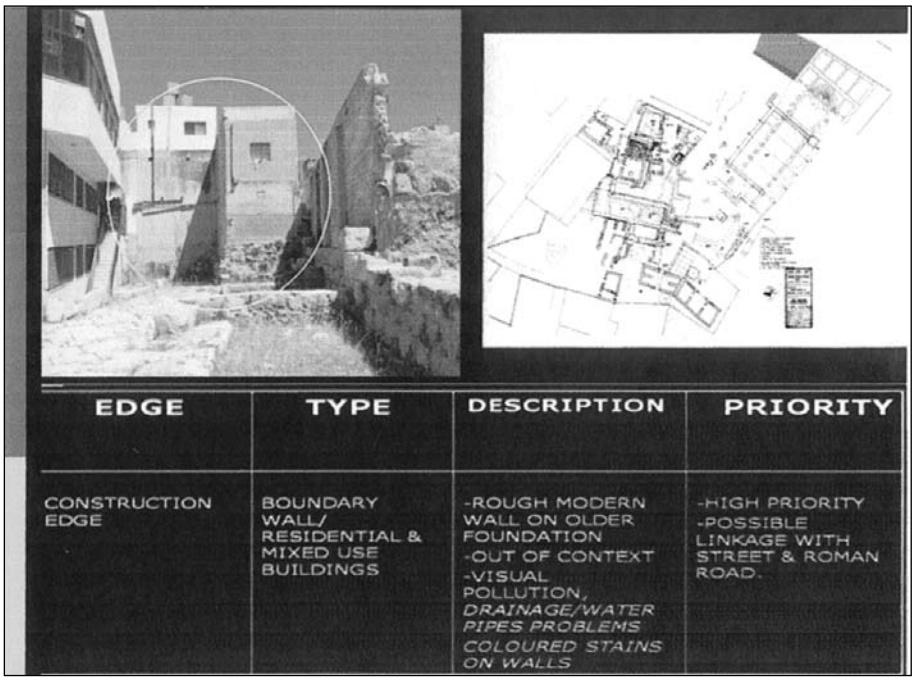
Later in the 1990s, the Mādabā Mosaic School was established — as an integral part of the park — with the help of the Italian Co-operation Agency. The school re-uses a series of pre-modern buildings and develops training programmes for the manufacture of mosaics and their restoration. It is currently at the core of an initiative to develop it into a conservation institute funded by Siyaha and European Union.

Madaba Archaeological Park Boundaries / Edges (see Appendix 1)

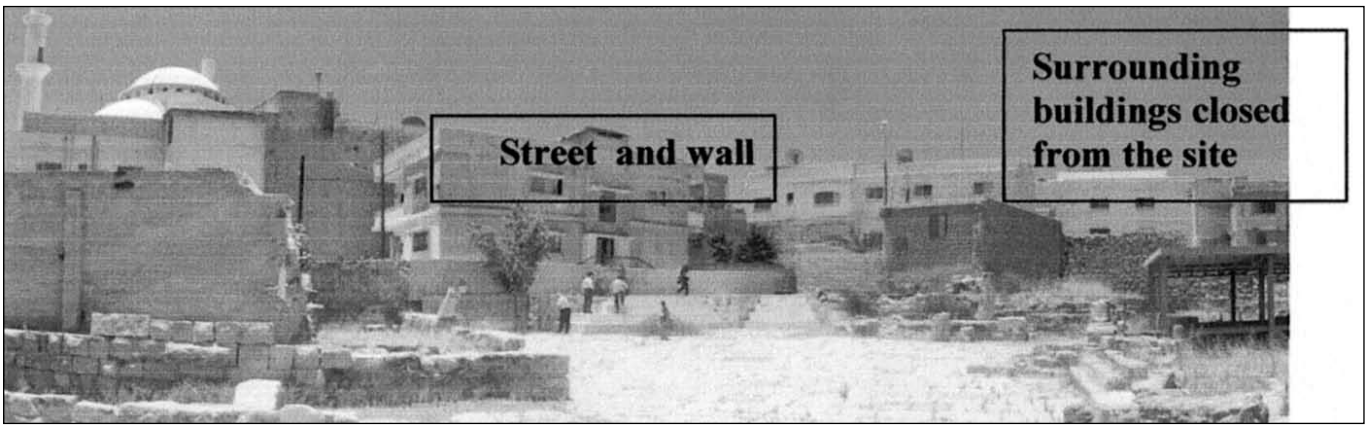
A survey of edge types relating to MAP which extends throughout the historic centre of the town was conducted. A description of the edge and its existing status — including potential, limitations and priority for intervention — was made (see FIG. 6).

Major threats derived from the presence of barriers can be summarised as follows:

A. Threats in Relation to the Edge
- Physical barriers / edges: the park has turned into a detached island (FIG. 7); it does not even act as a backyard for the surrounding buildings or as a space to be viewed through their windows and doors.
- Information barriers: present Madabites living around the park are often unaware of and do not relate to the history of that place; that 'Roman site' or 'church and site of mosaics' is how it is typically referred to, making it a product of some other time and people.
- Temporal barriers, i.e. past / present: this edge emphasises the limitation of continuities between the past, recent past and present. Few activities try to integrate the past (e.g. sites or locations) within the present community, although occasional classical or other western musical concerts are held there. None of the interpretation or display panels mention the role of the modern community. The significance of the park is in "its archaeological and historical significance", as Dr Ghazi Bisheh (archaeologist and researcher at the Burnt Palace) once commented. This is also the official interpretation of the site, as presented in brochures published by MoTA and on display panels at the Church of the Virgin.

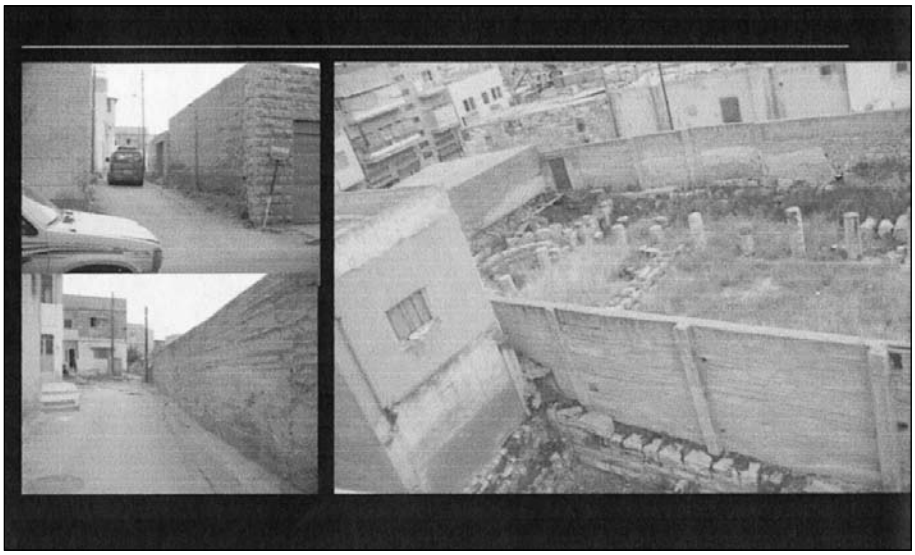


6. Sample of documentation: type of edge, constraints and priority for intervention (Source: Author).



7. The park is isolated, both physically and visually, from the surrounding urban scene.

- Activity limitations: the perimeter fence and other walls and barriers limit the type of activity that the local community can undertake within the park; indeed, the local community seems not to undertake any daily activities in the open sections of the park. Is MAP no longer part of the living urban space of Mādabā? In addition, the Greek Orthodox Church — owner of the Martyrs' and Sunna' Family churches — has surrounded the sites with high concrete walls, accessible only though a small, usually locked gate, in order to protect them (FIG. 8). One part of MAP closes before 18:00 pm, in line with normal summer and winter opening hours for archaeological sites in Jordan, whereas the other part of the park is not fully open for visitation — it has no presentation panels — although it is nominally accessible during the normal opening hours of the Mādabā DoT offices.
- User limitations: MAP also alienates local Madabites; the area of the park no longer forms part of the daily memory or even the occasional or traditional festive memory of the core of late 19th and 20th century Mādabā (FIG. 9).
- Different institutions are present at MAP, with limited collaboration between them. They include MoTA (comprising DoA, including the Mādabā Antiquities Office and Mosaic School, and DoT, who have their offices at the Burnt Palace), the Orthodox Church (the Christian Orthodox *waqf* owns the sites of the Martyrs' and Sunna' Family churches), immediate neighbours and the local community at large.



8. The concrete walls surrounding the archaeological site of the Martyrs' church.

9. Litter in the park, thrown in by the neighbours from surrounding windows (Source: Author).

B. Social Indicators[1]

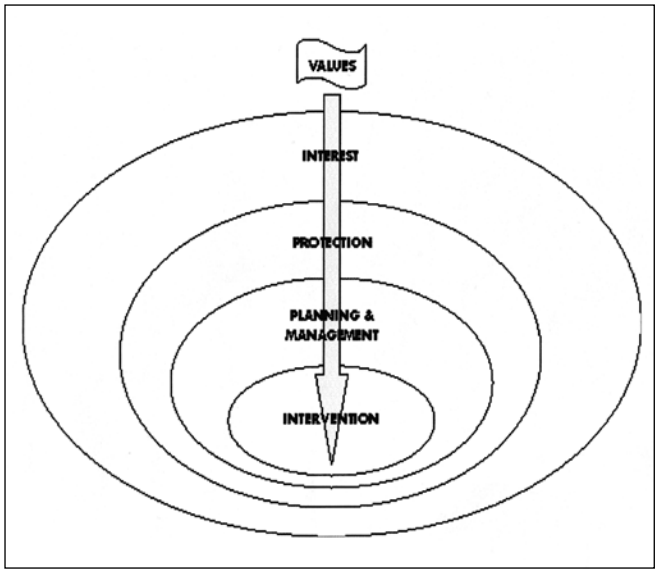
Preliminary studies, based on interviews and questionnaires completed in Mādabā city centre, have been conducted with the aim of documenting attitudes towards MAP by a sample of local inhabitants, shop owners, students and teachers at the Mosaic School, and tourists. These yielded the following information:

- Several families adjacent to MAP have abandoned their houses owing to recent social or economic changes.
- New residents / tennants are occupying some of the houses, and have no connection with the history of the locality.
- The older generation have more intimate memories of the park; some visit it to collect *khubeizeh* or edible green leaves, one retained the key to his house, another remembers the park since it provided access to their residence, whilst others referred to the removal of any evidence that they had ever lived there, with no recognition of their former houses within the area of the park (although efforts to maintain some of houses are apparent in the second part of the park).

[1] Interviews with the surrounding residents(6 families were interviewed), Interviews with students and teachers of the Mosaic School (15 questionnaires), Questionnaire to surrounding shop owners (15 questionnaires), interviews with tourists coming to the visitor centre (15 questionnaires for tourists). Thanks to Shadia Hamarneh, Catrina Hamarneh, Hussein Shawabkeh and Siyaha Project.

- Shop keepers clearly recognise the economic and touristic value of the park.
- Some shop keepers also recognise the cultural heritage value of the park.

The following table summarises the major limitations and barriers related to the edges of the park and proposes a way forward (TABLE 1: Challenges and solutions).



10. From assessment to implementation (Source: Research Report, The Getty Conservation Institute, Los Angeles, USA).

TABLE 1. Challenges and Solutions

• Physical barrier/edge	• Promote an interactive edge
• Information barrier	• Educate, interpret
• Time edge, past/present	• Present all layers
• Activity limitation	• Diversify activities/incorporate present needs
• User limitation	• Open to community
• Different institution (s) present, limited collaboration	• Active participation, work together
	DEVELOP AN INTEGRATED MANAGEMENT APPROACH

Stakeholders

As stated above, several institutions are present within MAP. Direct beneficiaries include MoTA (DoA and DoT), the Orthodox Church, immediate neighbours and the local community at large. Indirect beneficiaries include the Municipality of Madaba, hoteliers and tourist businesses and associations, the Chamber of Commerce (for businesses along the main tourist route), NGOs, research institutes and donors (ACOR and the Franciscan Institute of Archaeology have conducted several archaeological digs and conservation interventions in collaboration with DoA; a local NGO — the Madaba Heritage Society — ran a shop in the second part of the park until a few years ago) and the Directorates of Education, Health, Environment and Works, amongst others.

Towards a Management Plan

A site management plan for MAP is being developed by a working group appointed from the main stakeholders, with a heritage specialist as co-ordinator / facilitator and support from Siyaha. Support for DoA in planning and managing heritage conservation in Mādabā was one of the objectives of Siyaha for the period 2006 to 2008. The aim of this paper is to describe the potential role of MAP and the related urban scene within an integrated management vision.

What is a Management Plan?

A management plan is a document, which describes how to care for the natural and cultural heritage and non-heritage features of a place (FIG. 10). It may contain a conservation plan or some of its components. Management plans usually go further than conservation plans and include more detail on the practical, political, resource and economic circumstances affecting the place and the best ways to deal with those issues. They are usually best prepared by a group of people who are actively involved in the management of the site. A management plan should include:

- A description of the place and its setting;
- An identification of the key people interested and sources of information;
- A statement of the significant heritage values of the place;
- An identification of the key issues affecting the future of the place, e.g. threats, opportunities, constraints;
- Management objectives;
- Appropriate future actions, taking into account the significance of the place;
- Who will be responsible for implementing of the plan;
- How the protection of the place will be monitored and reviewed;
- A process and timescale for reviewing and updating the plan.

This research also aims to present and further discuss the planning and education objectives proposed in the draft site management plan, in order to facilitate the re-unification of MAP and the present urban landscape.

Significance[2]

The first step in assessing the significance of the site was undertaken by the appointed site management group. A summary of its findings follows below:

Historical and Archaeological Values

MAP demonstrates various stages of settlement:

- The park has a cluster of Byzantine churches[3]: the Virgin's church, Martyrs' church, Sunna' Family church and Elija's church. These are four out of a total of 15 churches built in Mādabā; of the others, the two most important are St George church and the Apostles' church.
- The Roman road and the structures along it reflect urban changes at important points of political and social transition in the period.
- The 'new' churches and residences (e.g.the burned palace), built at the end of the sixth and beginning of the seventh centuries, continued to be used throughout the tolerant Umayyad (early Islamic) period and beyond. They lie along the colonnaded Roman road (*documanus*) connecting Mādabā with the regional centres of Jarash, Petra, Umm Qays and Pella.

Social, Symbolic and Cultural Values

- The park is part of the modern urban fabric, where local inhabitants have settled on many of the ruins (e.g. the Virgin's church and Sunna' Family church);
- The local community has a strong living memory of the site and its social structure before it was excavated;
- Mādabā is associated with Christian identity at a local and national level.

Tourism Values

- There is significant tourism and economic potential, especially in the fields of cultural, heritage and religious tourism;
- There is potential to prolong average visitor stay and spending, and to increase economic and employment opportunities for the local community;
- There is educational value for tourists and the local community relating to the Christian identity of Mādabā and Jordan.

It is clear from the above that social, symbolic and cultural values form an integral part of the overall significance of the site.

Priority Issues

Several problems and issues have been noted, both during the study and during ongoing work undertaken at the park by the author. These range from conservation and protection issues to tourism and

[2] Significance and Management Values. These were interactively assigned as part of Siyaha Project.
UNESCO charter discusses two broad categories of management values; Cultural Value, Identity value, Scientific and historical values, Rarity values, Aesthetic and artistic values.

[3] Madaba Archaeological Park is located in Mādabā and contains archaeological and extensive mosaic floors from the Byzantine period where Mādabā was a provincial town and a regional Bishopric (Diocese) center.

integration with local community. All evidence indicates the need for an integrated management approach, including site management and operational management plans for the archaeological sites of Mādabā, which builds on several initiatives that have already been invested in.

The concern of this paper is to highlight present urban threats and vulnerabilities in relation to the park edge / urban context and overall significance of the site (TABLE 2: Urban threats and values of MAP, Source: author).

It is clear from the data in TABLE 2 that the significance of the site is affected by current impacts caused by the surrounding urban context; visual pollution, encroachment by neighbours and — principally — the discontinuity between the urban fabric and site which affects its aesthetics and archaeological and social values.

The management objectives, operational plan for MAP and organisational structure must permit an integrated and participative approach, in order to mitigate against negative impacts from the surrounding urban context and to re-introduce the park to the modern urban scene. Consultations with the local community and stakeholders are necessary to acheive this, and to maintain the significance and other values of the site.

Vision and Management Objectives

The management objectives of a cultural site are built upon its significance and assigned management values. Several interactive sessions were initiated with a local working group composed of DoA, DoT, Madaba Municipality and the Orthodox Church, in addition to a group of experts from the Siyaha project, in order to develop the site management plan for Mādabā in 2007. The facilitator for this project was the author. The following vision and objectives were adopted, which clearly reflect the status of the edge and related urban impacts, especially with regard to land use, planning and interpretation. The protection of all periods of the site is another concern, which is reflected in the heritage conservation objectives. The following vision also projects a balanced approach, in which all the various stakeholders participate.

Vision for the Site Management Plan

The Madaba Archaeological Park is protected, promoted and integrated with the surrounding city and its heritage sites as an exemplary model for site management, to be implemented in partnership with all stakeholders to maximize its cultural and socio-economic value for the benefit of the Madabite community, Jordanians and tourists.

Heritage Conservation Objectives

- Protect and conserve the park, artefacts (e.g. mosaics), structures, historic urban fabric and traditional buildings in accordance with international

TABLE 2. Urban threats and values of MAP.
Source: Author

Significance:
threats & vulnerabilities

	Archaeology/history	Tourism/economy	Social/identity	Symbolic	Aesthetic/artisic	Educational	Information
Urban context							
• Visual pollution	2	3	1	3	3		-
• Drainage system/encroachment by neighbors	3	2	1		3		2
• **Disconnection with urban fabric**	3	-	3		3	2	2

1=low, 2= medium, 3=high

professional practices and charters, and to raise awareness of the importance of protecting the cultural heritage of Mādabā.

Policy Objectives
- Approval and implementation of the management plan by DoA / MoTA and all stakeholders, after its preparation, and to develop both a community-based approach for all protection endeavours and a partnership between all stakeholders.

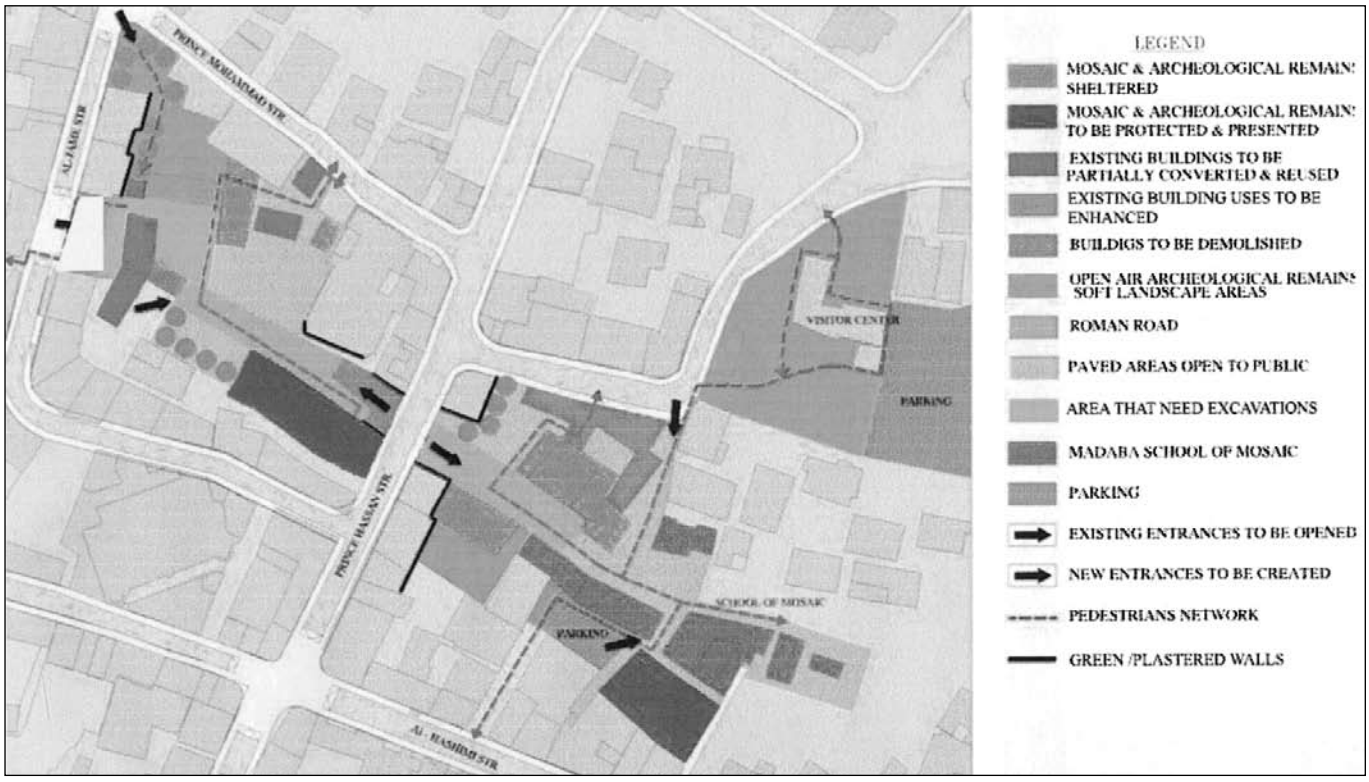
Sustainable Tourism and Visitor Management Objectives
- Ensure that the visitors' facilities and services are adequate to meet basic needs and are maintained to the highest standards, in addition to ensuring visitors' safety in accordance with the Principles of Sustainable Tourism / ICOMOS.
- Provide for visitor education and appreciation, in such a way that the archaeological remains are not significantly affected.
- Ensure that local people are involved in the planning and management of the site, and provide employment opportunities wherever possible.

Interpretation Objectives
- Ensure that the local inhabitants and Jordanian people as a whole understand the role of Mādabā in their cultural identity and history.

Conservation, Planning and Land Use Objectives
- Promote MAP as an integral part of the present open urban space of the city of Mādabā, by linking archeological sites — both visually and physically — with their urban contexts whenever possible; treat the edges and boundaries of the archaeological sites as places for education, visual communication and interaction.
- Develop a land use policy aimed at establishing a buffer zone around the park, to include building regulations and restrictions on building height.

Conservation, Land Use and Planning Objectives

The framework established for the objectives outlined above covers all issues related to the protection of the park's resources, including recent memory. It should therefore lead to the creation of an interactive boundary to the park and the opening up of parts of the site to local inhabitants, as well as helping to engage with and educate the community, especially youngsters. This is clearly reflected in the land use and planning objectives, which describe the action required to integrate the park with



11. Proposed interventions developed after the Second Tourism Mādabā study (Source: Adapted by the author).

the urban fabric of the modern town.

Promoting the park, or parts of it, as an open urban space for the city of Mādabā is the main tool with which to combat the phenomenon of isolated islands of ruins, standing isolated within the modern urban sprawl as illustrated in Figure 11. This is one of the main planning recommendations, but it needs to be coupled with a political decision to open selected, less sensitive areas to the public all day and, gradually, to monitor the engagement of the public at large. Furthermore, the proposed project for the Martyrs' church shelter and perimeter reflects the importance of providing an interactive edge to the site, instead of the physical barrier proposed in Figures 8 and 12. Here, the introduction of an educational / information edge to replace the high concrete walls separating the audience and passers by forms a basis for including the site within the daily pulse of the urban scene.

The protection and development of the late Ottoman ruins at the western edge of the park as in a small enterprise / concession project, to be managed by the local community (see FIG. 11), also projects a more interactive feel to the park, accessible to all users of the surrounding urban landscape.

Current and Proposed Management Organization

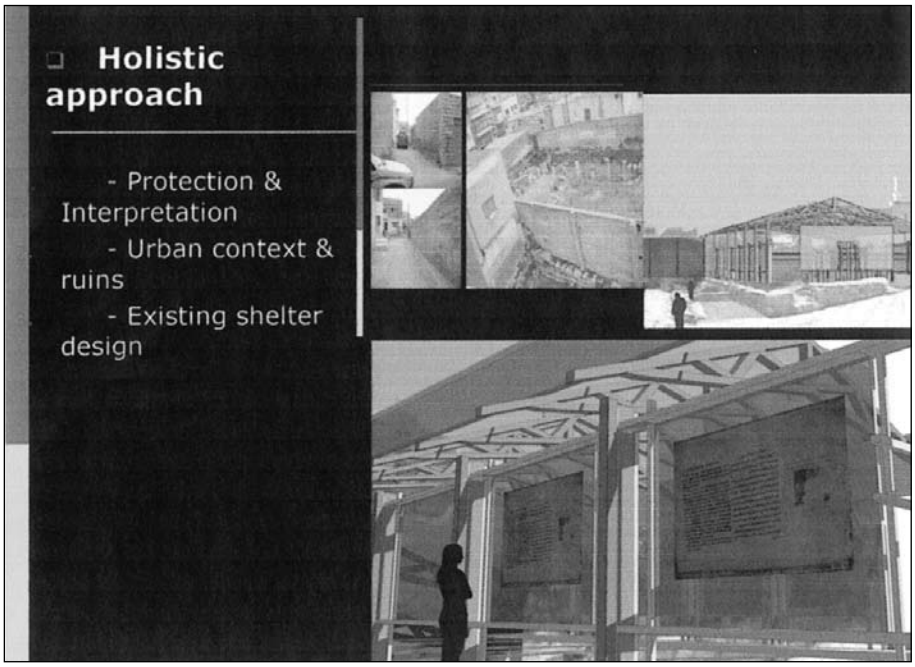
Current Situation

Responsibilities are currently divided amongst DoA, the Mosaic School (MI) and DoT. The DoA office has responsibility for the entire Governorate of Mādabā, as well as the districts of al-Jīza and Nā'ūr. Only three or four archaeologists are allocated to this office, which also has responsibility for the Mādabā Museum. No experts in conservation or site management are currently employed; most of the conservation and maintenance work is carried out by the Mosaic School. The DoT office manages the second part of the park, which has no signage or interpretation panels for visitors, and the Visitors' Centre. Capacity building within these institutions is necessary in order to implement any management plan.

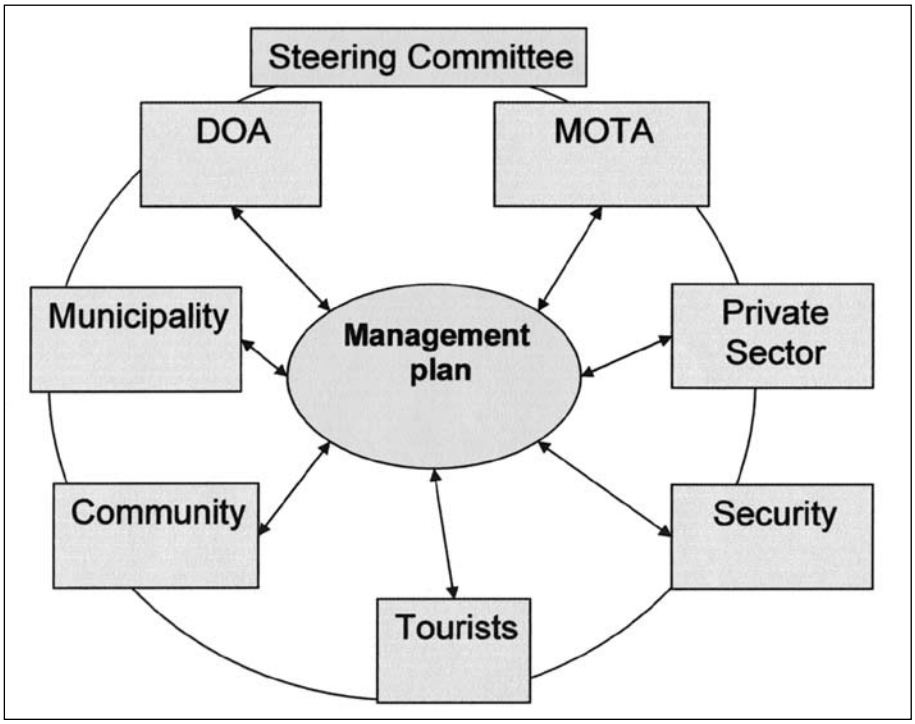
Proposed Organisation

Successful management of park policy needs to recognise and relate to the policy makers at DoA and MoTA, and to put forward a site-based management organisation to develop, implement and monitor the management plan. A possible framework for the management of the park is as follows:

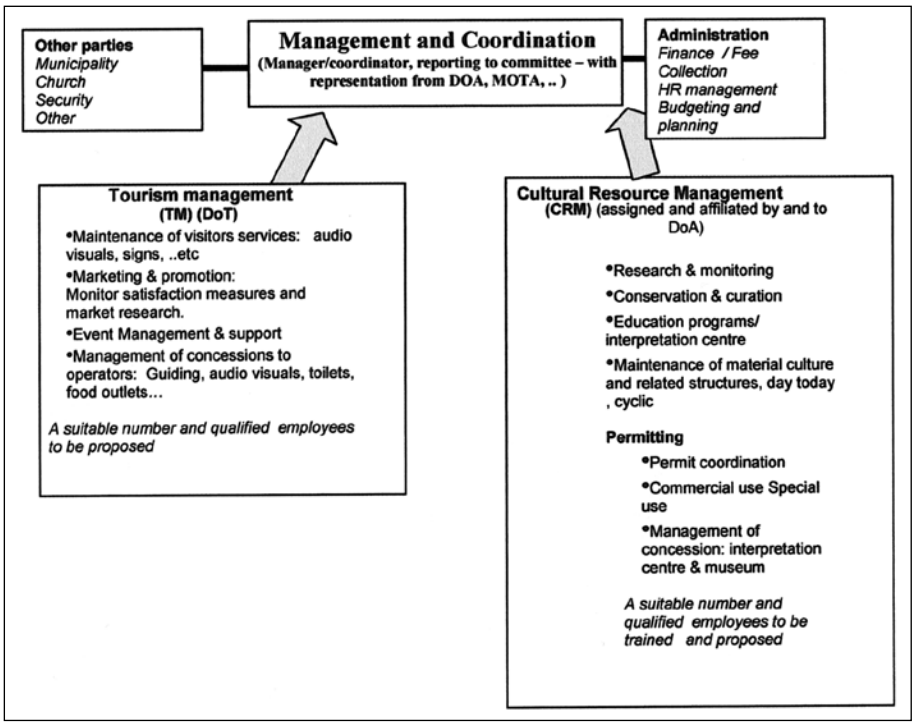
- A park manager / supervisor for day-to-day site operations needs to be assigned to Mādabā as suggested in Figures 13 and 14, in order to head up the cultural resource and tourism management fields that are respectively managed by DoA Mādabā and DoT Mādabā according to an approved site management plan.
- The manager will work closely with a 'follow-up committee', to be formed — initially — by the main stakeholders of DoT and DoA, which



12. Treatment of edges and boundaries of the urban archaeological sites / Martyrs' Church as places for education and / or visual communication (Source: Author, based on the Preliminary Design Proposal for the Martyrs' church shelter by the Author, commissioned by ACOR 1995-6).



13. Framework for management.



14. Proposed management roles and responsibilities for the park (Source: Draft Site Management Plan, 2007)

will be directed by a 'steering committee' made up of senior decision-makers at MoTA and DoA in Amman. The 'follow-up committee' should subsequently be expanded to include the other stakeholders.

The responsibilities of the park manager / supervisor should cover:

Cultural Resource Management (CRM) (DoA)

- Research and monitoring;
- Conservation and curation;
- Education programs / interpretation centre;
- Day-to-day and ongoing maintenance of material culture and related structure etc.;
- Permits: permit co-ordination; commercial and /

or special use; management of concessions at the interpretation centre and museum.

Tourism Management (TM) (DoT)
- Maintenance of visitors' services, e.g. audiovisuals, signage etc.;
- Marketing and promotion: monitoring of visitor satisfaction and market research;
- Events management and support;
- Management of operators' concessions, e.g. guiding, audiovisuals, toilets, catering.

An appropriate number of qualified employees needs to be recruited and trained, following screening of available human resources, to assist in the implementation of an approved site management plan and the administration of the human and financial resources of the park.

Conclusions

Site management planning is an interactive process without which the process of getting the different stakeholders to manage their resources effectively cannot easily be achieved. A site management plan for MAP cannot be conceived without taking the wider urban context into account, nor without a holistic view of how best to manage the urban archaeological sites of Mādabā. The roles of the local community and major local stakeholders will be critical to the success of the process and its sustainable implementation in the long term, with the aim of bridging the gap between the living and once alive sites of Mādabā.

Acronyms

ACOR	American Centre for Oriental Research
DoA	Department of Antiquities
DoE	Directorate of Education
DoT	Directorate of Tourism
FoA	Friends of Archaeology
ICOMOS	International Council of Monuments and Sites
MAP	Madaba Archaeological Park
MoE	Ministry of Education
MoTA	Ministry of Tourism and Antiquities
MI	Mosaic Institute
NGO	Non-Governmental Organisation
UNESCO	United Nations Education, Scientific and Cultural Organisation
USAID	United States Agency for International Development

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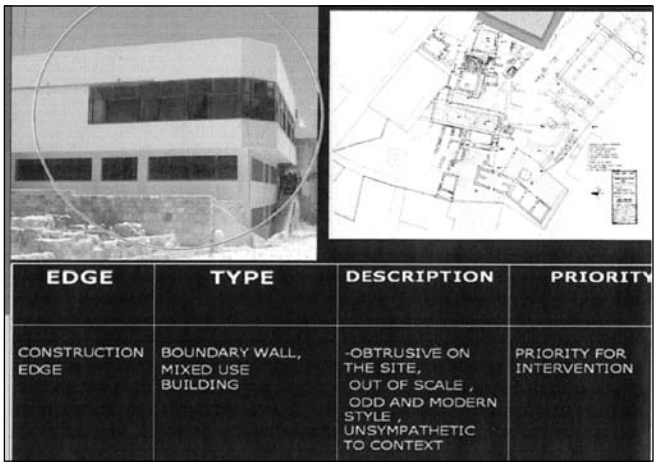
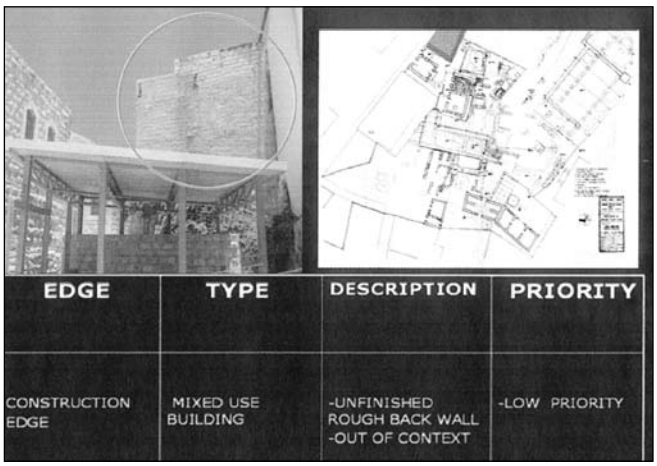
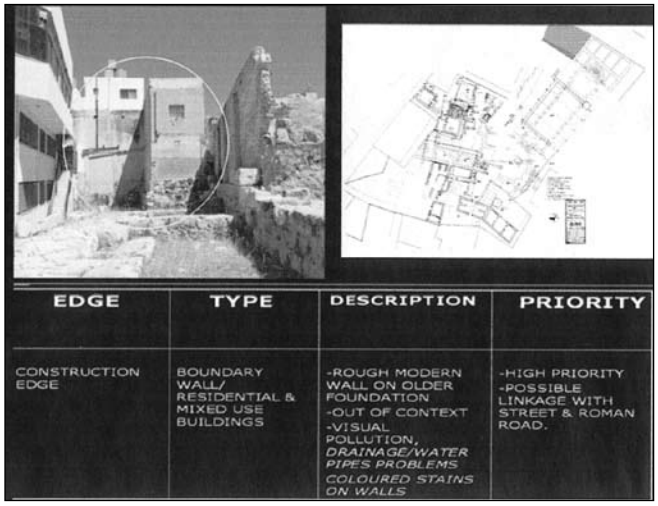
Appendix 1

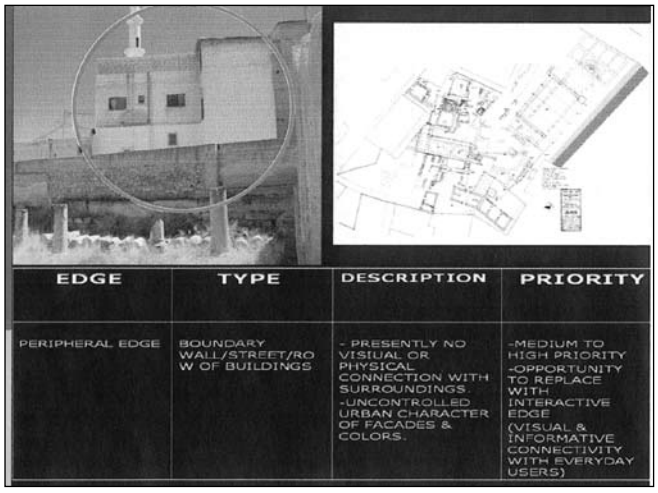
Physical Edges Analysis; Burnt Palace



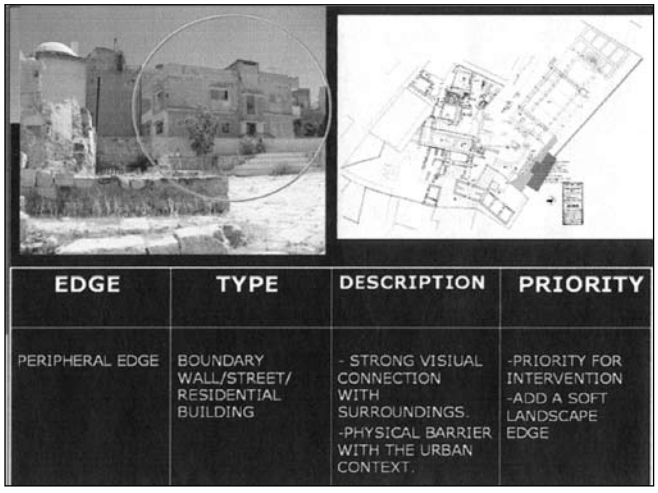




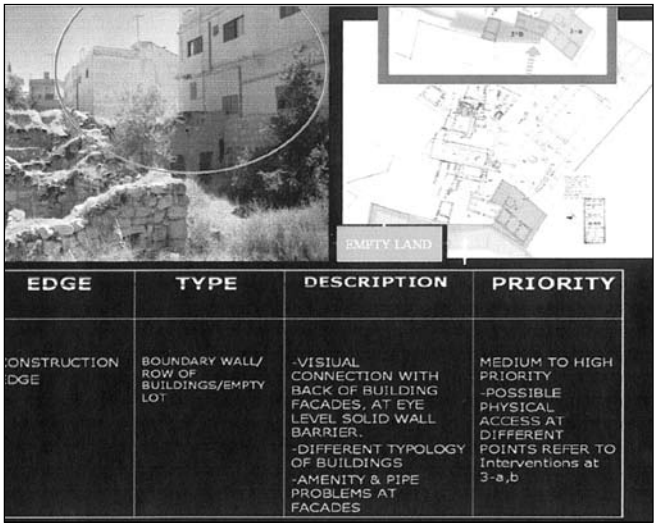
EDGE	TYPE	DESCRIPTION	PRIORITY
CONSTRUCTION EDGE	BOUNDARY WALL/ RESIDENTIAL & MIXED USE BUILDINGS	-ROUGH MODERN WALL ON OLDER FOUNDATION -OUT OF CONTEXT -VISUAL POLLUTION, *DRAINAGE/WATER PIPES PROBLEMS* *COLOURED STAINS ON WALLS*	-HIGH PRIORITY -POSSIBLE LINKAGE WITH STREET & ROMAN ROAD.



EDGE	TYPE	DESCRIPTION	PRIORITY
PERIPHERAL EDGE	BOUNDARY WALL/STREET/ROW OF BUILDINGS	- PRESENTLY NO VISUAL OR PHYSICAL CONNECTION WITH SURROUNDINGS. -UNCONTROLLED URBAN CHARACTER OF FACADES & COLORS.	-MEDIUM TO HIGH PRIORITY -OPPORTUNITY TO REPLACE WITH INTERACTIVE EDGE (VISUAL & INFORMATIVE CONNECTIVITY WITH EVERYDAY USERS)

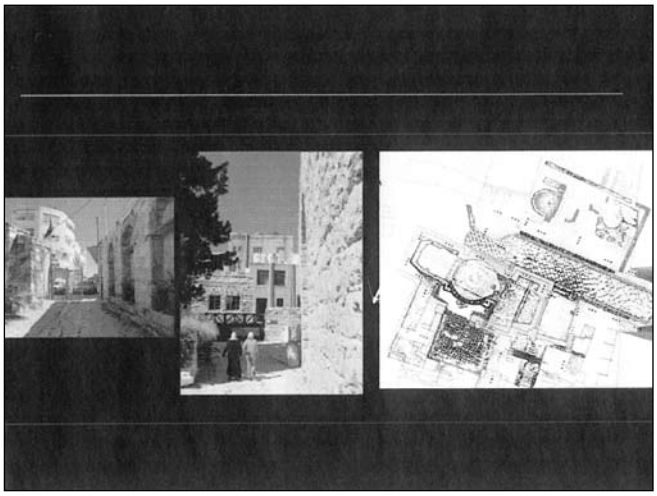


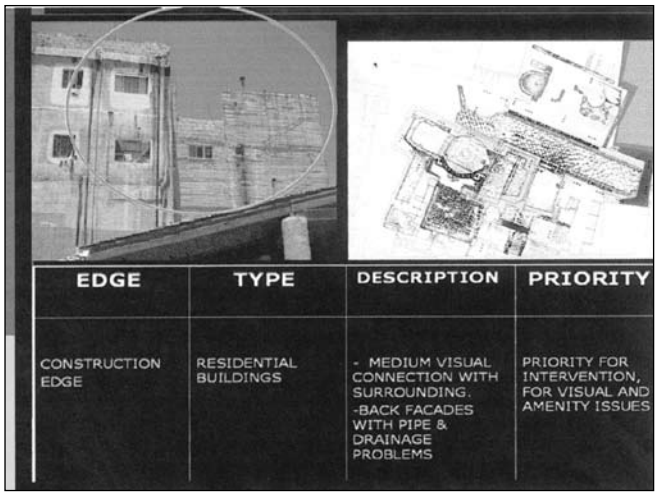
EDGE	TYPE	DESCRIPTION	PRIORITY
PERIPHERAL EDGE	BOUNDARY WALL/STREET/ RESIDENTIAL BUILDING	- STRONG VISUAL CONNECTION WITH SURROUNDINGS. -PHYSICAL BARRIER WITH THE URBAN CONTEXT.	-PRIORITY FOR INTERVENTION -ADD A SOFT LANDSCAPE EDGE



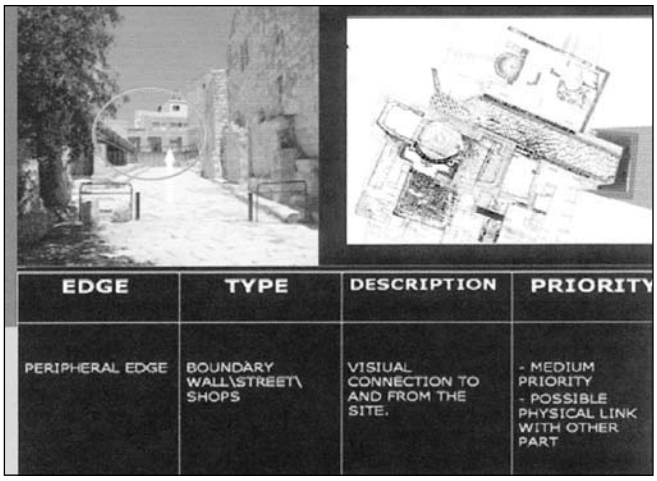
EDGE	TYPE	DESCRIPTION	PRIORITY
ONSTRUCTION DGE	BOUNDARY WALL/ ROW OF BUILDINGS/EMPTY LOT	-VISUAL CONNECTION WITH BACK OF BUILDING FACADES, AT EYE LEVEL SOLID WALL BARRIER. -DIFFERENT TYPOLOGY OF BUILDINGS -AMENITY & PIPE PROBLEMS AT FACADES	MEDIUM TO HIGH PRIORITY -POSSIBLE PHYSICAL ACCESS AT DIFFERENT POINTS REFER TO Interventions at 3-a,b

Edge Analysis Church of Virgin.





EDGE	TYPE	DESCRIPTION	PRIORITY
CONSTRUCTION EDGE	RESIDENTIAL BUILDINGS	- MEDIUM VISUAL CONNECTION WITH SURROUNDING. -BACK FACADES WITH PIPE & DRAINAGE PROBLEMS	PRIORITY FOR INTERVENTION, FOR VISUAL AND AMENITY ISSUES



EDGE	TYPE	DESCRIPTION	PRIORITY
PERIPHERAL EDGE	BOUNDARY WALL\STREET\ SHOPS	VISIUAL CONNECTION TO AND FROM THE SITE.	- MEDIUM PRIORITY - POSSIBLE PHYSICAL LINK WITH OTHER PART

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Ignacio Arce

Coenobium, Palatium and Hira: The Ghassanid Complex at al-Ḥallābāt

1. Introduction

One of the main goals of the ongoing research and excavation that is being carried out at Qaṣr al-Ḥallābāt since 2002[1] has been to clarify the transformation of the complex, and changes in its use, throughout its history, with a neutral approach that does not favour any period in particular. As a result of this research, a completely new picture has emerged, with evidence for a more complex evolution of the site in historical and architectural terms. This study is being conducted in the context of a wider one that analyses the evolution of architectural structures in the region from Late Antiquity to the Early Islamic period in the region[2]. This study encompasses all aspects, from building techniques to the physical transformation and changes in use experienced by these structures, as well as the political, social and economical evolution that can be elicited from those changes.

A detailed analysis of Qaṣr al-Ḥallābāt and its principal conclusions can be obtained in previous publications that present and interpret the evidence in full[3]. The aim of this paper is to present a in-depth analysis of the phasing and physical transformation of the complex during the pre-Umayyad period, specifically from the mid-6th to the mid-7th centuries AD, which is most probably attributable to the Ghassanid *phylarchs* and related to its socio-political, religious and military context.

Some of the hypotheses and conclusions which have been elicited from the evidence of this phase were totally unexpected (e.g. the co-existence of a monastery and a pre-Umayyad palace within the same precinct). For this reason, these data and related hypotheses have been cautiously and exhaustively double-checked before being presented to the scientific community as firm conclusions[4]. As a result of this cautious approach, in the first publication (Arce 2006) the existence of a Ghassanid *palatium* was proposed as the most plausible hypothesis, as it best corresponded with material evidence related to sequences of transformation and use during the 6th century AD. At this stage, its use as a monastery was not contemplated as the relevant evidence had not been uncovered[5]. Later, after the appearance of new evidence during the current excavations, the possible existence of a chapel inside the complex was contemplated (see Arce 2007), albeit cautious-

[1] This is a joint project between the Jordanian and Spanish Authorities, directed by the author and funded by the Spanish Agency for International Cooperation (AECI), within the Heritage for Development Programme. Its aims are the excavation, restoration and presentation to the public of the complex, not merely as an academic endeavour, but also as a way to promote the economic development of the region and its inhabitants through the development of cultural tourism as a means of fighting poverty. Special mention should be made of the work and commitment of my team, especially the dedication of assistant archaeologists Muhammad Nasser and Ghassan Ramahei, and of computer graphic designer Ignacio Moscoso, who has been responsible for the orthophotographic recording and the infographic reconstructions, following our hypothesis.

[2] This research, also directed by the author, is funded by the Spanish Ministry of Culture (Spanish Heritage Institute – IPHE), within the Programme for Archaeological Research Abroad.

[3] See Arce 2006, Arce 2007, and Arce, in press.

[4] These hypotheses have found full meaning when related to historical studies carried out by Prof. Irfan Shahid on the Ghassanids. His work on the transitional period from Late Antiquity to Islam provided a solid historical background for these hypotheses to become truly conclusions, which reciprocally support and illustrate the historical account based on his historical and documentary research.

[5] Notwithstanding David Kennedy's reference about a missing inscription, recording the transformation of the structure into a monastery (see Arce 2006: 42 and note 22). At that time, evidence for the existence of a chapel had not been uncovered. Furthermore, this hypothesis did not fit well with the palatine character of the reception halls (already uncovered and demonstrated to be pre-Umayyad).

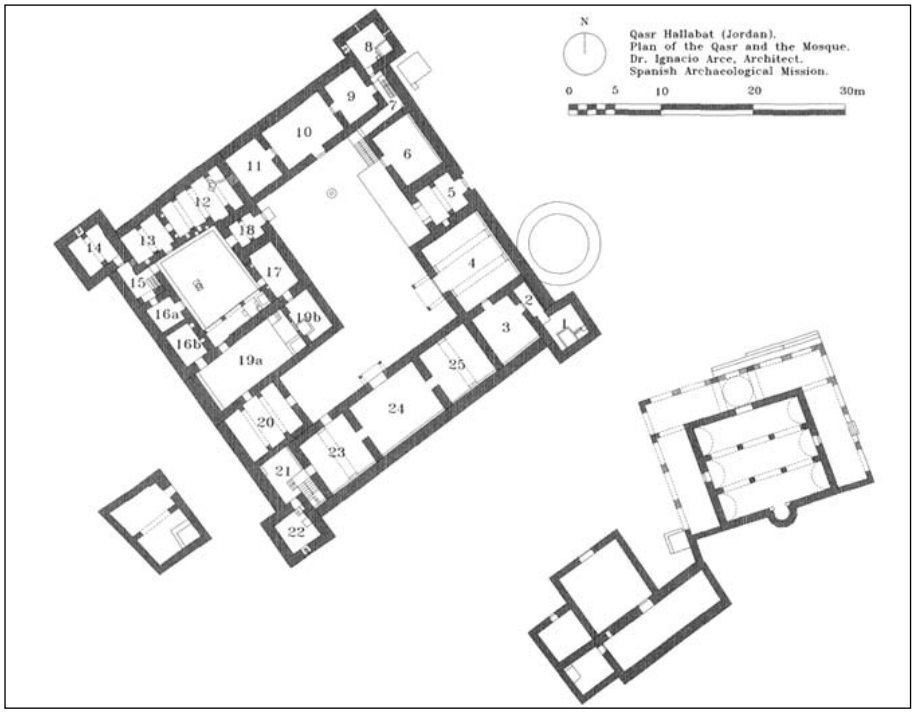
ly as no parallels for this unusual typology existed (owing in part also to its unusual association with a palatine structure, for which there were no parallels either). Finally, weight of evidence drove us to a more definitive interpretation[6]: after the dismissal of the *limitanei* and the agreement – *foedus* – between the Ghassanids and Emperor Justinian in 529 AD, the Tetrarchic q*uadriburgium* (then heavily damaged, most probably by an earthquake in 551 AD) was re-occupied, rebuilt and transformed into a monastery and palatine complex during the 6th century AD, and was most probably surrounded by a semi-permanent settlement or camp – *hira* – and an agricultural estate. This was most probably done by the Ghassanid *phylarchs*, thereby creating a complex that would subsequently be taken over and further refurbished by the Umayyads in the 7th century AD (FIGS. 1 and 2).

2. The Political and Military Context of the 6th Century AD

2.1 Consequences of the New Frontier Defence Strategy[7]

The military reorganization of the frontiers of the Byzantine Empire carried out by Justinian had a direct effect on the *limes orientalis* that stretched from the Black Sea to the Red Sea. It involved the diocese of Oriens and the Armenian provinces of the diocese of Pontus. The *limes orientalis* was divided into two major segments: Armenian and Arab. The first, running from the Black Sea to the Euphrates, was put under the control of Sittas as *magister militum per Armeniam*. Similarly, in the southern segment (the *limes arabicus*), Justinian placed as many tribes as possible under the command of Arethas ibn Jabala, who ruled over the Arabs, bestowing on him the dignity of kingship (see Shahid 2002: 21). In both cases the intention was to unify the command of all the territories and military forces under a single officer, in order to optimize resources and guarantee maximum efficiency against the increasing military threats.

In the Armenian section, the recruitment of indigenous forces[8] was decided upon because of their better knowledge of the territory. In the Arabian sector, the change was more radical as the *limitanei* of the regular army were withdrawn from their garrisons on the external frontier (the *limitrophe*[9]), as



1. Qaṣr al-Ḥallābāt: plan.

[6] Presented in Arce 2006a and b and Arce, in press.

[7] To better clarify the changes that took place in the region during the periods under consideration, it is advisable to review the socio-political and military context. We here summarize aspects that are of major interest for our discussion, using as main sources Parker 1985 and 2006, Kennedy 2004 and Shahid 2002.

[8] See Malalas, *Chronographia*, quoted by Shahid 2002, p. 23.

[9] *Limitrophe* literally means lands set apart for the support of troops on the frontier and thus describes the borderlands occupied by the Ghassanids (Shahid 2002 p. xxxiii). It corresponds to the so-called *badiya*, or steppic area inhabited by *bedw*, lying between the actual desert (*sahra*) and the cultivated lands where the cities were located.

2. General view after restoration.

this area was assigned directly to the Arabs under Ghassanid command. A major distinction between the two sections was that the *magister militum* of the Armenian sector was commander-in-chief of all the Roman forces at his disposal (both *stratiotai,* regular Roman troops who were Roman citizens, as were their commanders, and *scrinarii* or indigenous troops), whereas the Ghassanid phylarchs only commanded the *foederati, or* indigenous allies, of Oriens. Unlike the Nabateans and the Palmyrenes, whose territories were annexed and who became assimilated as citizens and *rhomaioi arabs*, the Ghassanids were allies (*foederati*) rather than Roman citizens (*cives*) which, according to Shahid (2006: 116) helped them to retain a strong Arab identity and established a basis for the Arabisation of the region.

In Arabia and Palestina, regular Roman soldiers (*stratiotai*) under the command of a Roman / Byzantine *dux* kept control of major cities and their hinterlands. Meanwhile, Arab *foederati* took over military duties on the frontier (*limitrophe*), which had until that time been occupied by the *limitanei* (frontier guard forces), thereby becoming de facto *limitanei* themselves[10].

The *limitanei*, garrisoned in their forts, had been performing static guard duties distinct from the duties of a mobile field army. This might have become monotonous and affected their combat preparedness, leading to inefficiency. This, together with the increasing risks posed by the raids of the Saracens (nomads and pastoralists) and the threat of the Sassanian army, especially that posed by their Arab allies the Lakhmids, led to a radical change in defence strategy. This involved the final dismissal of the *limitanei* by Justinian, who was dissatisfied with their performance, and the total reorganization of the *limes orientalis*.

Only a unified army of all the Arab *foederati*, under a single commander and using similar strategies and tactics to those of the attackers (nomadic pastoralists who were raiding the region), could shield the region from such threats. This was the role played by the Ghassanids as *phylarchs* of all the Arabs in the Roman provinces since 502 AD (a role that had been played before them by the Tanukh and the Salih tribes in the 4th and the 5th century AD respectively). The conclusion of a new *foedus* with the Banu Ghassan[11] after the death of Jabala marked a new era. The *basileia* (kingship) and the *archiphylarchia*[12] conferred on Arethas in 529 AD marked a major change in the political

[10] Apparently due to the slow pace of replacement, all three categories of troops are mentioned in the Provincia Palestina in the sixth century: *foederati, limitanei* and *stratiotai*.

[11] The analysis of newly discovered documents has led to the conclusion that in 529 AD, in order to defend the territories corresponding to this 'gap', two brothers — Arethas and Abu Karib — were endowed with a *phylarchia* and a *basileia*. The latter was responsible for the southern area, Palestina Tertia province (which included Sinai and western Arabia). The former was responsible for the central and northern areas, i.e. Provinciae Arabia, Phoenicia Libanensis, Syria Salutaris and Euphratensis, broadly speaking located between Palmyra and Wadi Hasa. These documents include the Petra papyri, a Greek inscription from Samma in the Golan, a Syrian ecclesiastical document from al-Nabk in Syria and the Sabean 'dam inscription', which lists the Near Eastern rulers who sent embassies to king Abraha, the Ethiopian conqueror of Yemen (see Shahid 2002: 29). Despite this separate phylarchy, Arethas remained supreme commander-in-chief of the entire federation.

[12] *Phylarchos* originally meant the commander or chief of a *phyle*, or tribe; later it also came to mean a foreign lord or chief in a treaty relationship with Byzantium (Shahid 2002: 10). He was also nominated *patricius* and *stratelates*, which was the Greek equivalent of *magister militum* (ibid: 26).

and military role assumed by the Ghassanid kings. This change would determine the historical events to come, which would in turn illuminate those that occurred at Qaṣr al-Ḥallābāt.

In political terms, the *foedus* of 502 AD that had been established with Jabala, Arethas' father, was narrower in scope than the consecration of Arethas as 'king' in the *foedus* of 529 AD. This would necessarily be reflected in the sort of architecture demanded by these new monarchs, who would have required a 'theatre' in which to perform their new role as kings of all the federate Arabs and in which to receive allegiance from their subjects and clients.

In addition, the fact that the Ghassanid army was partly a frontier force and partly a mobile field army must be taken into account[13]. It was therefore dependent on the effective control of water sources for its logistical bases. This would explain the location and use of some of the fortifications — towers — that were built or refurbished, such as those at Haliorama and probably at Burqu' and Ḥallābāt itself. As a frontier force, the Ghassanid army had long before participated in the Persian wars with its mobile army, but with the new *foedus* they now added the duties of watchmen of the frontier to their responsibilities. For that reason, their strategy and tactics (especially under Mundhir) responded to a new style in frontier wardenship, not static and defensive, but mobile and aggressive (see Shahid 2002: 49-50). Accordingly, their main military contribution was cavalry (decisive at the battle of Callinicum where they deployed approximately 5000 cavalry troops), which would explain the location of one of their headquarters in Gaulanitis, source of the best Arab horses and famous for its pastures.

2.2 The Fate of the Fortifications of the Limes Arabicus

The gradual dismissal and replacement of the *limitanei* by the Ghassanid *foederati* for the defence of the *limes* was a radical change from the Diocletianic system of defence (which consisted of *comitatenses* in the interior and *limitanei* along the borders[14]) and therefore dramatically changed the political, military and even religious character of the region. Gradually, forts that had housed the garrisons of the regular Roman Army for centuries were emptied and re-used in different ways, often as monasteries. In other cases, such as at Kastron Mefa'a, they became extensions *intramuros* of the *vicus* (built and inhabited by the families of soldiers once the ban of marriage while serving the Roman Army had been lifted) which had hitherto grown *extramuros* in the shadow of the military forts. Others forts were completely abandoned, as at al-Lajjūn and Udhruḥ.

The detailed description by Procopius of the fortifications built under Justinian as part of this reorganization of the *limes* reveals a gap between Palmyra and Ayla, the defence of which was entrusted to the Ghassanids. According to Shahid, this gap was a further expression of Procopius' antipathy towards the Arabs: a "vested and premeditate silence would have deprived historians from an accurate and neat picture of the military and political situation of the region" (Shahid 2002: 27-37). However, in my opinion this silence of Procopius about the construction of new fortifications under Justinian in this region may be linked to the fact that such fortifications would have been useless for a mobile field army like that of the Ghassanid *foederati*. Such an army would not have been garrisoned in forts, but would have been based in temporary or seasonal camps: *hira* / *hirta* in Syriac.

As a result, no substantial fortifications would have been built *ex-novo* at that time in this southern stretch of the *limes,* at least in the *limitrophe* under Ghassanid control, as there would have been no need for them. A few towers, perhaps associated with a monastery as at Burqu', may have been built to protect strategic points such as crossroads or water sources, assuming there was no previous Roman structure fulfilling that function that could be re-used. It stands to reason that structures abandoned by the dismissed *limitanei* would have changed function and been refurbished. Some, such as Ḥallābāt, Dayr al-Kahf, al-Fudayn and probably

[13] To illustrate the mobility of the Ghassanid army we can mention the battle of Qinnasrin / Chalcis that took place in 554 AD, during the 'Federates War' which lasted from the end of the second Persian War in 545 AD until the 'Endless Peace' of 561 AD. This battle took place in *Syria Prima*, in an area that should have been defended by the *stratiotai* of the regular Byzantine Army under the command of the *dux* of Syria, far away from the Ghassanid headquarters in Gaulanitis. This demonstrates how their role of *limitanei* actually extended as far north as Sergiopolis, far from the area theoretically under their control. Another example of the great mobility of Arab *foederati* is the inscription dated 328 AD of Imru al-Qays proclaiming that he had fought in areas of the Arabian peninsula that were at a great distance from each other (Shahid 1984: 53; see also Shahid 2002: 49).

[14] Shahid 2002: xxxii.

Dayr al-Qinn, became monasteries. These could have controlled perennial water sources on behalf of the *foederati*, who may occasionally have camped nearby, or even have played a more complex role as at Ḥallābāt. Those which were not of strategic value would have been abandoned, like the huge and difficult-to-manage c*astra* at al-Lajjūn and Udhruḥ, or would have been transformed into true cities, as at Kastron Mefa'a.

Other new constructions and refurbishments would have had this mixed character, part religious and part palatial, that denote the complex political and religious agenda of the Ghassanids (as at Ḥallābāt). They range from audience halls with religious uses (or *vice versa*) like Mundhir's *praetorium* at Resafa, to monasteries with towers, whether for the defence of the monastery or to be used as watch towers to protect roads and / or strategic water sources (small-scale like Burqu', or larger ones like Haliorama / Qaṣr al-Ḥayr al Gharbī), to hostels (*xenodocheion*) that could offer help and rest to travellers and comfort to their bodies and souls, thereby combining religious, military and 'philanthropic' functions. More complex structures, always with a multi-layered function that may not have been primarily military, could include Usays and Dumeyr. Although the latter had a fort-like appearance, it is more likely to have been palatial – and perhaps monastic – compound, meanwhile the former had a more complex configuration with several buildings, among them a fort-like structure and remains of a monastic chapel – (according to Franziska Bloch pers. comm.) [15]. From all this a complex image of buildings and complexes fulfilling more than one function emerges, but all served a common aim: the political and religious agenda of the Ghassanids (which, as we will see, on some occasions responded to Byzantine interests, but on others resulted in open conflict).

2.3 Monasteries as Defensive Elements

Monasteries would have played a key defensive role on the *limitrophe* after the *limitanei* of the regular Roman Army had been replaced on the frontier by Ghassanid *foederati*. These fortified monasteries (and their towers) were able to act as watch posts that could alert nearby military stations and confront attackers (thanks to their fortifications), acting as a *vigilarium* of the Roman Army would have done in the past[16].

Some of these monasteries (whether built on the site of a former Roman fort or not) were associated with temporary or permanent camps (*hira*) and can therefore be considered as part of their logistical support. The Ghassanid *maslaha* / *hira* (fort and camp) on the *limitrophe* was manned by observant Christian troops, who performed their religious duties even in this difficult location. The monasteries established in the vicinity would also have played an important role in this respect[17]. A landscape of permanent buildings (like those at Ḥallābāt) arose out of this symbiosis between monasteries and camps. These buildings would have been surrounded by tents, which – in some cases – were subsequently replaced by additional buildings (as the case of Ḥallābāt shows[18]).

In other cases, monasteries were equipped with proper fortifications, built *ex-novo* to protect against attacks by nomads, as was the case at the *castrum-lavra* of St Catherine in Sinai after a request by the monks to Emperor Justinian (see Monferrer 1999: 82 and 91-3). Eventually two more *castra* were built in the vicinity and manned with 100 troops to protect the monastery more effectively (Monferrer 1999: 92).

3. Summary of Phasing at Ḥallābāt (FIG. 3)

According to our conclusions, the phases of use and related transformations that occurred at the Ḥallābāt complex can be summarized as follows[19]:

During the first phases (Ia, Ib, Ic and II), the structure of the Qaṣr had a clear military purpose as part of the defensive system of the *limes arabicus*, manned by *limitanei* and having all the requisite features and characteristics of a military structure.

Phase I (2nd-3rd century AD) corresponds to

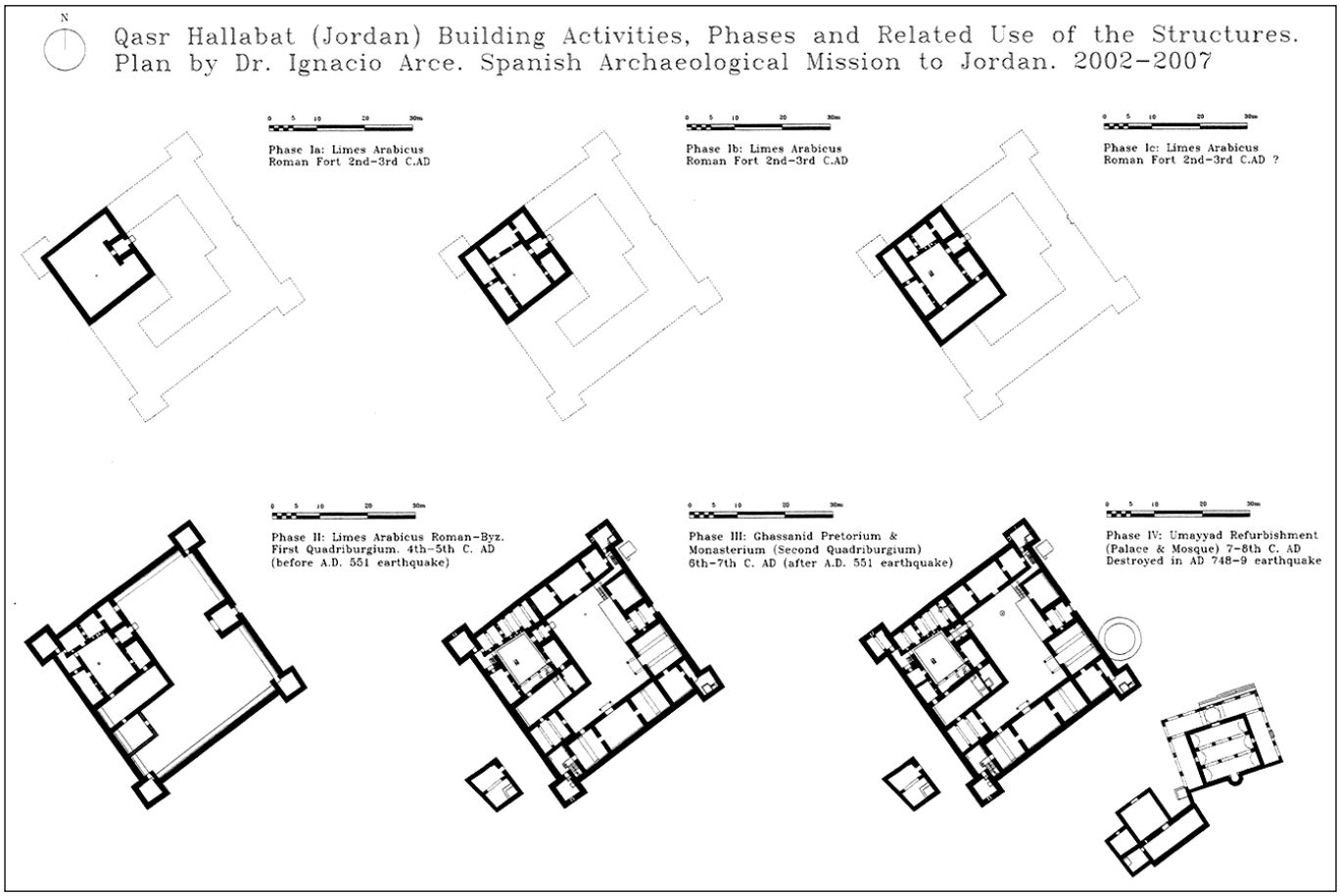
[15] Lenoir 1999.

[16] Lassus, J., *Sanctuaries Chrétiens de Syrie*. Paris, 1947, p. 269 & note 2 (quoted by Shahid 2002: 205).

[17] Regarding the location of troops near monasteries, it is noteworthy that troops who were grateful to Simeon the Younger for his aid in their victory over the Lakhmid king Mundir stayed with him after returning from battle.

[18] This would explain the scattered and "chaotic" pattern of houses in settlements such as Ḥallābāt, Umm al-Jimāl or the outskirts of Kastron Mefa'a. It is revealing that some confusion was experienced when mapping these scattered buildings at Ḥallābāt, especially when trying to distinguish between the remains of these buildings and the "foundations" of bedouin tents which were pitched in the area until recently.

[19] For the sake of the reader and to facilitate the discussion we include this summary here. For a complete discussion see Arce 2006, Arce 2007 and Arce in press.



3. Qaṣr al-Ḥallābāt: evolution of the complex and phases of use.

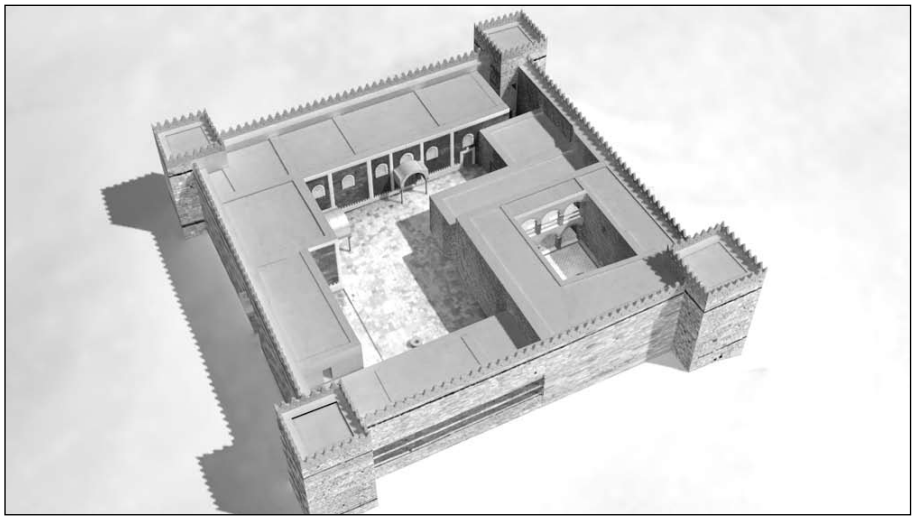
the 'first fort' or core building, which was 17.5m. square and located at the northern corner of the present building (FIGS. 3a, b and c). It was built of regular masonry consisting of well-dressed limestone ashlars with even, tight joins. Later, the building was internally sub-divided by means of partition walls that delineate several rooms around a central courtyard with a cistern (FIG. 3b). It was then enlarged on its south-eastern side with the addition of a room running from the NW to the SE façades (FIG. 3c).

During Phase II (end of 3rd / beginning of 4th century AD), an enclosure 38m. square (the 'first *quadriburgium'*) was built around the **'first fort'** (FIG. 3d). It had corner towers[20] (including the N / NW one incorporated within the oldest fort) according to the well-defined typology for this period. The building technique of this first *quadriburgium* consists of roughly hewn limestone blocks which are indicative of rapid construction, perhaps in response to the threat posed by the Persians. This episode of enlargement and transformation was almost certainly associated with the build-up of the frontier defences during the Tetrarchic period, which included the construction of many *quadriburgii* to host the *limitanei* units[21] which manned these fortified structures.

In Phase III (the so-called 'second *quadriburgium*'), there was an episode of refurbishment which included three distinctive features indicative of a change in use. First, the lack of a defensive capability in its newly refurbished perimeter walls and towers, second, the construction *intramuros* of a series of reception rooms with a clear representative function and, third, the transformation of the oldest fort into a monastery, which included the construction of an inner portico and chapel (FIGS. 3e, 4, 16 and 19). It's worth mentioning that the interventions that gave birth to the monastery may have been carried out in two stages: first, the aban-

[20] Remains of these first towers can be seen incorporated within the present ones or as part of their foundations.

[21] In many cases these units were composed of *equites promoti indigenae*.



4. Reconstruction showing the complex in the late 6th century AD.

doned military structure would have been transformed into a simple monastery and, later, it would have been patronised and completely refurbished by the same rulers who built the adjoining palatine structures.

The latest building phase, Phase IV, which dates to the Umayyad period, re-used and redecorated the palatine areas of the complex with a clear and distinctive character, different from its predecessors in terms of materials, building techniques and decorative features, and transformed the monastery into kitchens, stores and service areas (FIG. 3f).

This refurbishment of the pre-existing palatine and monastic structures by the Umayyads, reinforces the hypothesis that dates the Phase III structures (the so-called 'second *quadriburgium*', including the basalt structures[22], and the refurbishment of the oldest fort as a monastery) to the second half of the 6th century AD. The lack of any dedicatory inscription[23] prevents us from making categorical assertions, but we can infer that at that time and in such a peripheral area of the *limitrophe*, only the Ghassanids *phylarchs* could have built and patronized a joint palatial and monastic complex like this (see *addenda* below on the hypothetical identification of the site).

4. Description and Interpretation of the Phase III Transformations

We can distinguish between two episodes of building activity during this phase, which is dated to the 6th century AD: first, construction within the walls of the 'second *quadriburgium*' which was devoted to palatine use and, second, the transformation of the former 'first fort' into a monastery (FIGS. 2 and 3e). Both entailed the transformation of the original military structure in response to the changes in the *limes* defence strategy described above. Consequently, all the Phase III transformations resulted in the loss of the defensive character of the building, especially in the case of the perimeter wall area where, for example, the towers were transformed into latrines and stores.

4.1 The Palatine Area

Following a major destruction (most probably resulting from the 551 AD earthquake), the structure of the *quadriburgium* was rebuilt on identical lines[24]. The towers and stretches of the perimeter wall belonging to this phase were well-constructed of medium-size limestone ashlars, laid in regular courses, with courses of basalt headers placed at certain heights to bind both faces of the wall (FIG. 2).

[22] Which provide a clear *post quem* date, thanks to the fragments of the Anastasius edict carved on them. For the hypothesis that these came from a structure in a nearby city, which collapsed in the 551 AD earthquake (the same that is thought to have destroyed the 'first *quadriburgium*' at Ḥallābāt), see Arce 2006, Arce 2007 and Arce, in press.

[23] It is ironic that on a site so rich in inscriptions, not a single reference to this period has survived. Clearly, the Umayyads were meticulous when defacing any visual reference to the previous rulers and lords of Ḥallābāt. See also Note 5 re. the monastery's missing inscription.

[24] For this reason we use the term 'second *quadriburgium*', despite the fact that it was no longer a military *quadriburgium*, but a completely new building with new uses, and a new internal arrangement albeit externally it was almost identical to its predecessor.

The building now included new internal masonry partition walls, constructed in the same manner as the external wall, but using only basalt stone (FIGS. 5a and 7). These walls define three main units, or clusters of rooms, respectively comprising rooms 9, 10 and 11 (in the NE section), rooms 23, 24 and 25 (in the SW section) and rooms 3 and 4 (in the SE section, including the south tower, 1). The layout of the first two units is almost identical, with a main room flanked by two smaller ones[25]. From one of the smaller rooms, there is secondary access to the nearby towers, which have a store-room below and a latrine above, with an outlet located downwind. The importance of the main room is emphasised by its size, decoration and direct access from the court. Furthermore, in the SW cluster, room 24 was spanned by an elaborate wide-spanned ceiling supported by a cantilevered basalt cornice[26], while the flat ceilings of the lateral rooms were supported by diaphragm arches. A separate, less important, unit is that around room 6, situated north of the main entrance, room 5, to the complex. **An external staircase was added to provide access from the main courtyard to the rooms above, which probably functioned as guard-rooms**[27].

Room 4 is different from the other halls because of its orientation, more or less, towards the east (like the monastic chapel), the presence of two N-S diaphragm arches to support the ceiling, and the absence a second flanking room. Also unique are the traces of carved crosses and palms on the springers of the two diaphragm arches. Additionally, this room gave sole access to tower 1 (via room 3 and corridor 2), which was thereby deprived of its own access to the courtyard, as were the other towers. Tower 1 is also unusual, not only because it is the only one without a latrine on its upper floor, but also because it is lacks a constructed staircase, with the result that it would have been necessary to use a ladder to access it. This might relate to some special use for the upper room, perhaps as a strong-room — *bayt al-mal* — or as a cell. The question of whether room 4 (and, indeed, the whole SE cluster of rooms: 1, 2, 3 and 4) could have had a further religious function, such as a palatine chapel or an *oratorio* secluded from the monastery church[28], remains open. It is noteworthy that its entrance, covered by a canopy (see below), was aligned to face the door of room 20. This room 20 therefore acted as a 'narthex' for the monastic chapel and for those coming from the palace (intended both as an access point and 'buffer zone' between the former and the latter - see plan).

We should emphasize the 'shared', i.e. political and religious, use that occurs in Ghassanid audience halls (the case of Mundhir's **hall** at Resafa is paradigmatic[29], as it was apparently used not only as a church, but also as a venue for conferences). **Room 4 at** Ḥallābāt could also have been used in this way. Indeed, if we take into account the fact that this type of 'shared' use occurred at Ḥallābāt on the scale of the entire complex, i.e. a monastery next to a palace, it is perfectly plausible that the same could have applied in the case of one of its halls. Fowden, referring to Mundhir's *Pretorium*, remarks: "to suggest that church and audience hall were mutually exclusive categories is simply to miss the point" (Fowden 1999: 168). Our conclusions show that the same can be said of palaces and monasteries[30].

This shared use of buildings in the Byzantine realm can be seen as a symbolic expression of the effective unification of Church and Empire that came into being after Constantine. This is evident, for example, at the "Golden Octagon" built beside the Imperial Palace on the Orontes island at Antioch. Owing to its location, Krautheimer (1981: 89) has inferred that it was simultaneously both a cathedral and palatine chapel, and thus would have hosted very different ceremonies with both political and religious connotations.* This would be the

[25] This sort of arrangement is very different from the typical Umayyad scheme (the so-called 'Syrian *bayt*'), comprising a central oblong room flanked by two pairs of lateral rooms opening on to it.

[26] Similar to those found at Umm al-Jimāl, in the main building of the "barracks", in the main hall of the *Pretorium* – above the cruciform hall – and in the late entrance to the court of house XVII (amongst others).

[27] Mural paintings imitating marble were added to room 6 in the Umayyad period, when it was probably also used as a reception hall.

[28] Shahid points out that towers in monasteries could also have been places of retreat for solitary monks - a place of seclusion for those who lived in a *koinobion* but nevertheless wanted to contemplate in solitude. He notes that these seclusion towers sometimes had their own chapels (Shahid 2002: 205 and note 247).

[29] See Brands 1988; Fowden 1999: 168; and Shahid 2002: 129.

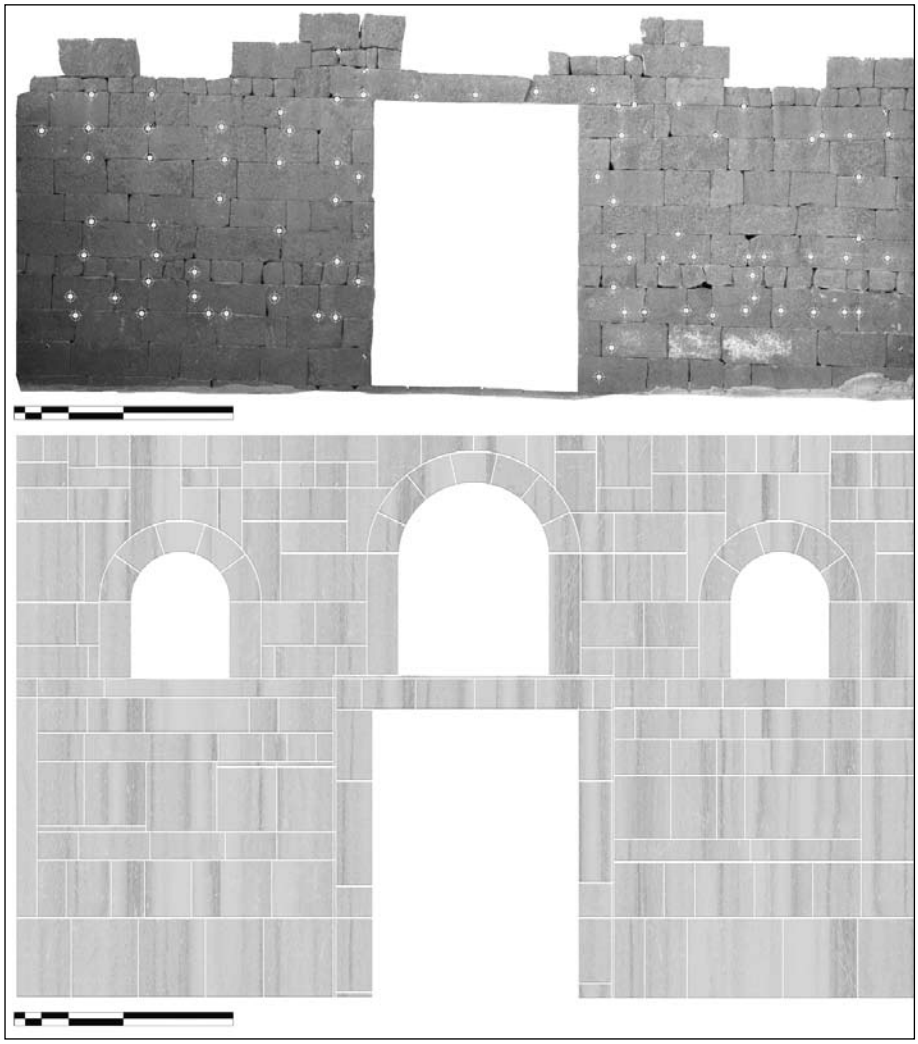
[30] Much later, another zealous Christian monarch, Philip II of Spain, would build his Escorial palace following the same concept, sharing the premises of the palace building with a monastery served by monks from the Order of St. Jerome (an order patronised by the Spanish kings).

* It could even seen as an antecedent of the mixed political and religious, funtions given to congregational mosques in Islam.

antecedent for those built by Justinian (and later by Charlemagne) as part of their palatine complexes. Even more relevant to our discussion is the case of the *Chrysotriclinos*, or "Golden Triclinium", of the Great Palace of Constantinople. As was the case with Roman audience halls, this had simultaneous religious and civil functions, serving as an audience hall for the 'divine majesty' of the Emperor and as a palatine chapel (Krautheimer 1981: 91).

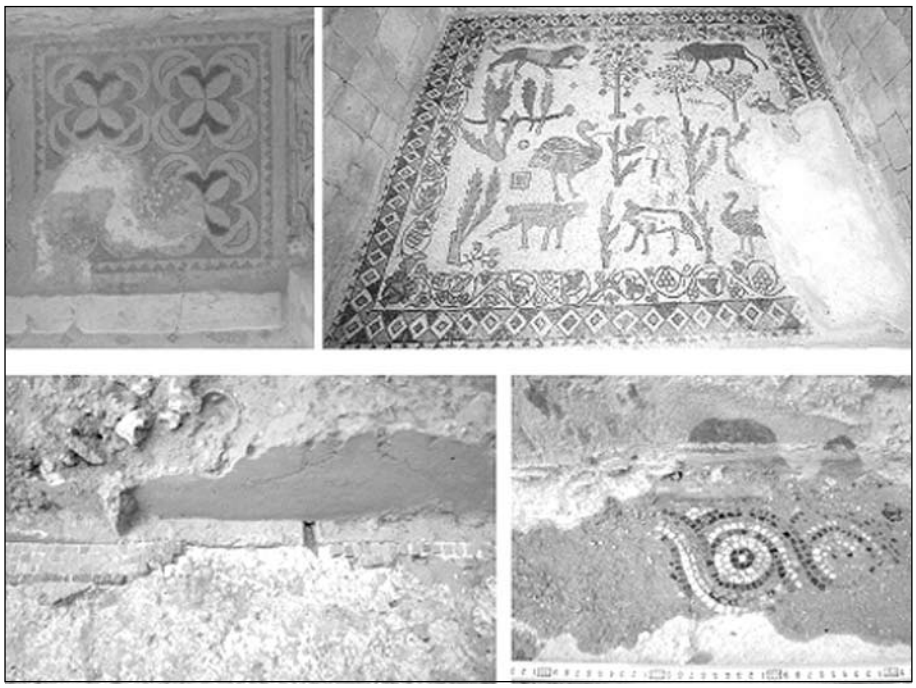
Decoration

These rooms were principally designed as reception halls and were therefore lavishly decorated, both internally and externally. The degree of richness in their decoration varied with their importance: for instance, room 24, probably the most important one, was lined with marble slabs (fixed with metal **cramps** and mortar – see FIGS. 5a and b) and had a mosaic floor fringed with black and white stone *tesserae*. The marble wall cladding remained in use into Umayyad period, but the original floor mosaic was completely removed (owing to the political message it conveyed) and replaced with a new mosaic with glass *tesserae* and a guilloche fringe[31] some time during the Umayyad period (FIGS. 6c and d). All the **extant** rooms probably had mosaics, of which only traces survive in the palatine area and church (also removed by the Umayyads because of their religious connotations). At the monastery, all mosaics that did not convey any obvious religious message were kept for practical reasons; some were even restored.



5. Ḥallābāt room 24 (reception hall). A: Mapping the holes drilled / carved on the basalt-built northern wall to take the metal cramps which held the marble slabs that lined this reception hall in place. Note, at floor level, traces of the thick (2 to 4cm.) mortar layer used to fix the slabs and even traces of the marble slabs themselves. B: Reconstruction of the marble panelling according to the material evidence, *viz*. (cramp holes and imprints of the slabs on the fixing mortar).

[31] This stratigraphic evidence was the proof that triggered the hypothesis of a pre-Umayyad palace, taken over and subsequently refurbished by the new Muslim rulers. Just a few *tesserae* of the fringe of the original mosaic survived under the new one, but these were enough to prove the assertion.



6. Ḥallābāt, pre-Umayyad mosaics. A: Monastery, portico mosaic (see also Arce 2006: fig.12 and Arce 2007: figs. 17 and 18). B: Palace, room 11 mosaic (Piccirillo 1993: fig. 776). C: Palace, hall 24 pre-Umayyad stone mosaic laid at the same level as the marble cladding (removed). D: Hall 24, Umayyad glass mosaic applied over the remains of the previous one and against the marble cladding.

The Mosaic in Room 11

The discovery of mosaics (or traces of them) of the pre-Umayyad period, not only in the area of the former monastery (FIG. 6a) and chapel, but also in the audience halls, has led to a re-assessment of the unique mosaic in room 11 (FIG. 6b) which had been attributed to the Umayyad period (along with others uncovered in the palatine area by Bisheh[32]).

This mosaic is notable because of its technical characteristics and themes, both of which are quite different from the rest of the 'Umayyad' mosaics at the site. It has been suggested that these may have been created by different mosaicists (Piccirillo 1993: 350), but without inferring a different date.

Whereas the other mosaics with figures were composed of a series of interlaced braids enclosing medallions, with the figures placed both in the medallions and in the spaces left between them, this was the only one with a single field of representation containing the main figures. It is enclosed by a double frame: an external one composed of lozenges, and an internal one of vine scrolls with bunches of grapes stemming from four jars placed in the corners. The field is divided by a central axis defined more clearly in the upper section by a tree of life, which separates an ox and a strange lion with human face. Below the latter, a snake, also with a human head and bearded face, creeps between the bushes, while below the former there are two fruit trees and a bird placed upside down. In the central and lower section of the field, the axial composition is not so clear, as it is composed of two rows of three figures each. The central one portrays a hunter with bare feet carrying a hare on his shoulder and leading an ostrich by a rope, while he walks towards a second ostrich on his right, with a bird on top of it. In the lower register, a sheep confronting a ram and a third ostrich complete the composition.

Although the design and composition is very naïve, combining common Christian-inspired themes of the Byzantine period (ox and lion confronted or eating side by side, tree of life, the sequence of animals etc.), the use of human faces applied to animals is really unusual and disturbing as it seems to conceal a message, the meaning of which is obscure to us. It might represent the fight between good and evil, personified in these animals with human faces. In any case, it does not seem at all like an iconographic design devised for an Islamic palace. Consequently, the hypothesis of a pre-Umayyad date for this mosaic (which would associate it with the Ghassanid complex) could be put forward. In any event, it was preserved in the Umayyad period for a reason that remains as obscure as its symbolism – most probably both issues

[32] It was considered Umayyad by both Dr Bisheh and Father Piccirillo (Bisheh and Piccirillo 1993: 350-1 and figs 774-776).

are closely related[33].

Canopies, an Architectural Device for Framing Divine and Earthly Might

The entrances to these rooms were further enhanced with the construction of canopies over their doors (in rooms 4 and 24, but not in room 10)[34]. These structures are certainly pre-Umayyad (as the mortar used in their construction proves — see Arce 2006a and b, in press), although like the rest of the palatine areas they were redecorated with new motifs bearing a new political message (FIGS. 7 and 8d).

This architectural element — a porch composed of a barrel vault supported by two beams, resting on two columns and usually placed over an important doorway — had extraordinary success in Late Antiquity, being introduced to many buildings, both religious and civil, even after they had been completed (the church of Qalb Lozeh — see FIGS. 8a and b — is a relevant example). Its popularity continued into Umayyad period, as the case of the Dome of the Rock shows[35] (FIG. 8c).

This element is, in my opinion, a derivation — both formally and symbolically, but on a smaller scale — of the arched lintel of a *fastigium*[36], the glorification façade under which the Emperor presented himself to his subjects after holding private audiences indoors in the *salutatoria* or reception halls (see Krautheimer 1981: 90).

It was used, depicted and built in different contexts (e.g. mural paintings, cultic or prestige ivory objects, churches and palaces), but was always related to religious as well as political issues, framing figures of saints or mighty rulers. Amongst examples with a religious character, we can mention a consular diptych where the canopy frames the Archangel Michael carrying a globe crowned by cross and sceptre (FIG. 9a), an ivory case panel where the canopy shelters a Virgin *Theotokos* receiving the gifts of the three Magi (FIG. 9b) and an ivory casket with the figure of St Menas under a canopy, amongst the faithful (FIG. 9c).

There are also examples of these arched structures sheltering royal / imperial *personae*, as in the socle of the obelisk at Constantinople, where the Emperor Theodosius II is depicted with his sons, Arcadius and Honorius, and the Emperor Valentinian II, receiving the homage of the barbarians and attending the games at the Hippodrome un-

7. Ḥallābāt: reconstruction of the canopy from the entrance to room 4 (during the Ghassanid period). Note the white plaster decoration applied to the basalt-built walls.

[33] We know that all mosaics from the pre-Islamic period which were in the chapel and palatine reception halls were destroyed. Only those from the former monastery court with geometric decoration, or no evident symbolic meaning, were kept for practical reasons. Why then was this one not removed? Perhaps because it made reference to a local tradition or myth that had full meaning at that time, and was not against Islamic beliefs. For the time being, unfortunately, no satisfactory answer can be found to this question.

[34] The one from room 24 was the most evident, as traces of mortar in the shape of an arch over the entrance and holes carved into the wall clearly indicated its location. The one from room 4 was detected because of traces of mortar left on the floor by the base of its right column. Later, the retrieval of the door, with carved holes for the beams, from the rubble of the jambs confirmed our initial hypothesis. There are no traces of a canopy in room 10.

[35] Nonetheless, it has been demonstrated that these canopies, although built in the Umayyad period, were not part of the original design of the building, as was the case at Qalb Lozeh, but were a 'trendy' addition (see Allen 1999: 209 and fig 11).

[36] Originally, this term designated the crest or ridge of a roof (also the pediment of a portico, so-called in ancient architecture because it followed the form of the roof). The most outstanding surviving example is that of the Diocletian Palace at Spalato.

8. Canopies. A and B: Qalb Lozeh church, Syria: traces of two canopies with gable and semi-circular profiles respectively. C: Jerusalem, Dome of the Rock: canopy. D: Ḥallābāt: traces of a canopy at the entrance to hall 24; note traces of mortar from the vault and holes for the supporting beams.

der a canopy supported by two columns, or in the diptych of the Empress Ariane (in this case it is a domed and isolated canopy, or baldachin), or even in the Umayyad period, at Quṣayr ʻAmra, where the Caliph is depicted seated on a throne under a canopy and, apparently, a *fastigium* (FIG. 9d).

It is clear that these architectural elements were designed to frame the gates of buildings, structures or halls of great political or religious significance[37], or, as we seen above, buildings that served both functions simultaneously. In our case it is clear that they were placed at the doors of the two main audience halls of the palatine section of the complex, emphasising the concept of political and religious might.

[37] More elaborate porches (usually surmounted by a dome) were built at the entrance of several Byzantine and Umayyad structures. The latter include the qaṣr and bath / audience hall of Mafjar at Jericho, or even mosques, such as the one recently discovered by at Ḥallābāt itself (Arce, forthcoming).

9. Representation of canopies in objects and mural paintings. A: Consular diptych representing Archangel Michael carrying globe crowned by the cross and a sceptre (British Museum). B: Ivory case panel depicting a Virgin *Teothokos* receiving the gifts of the Magi (British Museum). C: Ivory casket with the figure of St Menas (British Museum). D: Quṣayr ‘Amra: Umayyad Caliph seated under a canopy on a throne.

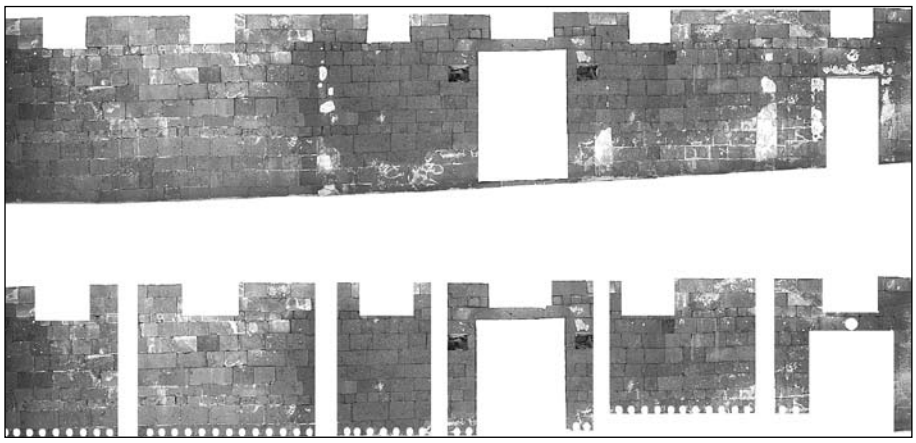
Aestheticising Politics, Politicising Aesthetics: the Bi-chromatic (Black and White) Decoration

The bi-chromatic decoration on the Ḥallābāt structures dating to the 6th century AD deserves special mention. It can be found on different elements and used various techniques, for instance, the combined basalt / limestone masonry of the external walls, or the application of decorative white plaster to the black basalt walls of the main courtyard.

In the first case, the bi-chromatic effect could be viewed as a natural result of combining different kinds of stone on the basis of their mechanical properties and the different use given to each of them[38], but it is clear that this combination was also exploited for its aesthetic value[39] (FIGS. 3, 14c and d) and, perhaps, some sort of political meaning.

An even more deliberate decorative intent in the use of this black and white combination can be seen in the second case, where white plaster was applied to define architectural elements and depict figurative ones. Amongst the former are ‘pilaster-like’ elements (actually are vertical gutters) and a dado crowned with globular elements (FIG. 10), whilst amongst the latter is a frieze of animals, including lions, gazelle, camels, dogs, onagers etc. (FIG. 11). There were also plaster roundels, e.g. above the door of room 23, or on the *intrados* of the arches of some other rooms), that with a symbolic or representative feature, such as a monogram, or a cross as in the ceiling of the monastery portico (see above).

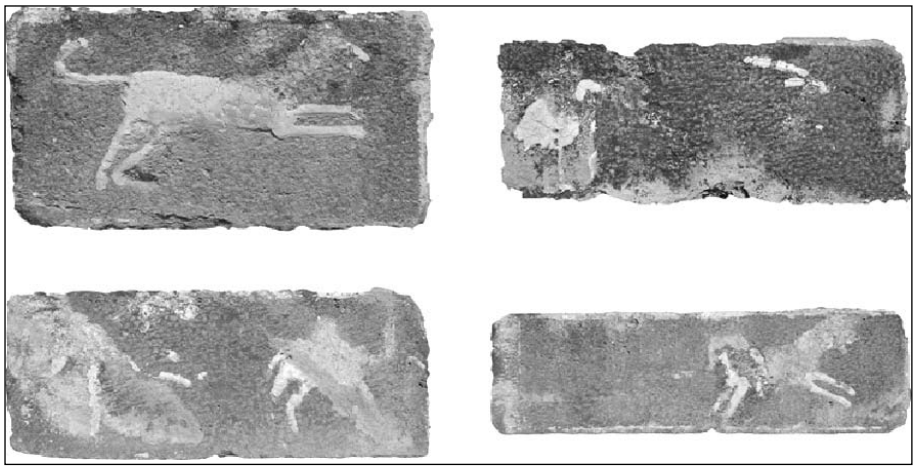
When all these features are taken into account,



10. Ḥallābāt: reconstruction of the bi-chromatic decoration of the court walls (note the canopies with the same colour scheme). A: Traces of decorative plaster applied to the basalt-built walls of the main court in the palatine section of the complex. B: Reconstruction of the decorative pattern of the white mortar plaster; note the combination of ‘pilasters’ and the dado with the crown of ‘heads’.

[38] Owing to the mechanical properties of basalt, it was used for courses of headers at regular heights (one in every six courses) in order to bind the two faces of a wall (constructed of limestone laid in courses of stretchers, following the traditional *emplekton* technique.

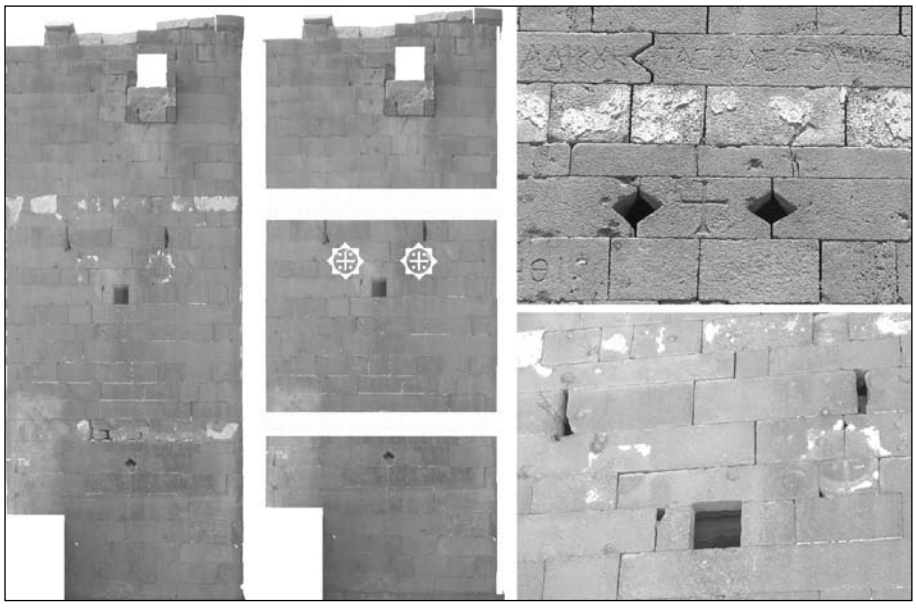
[39] This could be seen (together with the bi-chromatic red and white combination of brick and stone) as one of the first stages in the development of *ablaq*, a decorative feature that would become widespread - almost iconic - during the Ayyubid - Mamluk period (see Arce, forthcoming).



11. Ḥallābāt: white plaster figures of animals applied to basalt ashlars from the main court.

we realise that this chromatic combination is no coincidence. This impression is reinforced when we consider that this is not an isolated case in the region, as other examples exist in nearby structures dating to the 6th century AD (directly or indirectly associated with the Ghassanids). This is also the case with important structures from Umm al-Jimāl, namely the *praetorium*, the so-called "barracks" building and some other towers (**e.g. that of house XVII**). In these buildings, we find the same decorative patterns, applied with the same technique and the same kind of mortar (FIG. 12). We find window frames and 'pilasters' applied to façades (e.g. the N façade of the *praetorium*, or the W and E elevations of the 'barracks'). In the towers, a clear decorative pattern can be identified, with horizontal bands of white plaster applied to correspond with the floors, and vertical ones at their edges (e.g. the 'barracks', house XVII etc.). These horizontal bands recall those from the Ḥallābāt towers and NE façade, built with alternate courses of basalt and limestone. They also recall the pattern found in the representation of the towers of walled cities in the floor mosaic[40] from the church of St John the Baptist at Khirbat as-Samrā, which dates to the same period (see Piccirillo 1993, figs. 592 and 596).

Important symbolic elements were also applied with the same bi-chromatic design. In the façades



12. Antecedents and parallels of the black and white decorative patterns (I). Parallels of white plaster decoration on black basalt background from nearby 6th century AD Ghassanid buildings at Umm al-Jimāl: tower of the so-called 'barracks' building, N façade. Present condition and reconstruction of the decorative pattern in plaster. Note the eight-pointed star emblem framing a roundel and a cross with four knobs between its arms.

[40] According to the dedicatory medallion, the mosaic was laid as part of a renovation in 639 AD "at the time of the Archbishop Theodore". Therefore it is an image that records the condition of the building at the end of 6th or beginning of 7th century. AD, i.e. during the Ghassanid period.

of the 'barracks' tower are roundels with traces of plaster emblems inside geometrical plaster frames. In the E façade we can see two square elements with circular medallions framing what seem to be traces of a *chi-rho* monogram[41] (FIG. 12), whilst in the N façade, two eight-pointed stars frame roundels with a cross[42]. The same decoration can be seen on other 6th century AD monasteries' towers from Hawran, like at Shaqqa, Mallah or Buraq.

It would be tempting to relate this architectural bi-chromatic decoration with the green and white that it is said to have distinguished the robes of the Ghassanid kings[43]. Unfortunately, the written sources are vague and graphic ones are non-existant.

Nevertheless, we have identified what we are convinced are the origins and antecedents of this decoration (including the materials and techniques involved) in the Sabaean / Himyarite region of Yemen[44], from where the Ghassanids migrated to *Oriens* in the 5th century AD, apparently after one of the major collapses of the Marib dam. This hypothesis is extremely important as it is in agreement with the historical antecedents of the Ghassanids and reinforces the strong Arab identity claimed by them in their quest for a symbolic decorative language of their own. Outstanding samples of this sort of decoration can be found at Sana'a, in houses and in the congregational mosque (FIG. 13). There we found not only the same plaster 'pilasters' applied to walls of black basalt (very common in that region as well), but also alternating courses of different coloured stone (FIG. 14). In these buildings, which are still in use today, it is clear that these 'pilasters' are functional as well as decorative, as they acted as open gutters to channel rain-water off the flat roofs. This would explain their characteristic cross-section, with two laterally thickened edges which would channel water downwards[45]. In the same Himyarite cities antecedents and parallels can be found for the pattern applied to the towers (i.e. horizontal and vertical white bands on a black background, corresponding with edges and floors)

13. Antecedents and parallels of the black and white decorative patterns (II). A: Ḥallābāt court showing the white plaster 'pilasters', the dado with a crown of heads and black and white decoration of the Ghassanid period canopies. B: Sana'a, Yemen: congregational mosque, external S façade, white plaster 'pilasters' — actually gutters to carry rainwater from the roof.

[41] This can be elicited from the scratched and pecked pattern applied to the dressed surface of the stone façade, which was intended to offer a better 'grip' to the plaster letters applied to it. It is interesting how the "sgraffiato" technique developed, taking advantage of the expressive value of the materials available. Regarding its origins and antecedents, see below.

[42] It is not clear if there were four knobs — representing Christ's wounds — between the arms of the cross or if there was just an *alpha* and *omega* hanging from the horizontal arms. The ones from the southern façade were simple roundels of plaster, most probably bearing crosses.

[43] Cheiko, L. (1991) *Shuara al-Nusranya*, Vol.1 Beirut, p. 648, note 5 (in Arabic).

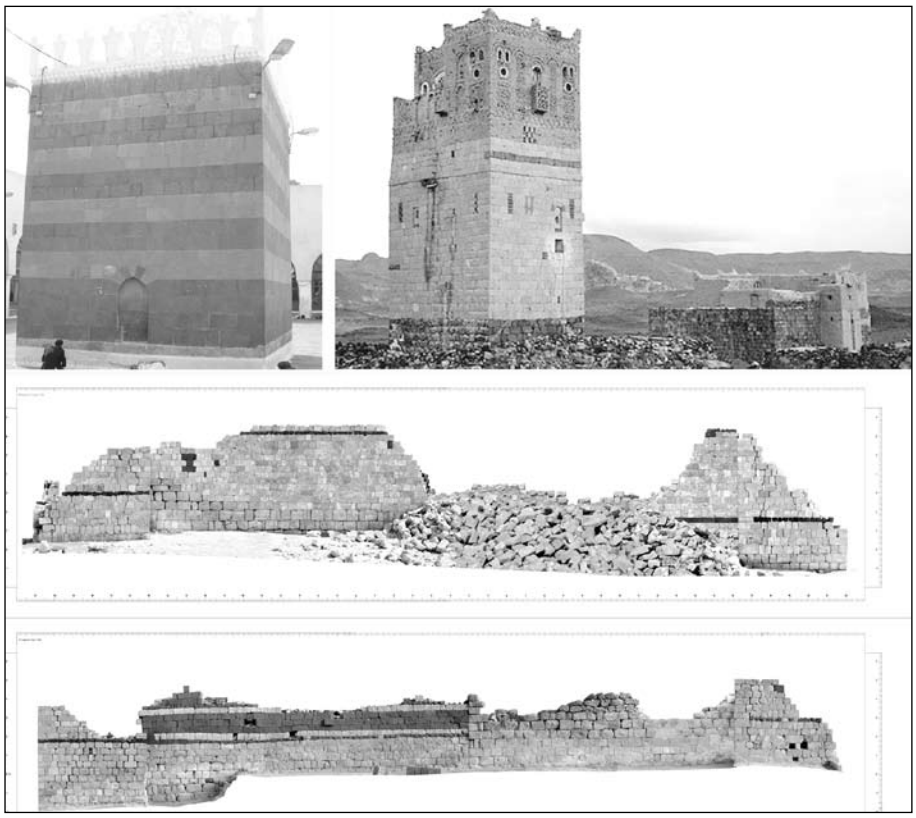
[44] In contrast, these patterns are not found in the Hadramawt valley in eastern Yemen, where whole buildings — or at least the upper part of them — are usually completely whitewashed.

[45] Apparently this system was also found in Jordanian vernacular architecture until recently (Isabelle Ruben, pers. comm.).

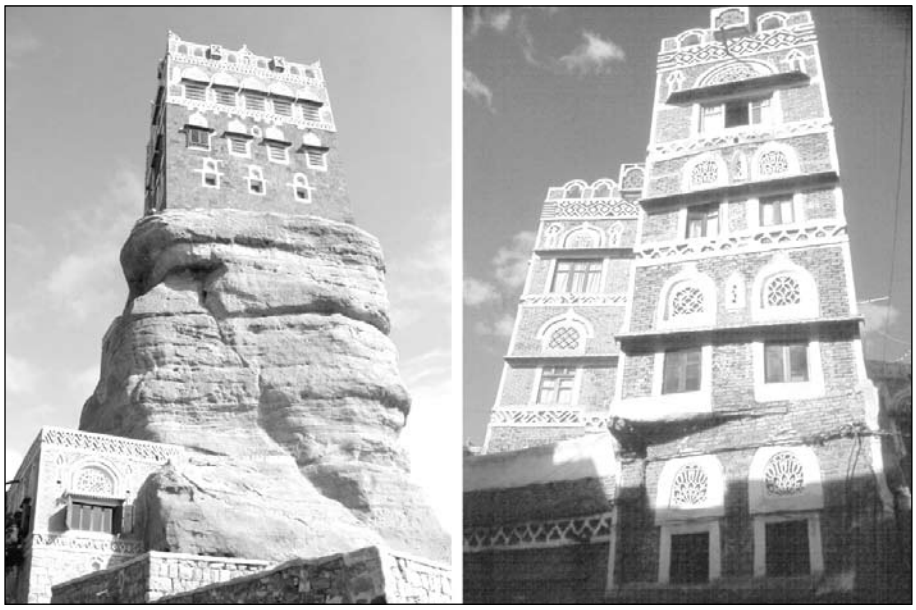
and frames around the windows (see FIGS. 15 and 12; compare also with the examples from Umm al-Jimāl). It seems clear that the same patterns were reproduced in these new buildings in *Oriens* as a reminder of the places in Yemen which from which the Ghassanids had fled decades earlier.

It could be argued that the date of these Yemeni buildings and their decoration is later than our examples from Jordan. Unfortunately, there is currently no reliable dating for these particular buildings. It would be necessary to search for new examples, ideally in well-dated buildings. Nevertheless the most significant examples, those from the congregational mosque at Sana'a, could well be as old as the mosque itself, which was built by the Umayyad Caliph Walid I.

Besides this architectural decoration, at Ḥallābāt we also found the aforementioned animal silhou-



14. Antecedents and parallels of the black and white patterns (III). A: Sana'a, Yemen: congregational mosque, structure in the court with alternating courses of different colour stones. B: Tower near Sana'a, Yemen; note its basalt base and the upper band of basalt stone in the limestone masonry work. C and D: Ḥallābāt: NE and NW façades of the Qaṣr showing mixed masonry of limestone stretchers with courses of basalt headers.



15. Antecedents and parallels of the black and white decorative patterns (IV). Sana'a, Yemen: two tower-houses; note the pattern of white plaster applied in horizontal bands, vertical edges and around the windows.

ettes, modelled in white plaster and still attached to fallen basalt ashlars. These figures were probably arranged in a continuous freeze around the court, in a manner that is no longer found in Yemen because of the shift towards simple geometrical decoration, probably related to the increasing aniconism of Islamic societies.

This aspect of our research is extremely important because in Yemen we have found not only the anecdotal origin of a decorative pattern, but also the source of the imagery chosen by the Ghassanids in their quest to (re)create an image of power, in a visual language of their own with a distinct 'Arab' identity, for their new **public** buildings in *Oriens*. For that purpose, they delved back into their memories for images of buildings in Sana'a, Marib, Hajjara etc. which they had left decades earlier, thereby creating their own idiosyncratic identity within the context of the powerful Byzantine Christian visual culture.

Other Figurative Elements

In this context, some other fragments of figurative elements (beside the plaster figures mentioned above) should be noted. First, the fragments of marble figurines found in the cistern of the main courtyard: two represent birds, most probably eagles, and the other a horseman wearing a tunic and riding a saddled galloping horse, whilst holding a whip in his right hand (FIG. 18b). The naturalistic nimbleness that can be guessed at in this fragmentary figure is reminiscent not of a *cataphract*[46], but of a lightweight horseman. In any event it embodies the Ghassanid enthusiasm for horsemanship. In addition, a number of fragmentary of animal figures carved in limestone (two eagles and the head of what seems to be a panther) were recovered at the site[47].

Did a Ghassanid 'Imagery of Power' Exist?

As for the question of whether the Ghassanids developed an architectural or decorative style / visual culture, peculiar to them and with political and religious propagandist aims, the abovementioned remains strongly suggest that some attempts in that direction were made. This poses several questions, in the sense that it is logical that their pursuit of an imagery of power of their own ought to have been linked, in visual terms, to that of the Byzantine Empire to which they owed allegiance and from which their legitimacy was derived. At the same time, it is logical that they would have attempted to emphasise specific characteristics that defined an individual and idiosyncratic Arab Ghassanid identity that differentiated them from the Byzantines and Arab *rhomaioi*. These differences were related to their position as allies (*foederati*) rather than citizens (*cives*) of the Empire and, more importantly, to their idiosyncratic identity as Arabs, warriors and **adherents of the Monophysite postulates**[48]. As we have demonstrated, this 'Arab' imprint was sought in the imagery of the Yemeni cities they came from, demonstrating their affiliation with an 'Arab' urban culture of their own.

The Pursuit of a Political and Religious Identity

After being granted the title of kings (*basileus*) by the Byzantine Emperor, it's logical to assume that Ghassanid self-image, in political terms, would no longer be that of mere *foederati* of the Byzantine Empire, but of monarchs with rising power and a clear will to leave their political and religious imprint on the territories under their control[49].

In the same way as Mu'awiya adopted the pomp and circumstance of royalty whilst governor of Damascus, in order to gain the respect of foreign ambassadors[50],

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[46] A heavily armourd horseman

[47] It is difficult to date them, especially the latter ones which could be Umayyad, although no clear parallels exist. The marble figurines seem to be pre-Umayyad.

[48] Shahid 2006: 123.

[49] The Ghassanids were settled on state-owned lands that were legally Roman / Byzantine rather than Arab Ghassanid territory. This was not ceded to them, but was made available for them to settle on, not as *cives*, but as *foederati* permitted to do so by the terms of the *foedus*. The fact the Ghassanids were *foederati* de jure but *limitanei* de facto could imply that there had been changes in the terms of the *foedus*, by which they were granted those lands. Actually, *limitanei* received grants of land which they cultivated, so the Ghassanid adoption of the role and lands of the former might imply that they too received land grants (see Shahid 2002). This character of state-owned land could be a reason for the seizure of Ghassanid property by the Umayyads, as the latter typically steered away from confiscation of private property.

[50] Mu'awiyya's behaviour provoked initial criticism from Caliph Omar, who nevertheless quickly came to appreciate the reasons behind it and approved the move. Mu'awiyya's adoption of royal pomp would be the starting point for the Umayyads in their quest for a protocol and imagery of power of their own. It would be interesting to know what they borrowed directly from the Byzantines and what they borrowed from the adopted and adapted Ghassanid version of Byzantine protocol, which was clearly biased by their Arab and Monophysite identity. The Umayyads took over Ghassanid **public buildings and even cities**, so it would be logical for them to have borrowed elements of a Ghassanid protocol that was already adapted to Arab manners (see note on Jabiya and Jalliq below; re. this encounter see Baladuri Ansab al-Ashraf, ed. I. 'Abbas, Bibliotheca Islamica Beirut 1997 IV.1, p. 147; re. the results see Flood 2001 and Arce 2006b).

the Ghassanid *phylarchs*, as kings (though clients of the Byzantine Emperor), also sought their own protocol and palatial 'theatres' in which to enact their own pomp[51], receive the allegiance of the Arab tribes under their new royal command and to play out their own clientele policy (as the Umayyads would do, in many cases in the very same venues[52], one hundred years later).

In religious terms, the situation was similar[53]: the Ghassanids were doubtlessly zealous defenders of the Christian faith, but followed the Monophysite creed in open antagonism with the Diophysite one that was supported by the imperial court[54] and the Hellenised cities in which the majority of the region's population lived[55]. This deep division between the Diophysite, Greek-speaking inhabitants of the cities (mostly Roman citizens after Caracalla`s edict and followers of a 'Hellenistic Christianity') on the one hand, and the Aramaic-speaking Monophysite villagers (plus the Arabic-speaking pastoralists of the *badiya*) — a subdued and repressed society permanently under suspicion (whether pagans or newly converted followers of a more 'Abrahamic' or Semitic Chistianity) — on the other, marks a social, cultural, political and religious fracture between two societies that we could define as the 'internal border' of *Oriens*[56].

Strategies, Opportunities and Risks

Conscious of their position as newcomers in this divided society, the Ghassanids played an intelligent game — that would be imitated by the Umayyads — trying to win over that part of society closest to them in cultural terms and political status, and from which they could obtain the extra support required to attempt to gain political and religious control of the region. Accordingly, the Ghassanids promoted monasticism to facilitate the Christianization of the pastoralists and partially-settled inhabitants of the *limithrophe*. By doing this they were simultaneously trying to gain converts to their religious faction and supporters for their political agenda[57]. Thus, as *phylarchs* of all the Arabs and as patrons of Monophysite monasticism, they developed a perfect combination of a patron and client policy that was aimed at gaining political, religious and military support among the inhabitants of the *badiya*[58].

It was clear that this divergence of interests with the Byzantine Empire and Diophysite Church would eventually result in open conflict. This conflict was never solved because the Ghassanids never became true Roman citizens and their quest for an Arab and Monophysite identity, as part of their own agenda, was incompatible with the condition of *cives* and a permanent source of political and religious conflict with the Byzantine imperial power[59].

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[51] Regarding this point, the panegyrics of their courtier poets at Jabiya, which are among the highest achievements of Arab poetry, should be noted.

[52] The most remarkable example is Jabiya, one of the capitals of the Ghassanids (and certainly the most important 'Arab' city in the region), that under Mu'awiya became the Umayyad capital of Bilad al-Sham for twenty years (until the establishment of Damascus as capital of the Caliphate when he became Caliph). Similarly, Yazid made Jalliq (the second Ghassanid capital) one of his residences. Other examples, such as Qasṭal, Usays, Haliorama / Qaṣr al-Ḥayr al-Gharbi, confirm this fact.

[53] The consequences in terms of visual culture, liturgy etc. are still unclear (see below).

[54] Except under Emperor Anastasius, who was Monophysite.

[55] For the question about the existence of a specific Monophysite religious imagery see below.

[56] Control of this 'internal border' was one of the main tasks of the Ghassanids as *foederati*. This was also one of the reasons why the Byzantines mistrusted the Ghassanids, as on occasions the latter were seen by the former as proponents of '**divide and rule**', siding with one party in conflicts they were supposed to control and arbitrate (see their behaviour during the Nu'man revolt). On the author's hypothesis of the existence of a "Double Frontier" ("internal" and "external") see Arce 2008, in press.

[57] At a certain point their intentions became far too obvious, for instance when Jacob Baradeus tried to establish new bishoprics, not linked to urban parishes (under the control of the Diophysites) but to monasteries of the desert *limitrophe* (patronised by the Ghassanids and under his own religious authority and control). See below.

[58] See Arce 2006, in press.

[59] This conflict can be ascertained from the increasing mutual distrust that became apparent after the Ghassanid withdrawal from the alliance (firstly under Jabala - the first Ghassanid *phylarch* allied to Rome — when Monophysitism was persecuted after the death of Anastasius, and secondly under Mundhir). As a result, the federate tribes, without Ghassanid control and without subsidies, started pillaging the cities and their hinterland. This mistrust was worsened with the suspicions of Rome towards Harith, fearing the creation of an independent state. The conflict finally reached a critical point with the attempt of Emperor Tiberius to eliminate Mundhir (which triggered the second Ghassanid withdrawal, from 582 to 584 AD), the subsequent exile of Mundhir to Sicily on the orders of Emperor Maurice, and the revolt of his son Nu'man (who avenged his father by ravaging Syria, Palestine and Arabia, killing the Governor of Bosra and assaulting villages and Roman military bases before being captured and exiled to Constantinople himself). As a result of all this, the *Phylarchate* was disolved. When it was restored in 602 (when the Byzantine Empire realized that they could not keep *Oriens* in peace without the collaboration of the Ghassanids), it was so feeble and diminished that it did not withstand the Persian attack against Palestine in 613 AD. The Persian invasion, despite Heraclius' victory, finished off the Ghassanids, when Jabla Ibn al-Ayham (the last Ghassanid

'Building' a Political and Religious Identity

This political and religious agenda implied an ambitious program of which we have more written records than material remains, at least until now. Regarding the discussion of how much the Ghassanids built anew, and how much they refurbished or rebuilt existing structures, we can say that this issue is similar to the debate about some of the Umayyad building enterprises[60] (the cases of Haliorama / Qaṣr al-Ḥayr, Usays, Qasṭal and Ḥallābāt itself are remarkable examples). Concerning this point, the apparent inconsistency between the silence of Procopius in his list of 'buildings' in the area (see below) and the list of Hamza (naming those related to the Ghassanids *phylarchs*), might have a perfectly logical explanation, *viz*. when the Ghassanids are associated with a structure in the "list of Hamza"[61] it might not mean that they built it, but that they renewed or restored it, as per the inscription from Dakir in Trachonities (see Shahid 2002: 45 and 48).

This does not deny that the Ghassanids implemented intensive building programmes (for which they deserved the title of *philoktistai*), but would imply that this activity was devoted more to the construction of palatial and religious structures than military ones, on the basis of their new political status as kings, their religious strategy of supporting the Monophysite Church and its monastic endeavours, their distinctive military strategies and tactics (i.e. those of a mobile army, not garrisoned in forts, but patrolling the frontier). The latter did not required large *kastra*, but towers protecting strategic points, such as crossroads or water sources, and other means of logistic support, e.g. permanent buildings for the seasonal camps required by their mobile army and peripatetic courts[62]).

4.2 The Monastic Area

The second group of building activities of Phase III are related to the transformation of the remains of the oldest 'first fort' (Phase I structure) into a monastery. They consist mainly of the construction of a second floor over the rooms around the internal court (FIGS. 3 and 16), reached by a staircase (FIG. 18c) built in room 15, and the construc-

16. Ḥallābāt: Monastery built within the premises of the inner (oldest) Roman fort; general view after restoration.

phylarch, since 609 AD) was incapable of keeping control of the federate tribes under his command and witnessed them change sides during the Battle of Yarmuk, deserting the Byzantine ranks and thereby hastening the end of the *phylarchate* and Christian *Oriens*. Jabla eventually changed sides himself, when apparently he adopted Islam, starting a trend that, owing to his position and prestige, was followed by many Monophysite Arabs (although he eventually apostatized, refusing to obey the command of the new Umayyad lords, and fled to Byzantium, some authors do not support, even, his conversion to Islam).

[60] We have to take into account the evident differences: the former were vassals of the Byzantine emperors, the latter the new absolute masters of the region, wealthier and with no political constraints.

[61] The *Chronography* or *Annals* of Hamza al-Isfahani (*Tarik sini muluk al-ard wa al-anbiya*) is a chronology of pre-Islamic and Islamic Arab dynasties, and one of the most important sources for study of the Ghassanids (see Shahid 2002: 306-341).

[62] Hamza al-Isfahani uses the terms *sayyarat* and *jawwab* ('itinerant king who wanders from one palace to another'), something that, as Shahid (2002) points out, does not mean they were nomads, but that they had an itinerant court (as did the Spanish kings, before a fixed capital was established in the 15th century).

tion of a two-storied[63], three-arched portico on its southern side (FIG. 17). The arches of this portico are built of finely dressed limestone blocks. They bear crosses in their key stones and directly abut the fabric of the 'first fort' internal partition walls. The building technique employed recalls that used in the walls of the 'second *quadriburgium*', in that the ceiling of the portico was built by means of basalt beams, covered with plaster and mural paintings of a cross within a circle. Finally, the fact that the key stones of the three arches bear this kind of cross[64] dates this architectural intervention to the period after it fell in disuse as a military structure and its consequent abandonment by the *limitanei*, but before the Islamic period.

Closely related to the portico are the wine press basins in its E corner, and the mosaic pavements[65] that cover the court and portico floors (FIG. 6a). Apparently these three elements (portico, basins and mosaics) were built simultaneously over a short period of time[66]. It is important to mention the traces of wall paintings (eventually whitewashed) on the south wall of the portico representing, amongst other features, a soldier (probably a representation of St Sergius[67]) as well as the aforementioned traces of a cross on the ceiling basalt beams (FIG. 19a).

The technique of these mosaics and some of their decorative patterns seem to correspond to the 6th century AD[68]. It is noteworthy that these mosaics incorporate some old restorations, indicating that they do not belong to the final refurbishment of the building in the Umayyad period, but to an

17. Reconstruction of the monastery court showing the two-storey portico.

[63] The assessment of the material remains, particularly the existence of an 'extra' number of voussoires with the same dimensions as those from the lower arches and the distribution of their fallen remnants after the earthquake, led to the conclusion that an upper portico, similar to the lower one, existed.

[64] It could be argued that the crosses might subsequently have been carved on to a pre-existing structure, but the fact that the central one was protruding (because of this it was carved away in the Islamic period, whereas the other ones were simply concealed under a coat of plaster) indicates that the central cross at least was carved at the same time the key stone was cut and erected, not later.

[65] The pattern of the mosaic from the court is a simple grid of squares placed at 45 degrees without any further decoration. The one placed under the portico has two different panels: the first consists of a series of interlaced circles with baskets, birds and a chalix with a fish, whereas the second has a cross-like pattern achieved by the combination of interlaced circumferences. The design and display of the mosaic patterns indicates that the mosaic was laid at the same time as or later than the wine press basins, as the former respects the location of the latter (see Arce 2006 and 2007).

[66] The arch behind which the basin is located was apparently blocked up immediately afterwards.

[67] The main Monophysite saint, to whom many Ghassanid churches were devoted.

[68] Similar motifs and techniques can be traced in the apse of the church at al-Fudayn – al-Mafraq, the lower Church at Quwaysma (rebuilt in AD 717), in the northern aisle of St Stephen's Church at Umm ar-Raṣāṣ, and at the Deacon Thomas Church in 'Uyūn Mūsā valley (see Piccirillo 1993: fig. 263).

earlier one (see Arce 2006: fig. 18).

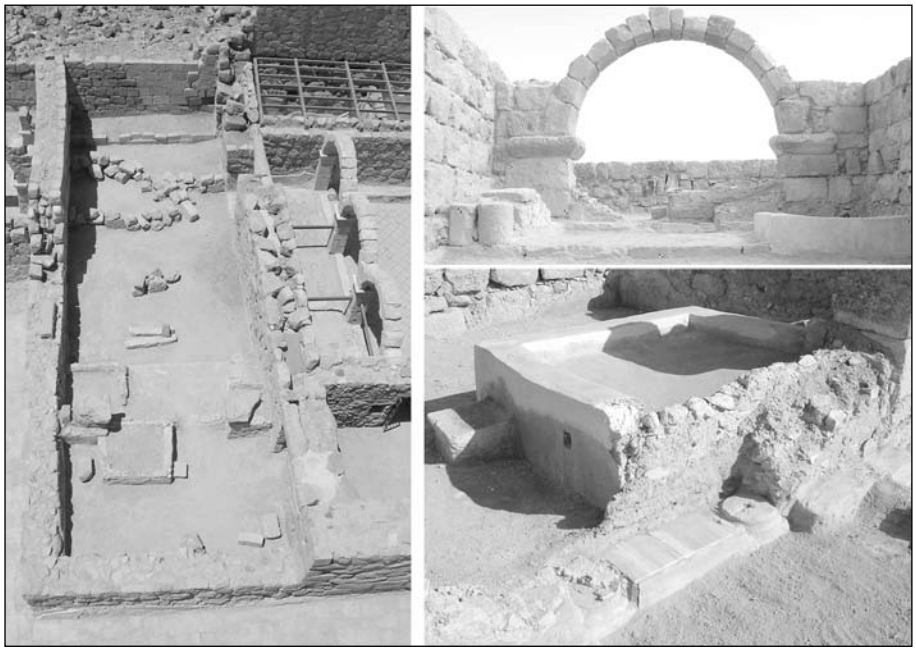
The rooms around the court were devoted mainly to dormitories, but a kitchen and winter refectory have also been identified (rooms 13 and 12 respectively (FIGS. 18a and b))**.** The former was kept in use during the Umayyad period, while the latter was devoted to storage, with a wine press being built in its NE corner. The NW tower (14) was refurbished like the other ones, adding a latrine to the upper floor and using the lower room as a kitchen store (there was a door giving direct access to the kitchen; this was blocked in Umayyad period with the addition of another wine press).

The chapel (*catholicon***)**

The transformation of room 19 into a chapel intended for the use of the monastery is remarkable for in spatial and liturgical terms. At its eastern end, a small area just three metres deep was separated from the rest of the room by means of a triumphal arch (FIGS. 20 and 21). This arch was built with well-cut masonry voussoirs, with a rough dress-

18. Ḥallābāt monastery. A: Staircase in room 15 leading to upper floor. B: Computer-generated reconstruction of the SW corner of the court portico. C: Computer-generated reconstruction of room 13 (kitchen). D: Remains of room 12 ('refectory'; the door seen at the end gives access to the kitchen).

19. Ḥallābāt. A: Marble figurine of horseman; fragment found in main courtyard cistern. B: Traces of mural paintings from the portico of the monastery court, representing a soldier (probably St Sergius).



20. Ḥallābāt: Monastery chapel. A: Remains after excavation. B: Triumphal arch after restoration. C: Marble threshold and bases of columns supporting the screen (*'iskana'*) between the nave and the *presbyterium*; note remains of the Umayyad blocking wall that separated the *presbyterium* from the nave and the wine presses built against it.

21. Ḥallābāt: Monastery chapel. A: View after the restoration; note doors leading to monastery court (on the right) and to room 20, which act as a 'narthex' or filter between the chapel and palatine courtyard. B: Computer-generated reconstruction of the chapel (mosaic patterns from the floor are hypothetical).

ing[69], springing from low piers with projecting springers. This is indicative of a functional distinction of this area from that of the rest of the room, which was therefore roughly oriented towards the east.

The floor level of the area behind the arch and up to 1.8m. in front of it was raised 25cm. higher than the rest of the room by means of a platform defined by a step, created by kerbstones running from wall to wall. At the northern end of this raised platform, which clearly corresponds to a *presbyterium*, are the remains of the steps of the *ambo* or pulpit, which probably stood as a structure on columns projecting into the area of the nave.

The spatial division and importance of this section of the room was further enhanced by means of two marble columns[70] placed under the arch (FIG. 20c) and the construction of a thin wall in the lat-

[69] This rougher technique leads one to think that the arch (and consequently the transformation of room 19 into a chapel) pre-dates the refurbishment of the rest of the monastery, including the delicate portico of the court. This would indicate that the monastery could have been founded some time earlier than its 'patronised' enhancement and refurbishment (involving the construction of the portico, upper floor etc.), which was contemporary with the palatine refurbishment (corresponding to the "second *quadriburgium*" or Phase III).

[70] The columns are of too large a diameter to support an altar, which would block access to the *presbyterium*), and too close to each other to support a baldachin.

eral spaces between the columns and arch piers[71]. Traces of a painted red skirting stripe decorated the base of this wall. The threshold of this chamber was further enriched by two small square marble slabs placed between the columns. Related to this decoration are traces of a mosaic floor that once covered the entire floor of room 19[72]. A bench running from wall to wall was placed at the foot of the nave. The discovery of a *pavonazzetto* marble reliquary (reused in Umayyad period as a mortar) indicates that it might have been a *martyrion* chapel, corresponding to the increasing devotion of Christians towards saints' relics during the 6th century AD, especially after the martyrdoms of Najran[73].

The means of accessing the chapel illuminates the way it was used by the inhabitants of both sections of the complex. From the monastery, it is reached through a door of 'standard' height in the wall that divides both spaces. From the external court (the palatine area), access is through room 20 which acts as a 'narthex' or antechamber, acting as a true filter dividing and relating both sections of the complex. The access to the chapel from this 'narthex' room is through a very low door that forces the approaching person to bow when entering the sacred space, (similar to the 'humility door' in the Nativity Church at Bethlehem).

Religious Art and Liturgical Issues

Like their 'political' imagery, the artistic expression of the Ghassanids in religious terms would reflect not only their allegiance to the Christian faith, but also the peculiarities of Monophysitism, the latter acting as a statement of their own idiosyncratic religious identity and, consequently, their differences with Byzantium and the Diophysite Chalcedonian Church.

It is generally assumed that, during the 6th century AD – the golden age of Byzantine art under Justinian — provincial art was a reflection of the former, with some peculiarities depending on local taste and influences. Although architecture responded to liturgy and liturgy responded to theology, it is difficult to know how these differences would have been reflected in the actual construction of churches and religious structures. Actually, the subtle differences of liturgy and related sacred spaces in the different regions and provinces in *Oriens* at that period have not yet been clarified. Besides, almost no reference exists to Monophysite art and architecture, with the exception of *al-Jawara al-Nafisa*, or "The Precious Pearl" treatise, which is discussed below

As a result, we can only attempt to elicit some basic data about the characteristics of this simple monastic church. The most remarkable feature is the physical separation of the nave and the *presbyterium* by means of the triumphal arch and abovementioned arched 'screen' that, as has been pointed out, could be described as a *proto-iconostasis* (see below re. *iskana*). Another remarkable characteristic is the square apse and the apparent position of the altar (in the shape of a *mensa*, underneath which the aforementioned reliquary would have been placed) against its back wall. In the region, there are several examples of churches with square apses dating back to that period. The most remarkable is the Deacon Thomas Church at 'Uyūn Mūsā, dated by inscriptions to 540 AD[74]. At Khirbat as-Samrā, the St John Church has a square apse with only a semicircular, two-step *sinthronon* built within it[75]. Samrā churches 20 and 81 also have square apses, as does the northern church of lower Herodion in Palestine, and the monastic chapel of Khirbat al-Kursī near Mādabā.

***Al-Jawara al-Nafisa* ("The Precious Pearl") Treatise[76]**

The only treatise on Monophysite liturgy that also makes reference to architectural features is from Coptic Egypt and dates to the 13th century AD. It is entitled *al-Jawara al-Nafisa* ("The Precious Pearl") and contains a chapter "*about the construction of a church and its resemblance with the tabernacle*",

[71] It seems that a marble chancel stood in that place before the wall was constructed. There is not enough evidence to suggest that the blocking of the space between the columns and arch was implemented throughout the entire remaining space, which resulted in a narrow door of which the columns became the jambs.

[72] The traces of this mosaic resemble those of the oldest one found in room 24 (see above).

[73] The Arabic sources distinguish pilgrimage centres (called *mahjuj,* i.e. a site to which a pilgrimage is made) from other *martyria* and monasteries which had relics, but were not considered as such. Amongst the former, the most important — in addition to the Holy Sepulchre in Jerusalem — for the Monophysites were Resafa - Sergipolis (Brands argues that Mundhir's *pretorium* would have been a *martyrion* built on the site of the saint's martyrdom and burial, see Brands 1998), St Simeon and Mahajja (south of Damascus -see Shahid 2006:119 and notes 7 and 8).

[74] Piccirillo 1993: 186 and figs. 263-269.

[75] See above and Piccirillo 1993: 599, 617 and 620.

[76] See Shahid 2006: 131-3 and J. Perier 1991, quoted by the former.

where it states that it must be oriented towards the east ("*its eastern end must be built in the course of twenty days of the Coptic month of Baouneh*"), that its length must be twenty four cubits and its width twelve cubits, that it should have three gates (one for women, one for men and one for those bringing votive offerings in secret), and that its Holy of Holies should be domed.

Only small churches could have been built according to such detailed and strict prescriptions (which seems neither practical nor logical in general terms, but entirely adequate for small monastic communities living in the desert). Surprisingly, and probably by chance, our small church conforms almost exactly to these recommendations. Its apse is oriented to the east, the length of its nave is almost exactly twenty four cubits (11.69m. equivalent to 24 cubits of approx. 0.49m.), whilst its width is of ten rather than twelve cubits (i.e. approx. 5m.). It has three doors: one for monks coming from the *coenobium*, one for the courtiers coming from the palatine area and a third one giving access to the *presbyterium* from a lateral chamber, room 17, connected with the monastery court and which might have been used as a *pastophorium*. Finally, the depth of the *presbyterium* is exactly the span of the triumphal arch that separates it from the nave (2.82m. equivalent to six cubits of 37cm.). This would have allowed for a small dome of six cubits diameter over the *presbyterium*, in a balanced composition from both proportional and constructional points of view, thereby complying with all prescriptions of the treatise.

In another chapter, devoted to "*the lamps and the ostrich eggs placed among them*", it is stated that the church should be generously lit during Mass, that the lamps of the east end and *iskana* (the part of the temple secluded by a veil — probably derived from the Greek *skenos* or "screen") should be fed with olive oil and kept lit day and night. This *iskana* area would correspond to the area behind the arch and above-mentioned columned screen (see FIGS. 20 and 21).

An interesting parallel, worthy of note, is Abraham's Church of al-Qalis (*ecclesia*) in Sana'a[77], built by King Abraha in the 6th century AD. According to Serjeant's reconstruction, it would be quite similar in plan and proportions to the one at Ḥallābāt. However, there are some problems with the dimensions in Serjeant's reconstruction. These do not fit with the single nave scheme of the drawn plan. The plan indicates that its width was 40 *dhira* (a unit of 0.48m. equivalent to a cubit) and 40 plus 80 *dhira* long. It also had a domed, square *presbyterium* of 30 by 30 *dhira*. Most probably, there has been a *lapsus calami* regarding these figures, because they would result in a nave 19m. wide and 57m. long, dimensions that are not possible for a single nave church as drawn in plan. In contrast, if we apply the prescriptions of *al-Jawara al-Nafisa*, drawing a 20 by 40 (plus 20) cubit (*dhira*) single nave plan, we would have a church almost identical in proportions to that drawn by Serjeant, these dimensions being more logical and appropriate for a single nave church.

Monasteries as Instruments of *Propaganda Fide* and Territorial Control

A deep-rooted and diverse monastic culture developed in the region during the 5th to 7th centuries AD. There are innumerable references to monasteries, hermits, *stylites* and different congregations of monks, especially along the desert fringes. Many of these monasteries were established, as at Ḥallābāt, on the sites of former Roman forts of the *limes arabicus*. A pattern of re-use, implying more than simple reoccupation of abandoned buildings by religious communities, can be elicited. Monasteries were essential for the policy of conversion, owing to the geographical conditions of the region. As a matter of fact, Arabs became acquainted with Christianity through contact with monks leading a contemplative life in the desert. Syriac missionaries played an essential role in conversion, and the construction of monasteries played a pivotal role in their activities. Contemporary accounts indicate the existence of close ties between pastoral communities and monasteries, which are crucial in gaining an understanding of the evolution of these sites in general, and Ḥallābāt in particular[78].

The strategic location of these places at crossroads, near well-travelled routes[79] or perennial water sources, had long made them meeting points for local pastoral populations, travellers, merchants

[77] Serjeant and Lewcock 1983 (quoted in Johns 1999: 100 and fig. 23).

[78] For a more in depth review of these issues see Arce 2006a, in press.

[79] In our case, as well the abundant sources of water in the vicinity, the nearby presence of the Via Nova Traiana connecting Boṣra and 'Amman should be noted, as should the routes towards Azraq and Wādī Sirḥān,.

and pilgrims (who could occasionally be sheltered and fed in the monasteries), which explains this pattern of re-use. In many cases, monks took advantage of the abandoned Roman forts (as at Ḥallābāt) because they had precisely the same strategic location they were seeking. Actually, the Romans had carried out a policy that ranged from containment to repression of the local nomadic tribes, but which was similar in territorial strategic terms. Consequently, they tended to site their forts in areas that were important for tribal gatherings, access and transit. As we have seen, the transformation of these forts into monasteries did not mean that they played no further role in the defensive strategy of the Ghassanids regarding the *limitrophe*, but simply that the means and approach adopted were radically different. The location of some monasteries at important crossroads or on difficult stages of harsh routes would explain the use of these buildings and their towers as both watch posts and reference points in the landscape that would help travellers to orient themselves[80]. At night, these towers functioned as lighthouses (*phanarion* in Greek, or *manara* in Arabic), a fact that is frequently mentioned in pre-Islamic poetry.

Religion and Politics

After the defeat of the Salihids (the Arab federate tribe which had until then held the *phylarchy*), the Byzantines gave the Ghassanids responsibility for the defence of the *limes*, as well as the role of regional political leaders as *phylarcs* of the federate tribes[81]. They demonstrated religious zeal in promoting the institution of monasticism (which had been so important in their own conversion), not only as an expression of their Monophysite faith, but also as part of their political strategy for the effective control of the region under consideration, which included the Hellenised cities as well as the desert fringes.

Ten years after the *foedus* of 529 AD that made Arethas king, he succeeded in his efforts to resuscitate the Monophysite church[82]. It was further empowered with the nomination of Theodore as presiding Bishop of the entire Arab federate Church in *Oriens*, who — like Jacobus Baradeus — reinforced and promoted the Monophysite faith. The close relationship between *phylarch* and Bishop was the basis of a political and religious strategy of reciprocal support, with the common aim of expanding Monophysite Christianity among the pagan inhabitants of the *badiya* / *limitrophe* and, in so doing, gained political and military support for the Ghassanids. This policy accelerated under Harith ibn Jabala and, by 535 AD, the Monophysite creed was predominant in the East, with the exception of the Diophysite strongholds of Jerusalem and Antioch.

The social and political importance of monasticism, especially among the Monophysites, can be seen in the previously mentioned attempt by Jacob Baradeus to create a separate, parallel Monophysite hierarchy, with new sees based in monasteries. These stood in opposition to the sees of the Diophysite Church, which had been named after the main cities. This dichotomy between an urban, settled population with a city-based religious hierarchy loyal to the Diophysite or Chalcedonian 'orthodox' church, and the nomad and pastoralist 'parishes' associated with Monophysite monasteries is of great importance in gaining an understanding of the dynamics of the fierce internal struggles of the Christian Church in pre-Islamic times and the consequent socio-political disruption in these territories[83]. This patronage was thus an essential element of Ghassanid policy as new rulers of Bilād ash-Shām (albeit on behalf of the Byzantine emperor). The discovery of a complex such as Ḥallābāt, which combines a Ghassanid palace and monastery within a single complex, is especially illuminating

[80] This, like the hydraulic and agricultural infrastructure and logistical and medical support offered by monasteries, is an example of the *philantropia* (intended to benefit the people living in the desert) that helped to spread the Christian faith among the pastoralist nomads of the region. Wayfarers and caravaneers would rely on the monastic structures that were established in traditional locations, which would offer them improved and well-kept traditional resources, as well as new ones, together with spiritual relief and guidance.

[81] Under Emperor Anastasius the Byzantine world shifted towards Monophysitism. The first *foedus* with the Ghassanids was signed under his reign (in 502 AD) something that has been used to explain their attachment to Monophysite creed. In contrast, the Tanukh and Salihids (the previous federate tribes to have been bestowed with the *phylarchate* in the 4th and 5th centuries AD respectively) were Diophysites.

[82] After his visit to Constantinople *ca.* 540 AD.

[83] The suspicion of the Byzantines about the Ghassanids' aims, using their influence over the federate tribes and their support and links with the Monophysite cause to create an Arab empire not subjected to Rome (as Oedenatus and Zenobia had attempted long before), was not baseless. The dichotomy faced by the Byzantines was their dependence on the Ghassanids for the defence of the *limes arabicus* on the one hand, and an increasing lack of trust in them on the other. See Arce 2008, in press.

of this strategy, which was expressed in physical terms by the support given to the construction of churches and monasteries.

Epilogue: Ghassanids and Umayyads — the Pursuit of Power by Arab Elites

In light of this new perspective on *Oriens* / *Bilad al-Sham* during Late Antiquity, it is easy to see the Ghassanids as forerunners of Umayyad strategies for political and territorial control, as well as a good example of transmission and adaptation in Late Antique culture.

The Ghassanids as Forerunners of Umayyad Strategies for Political and Territorial Control

Remoteness, in combination with access to routes and water sources, was also sought by the Umayyad elite in areas inhabited by the nomadic populations who backed them, both politically and militarily. The tribesmen on whose support their rule depended would require spaces for staging the clientele policy that was at the base of this relationship. The monasteries offered the requisite geographical and political framework for this 'play', as they had already done for several decades. This is a clear example of an adaptive adoption of pre-existing practices by the Umayyads in order to guarantee effective control of territory. In addition, and also as part of this territorial strategy, we should consider the settlement of hitherto mobile populations in pre-existing or newly-created cities: an essential component of a strong monetarised economy, dependant - like that of the Umayyad state — on trade and markets. This helps to explain why some monasteries were re-used and transformed by the Umayyads into small dwelling units that would eventually evolve into proto-urban settlements. This could be done thanks to the privileged locations of monasteries near water sources and crossroads, characteristics shared by other Umayyad quṣūr not necessarily related to pre-existing structures, that could facilitate their transformation into urban settlements and, eventually, into trade centres or stations for even larger communities: a useful factor in the strategy of territorial control practiced by the Umayyads.

We can conclude that from the 6th to the 8th centuries AD, many military structures from the limes arabicus underwent a process of transformation and re-use that took advantage of their strategic locations and which, in many cases, followed a recurrent and similar pattern. Ḥallābāt is a paradigmatic sample of this transformation of a military complex into a monastic structure, which was later combined with a palatine one. The final aim in all cases, despite the different approaches, was that of achieving effective control of a territory and its population by exploiting these strategic locations and their peculiar conditions (see Arce 2006b, in press). The settings where the Ghassanids acted out their palatine protocol and patronage of monastic institutions were, in many cases, re-used by the Umayyads. They were also the same locations where the Romans had implemented their own coercive strategies to control the same region and population several centuries earlier[84].

The re-use of former monasteries[85] and palaces as Umayyad quṣūr emphasises the socio-economic and political role that they played, and the continuity of similar strategies of control of these territories from the Roman to early Islamic period, with a shift from coercive policies towards more persuasive relationships between the successive overlords of the region and its population.

Christian Arab Culture and the Transmission of Late Antique Culture: a Forerunner of Inter-Cultural Merging Processes

Our work at Ḥallābāt sheds some light on the complex discussion of the relationship between the Ghassanids and Umayyads, in the sense of establishing what is Ghassanid, what is Umayyad and

[84] This is also reflected in the takeover by the Umayyads of the Ghassanid capitals (and the takeover by the Ghassanids of the capitals of previous Arab *phylarchs*). It is well-recorded that Jabiya, one of the two Ghassanid capitals (identified with Gawlan / Gaulanitis, south of Damascus), was taken over by the Umayyads. Similarly, the second Ghassanid 'capital', Jalliq, was taken over by the Ghassanids from the Salihids (the Christian Arab tribe that preceded the Gassanids as leader of the Arab *foederati* of Byzantium in the 5th century AD), who in their turn had taken control of the premises from the Gallica legion from which its non-Arabic name was derived. This stands as proof that the symbolic, propagandistic and effective take over of previous seats of power did not only apply to capital cities in Late Antiquity, but also to less important but also power-related sites such as these.

[85] In general, we know that monasteries were accepted and respected, but exceptionally some of them were taken over by the Umayyad Caliphs (Haliorama, and now Ḥallābāt), in our opinion more for political reasons as key places in a network of territorial control. Also noteworthy is the fascination and attraction they exerted over different Caliphs, including that related to wine consumption.

what is a combination of both. The re-use of the palatine areas of the complex with a comprehensive redecoration of its surfaces, which presents a new message to the observer — with almost no changes to the built structure — is revealing.

The royal, almost imperial, character adopted by the Umayyad state (which diverged from the concept of a true Caliphate[86]), especially after Mu'awiya's reform which introduced the hereditary principle in place of an elective one, would initially find an ideal model in the adoption one century earlier of Byzantine protocol and architecture by the Ghassanids. These include the peripatetic court of the Umayyads that followed the Ghassanid model, requiring not just one palatine venue but several. This explains the early adoption of western traditions by the Umayyads, which would later shift towards Sassanian models with fewer political and religious connotations.

The utilitarian re-use of the former monastery at Ḥallābāt, and the reorganisation of the function and use of each section of the complex according to the new protocol procedures established for their clientele policy (in some aspects so close to that of the Ghassanids) is also very revealing. Last, but not least, the propagandistic value of the construction of the extramural mosque as a manifestion of the political and religious identity of the new rulers, should also be mentioned. This Ghassanid heritage, that at Ḥallābāt can be clearly distinguished in its material components and the functions and goals they were designed for, emphasises their common identity as Arabs (despite their differences in religious creed and political status). One of the key cultural elements shared by both was poetry, developed by the former and revitalised by the latter. Poetry was, at one level, a manifestation of a common Arabic cultural identity, but at another it functioned as a propagandistic instrument and key element in their respective palatine protocol. The idea that the same venues, albeit with different but related decoration, were theatres for a similar panegyric poetic demonstrations is a clear image that speaks clearly of the common cultural ground shared by Ghassanids and Umayyads as Arabs. These, together with the peripatetic character of their respective courts, are key elements in this 'common heritage'. In this case, what provoked the movement from the cities (hostile and Hellenised) to the badiya was the need to sustain their tribal clientele policy (and not merely for purposes of sport and relaxation as Shahid (2002: 383) points out) that was the basis of their power as phylarchs or Caliphs / muløk. A tribal clientele policy was essential in a region that was tri-cultural, tri-ethnic and tri-lingual.

Accordingly, we believe that the strong Ghassanid influence underpinning what would become Umayyad culture, state and territory in Oriens / Bilad al-Sham is a basic element in understanding the latter, and therefore an essential (and so far missing) link in the analysis of the process of by which Late Antique culture was transformed into Early Islamic culture. The study of this process of adoption and adaptation of Late Antique culture to idiosyncratic Arab taste, as carried out by the Ghassanids, is essential if we are to understand similar processes carried out by the Umayyads one hundred years later. An appropriate analysis of these channels of cultural transmission is essential for understanding similar processes in other areas of the Mediterranean as well.

Bearing this in mind, it must be pointed out that it would be equally important to analyse the extent to which the Arab culture of the Lakhmids of Hira played a similar role as a vehicle of transmission for Sassanian culture and, more importantly, the extent to which these Arab people merged Roman — Byzantine and Partho — Sassanian cultural elements, as they had been exposed to both. Accordingly, we can affirm that if the Ghassanids can be considered forerunners of the Umayyads in whatsoever has to do with the adoption of Classical culture and the socio-political and religious context of Oriens, the Lakhmids could be seen as forerunners of the cultural hybridisation between east and west that would characterise Early Islamic / Umayyad culture. The extent and impact of both processes is still awaiting a proper study, although unfortunately the material evidence available is scarce at best, or disappeared long ago at worst.

Addendum: An Attempt to Identify the Ḥallābāt Complex on the Basis of Written Sources.

Prof. Shahid's detailed studies on the written sources related to the Ghassanids (especially on toponymy, historical geography and their built structures) allow us to attempt an identification of the site. Two of the main written sources, the *Chronog-*

[86] Not a true Caliphate, not a true Islamic State, but a true Arab Empire.

raphy of Hamza al-Isfahani and the list of Syriac Monophysite monasteries (the so called *Letter of the Archimandrites*), both mention a site that would host a *dayr* / "monastery" and a *ṣarḥ* / "stately mansion" located close to an important body of water (*ghadīr*) in the area between Ḥawran and Balqā'.

In the *Chronography* of Ghassanid *phylarchs* compiled by Hamza el-Isfahani, which lists their building activities, there is a mention of a site that, owing to its location and toponym, could well be modern Ḥallābāt (which is certainly a modern name). He mentions that Tha'laba ibn 'Amr "*built 'Aqqa and Sarh al-Ghadir in the extremities of Hawran, next to or adjoining al-Balqa'*". Regarding the first place name, Shahid states that is clearly a corrupt reading which may be read as Baqqa, Raqqa or Shaqqa, of which he prefers the last (a site in the Trachonitis) as the most likely correction[87]. Our interest points to the second structure or complex. The term *sarh* implies a stately mansion, while *ghadir* implies a body of water. It may not be a coincidence that the toponym of the nearby Umayyad baths (which belong to the same complex as Ḥallābāt) is still *Ḥammām as-Saraḥ* today. On the other hand, it is noteworthy that Ḥallābāt is a place with important water sources, of which the noteworthy hydraulic and agricultural system around the Qaṣr (and the *ʿammam* itself at Sarah) are the most obvious manifestation. Even today, Ḥallābāt has one of the main springs in Jordan, which is so productive that a bottled mineral water plant has been built there.

If the term *ghadir* referred to a pool rather than a stream, it might have related to the huge *birka* of the agricultural complex near the *qasr*, located in a depression at the foot of the hill where our building stands, which gathers water from its slopes and from a nearby *wadi*[88].

In the *Letter of the Archimandrites*, there is also mention of a *Dayr al-Ghadir* which Shahid suggests may refer to the same site. Besides, he notes "that the definite article in al-Ghadir suggests that the common noun *ghadir* has in this case become a proper noun, a specific place by that name" (Shahid, 2002: 325-6). Furthermore, Prof. Shahid underlines how Hamza refers to al-Ghadir when speaks of al-Mundir ibn al-Harith, in such a way that suggests that al-Ghadir was a well-known name in the 6th century AD. He also mentions Wetzstein's hypothesis, which locates this place in a **tributary** of *Wadi Butum*, not far from our site. Two other sites in Syria are also mentioned, but in our opinion these are out of the question as they are in the Golan (Ghadir al-Bustan and Ghadir al-Nuhas), which openly contradicts the clear geographic location given by Hamza.

In our opinion, the most important reference is that of its location "*in the extremities of Hawran, next to or adjoining al-Balqa'*". This precision is remarkable, because in other examples the location is not so clearly stated. Actually, Ḥallābāt could be clearly defined on the basis of this geographical reference to a border location that is clearly reflected in the building materials used: white limestone from the Balqā' and black basalt from the Ḥawran.

The facts that the list of Hamza makes reference to a stately mansion, and the letter of Syriac monasteries to a *coenobium*, both related to a place called al-Ghadir, goes beyond mere coincidence as it reflects the dual nature, both civil and religious, of the complex. Each document would make reference to the character of the buildings they respectively list: royal civic / palatine enterprises in the first case, and religious (monastic to be more precise) in the second. To be more accurate, they would make reference not to a single structure with a shared use (as would be the case for Mundhir's *praetorium*) but to a monastery built immediately adjacent to a palatial mansion, which is the case of Ḥallābāt, where both 'buildings' were constructed within the same walled precinct of the former abandoned *limes* fort. The fact that Hamza clearly uses the term *bana* / "he built" in relation to the enterprise undertaken by Tha'laba at this site could lead to some doubts, as in our case that expression would have to refer to the refurbishment of a former Roman fort and not to a structure built *ex novo*. Nevertheless, we know that Hamza uses that term when referring to refurbishments that imply important changes in the previous structure. This clearly occurs in our case, as we have demonstrated that the level of reconstruction is so significant (structurally and formally, involving building techniques, materials, architectural typology and of course final use) that the

[87] At Hayyat, near Shaqqa, there is one of the few buildings that have so far been identified as Ghassanid, while at Shaqqa itself there is a monastery with a fortified tower that would be dated in the 6th century AD.

[88] Although apparently refurbished or 'rebuilt' in the Umayyad period, this reservoir is certainly from an earlier period, most probably Roman.

result was a completely new and different building, notwithstanding the fact that it occupied exactly the same perimeter. All this would doubtlessly justify the use of the expression "he built" to describe or make reference to this intervention[89].

These fragmentary data therefore allow us to present for discussion the hypothesis that the complex of Ḥallābāt / *Ḥammām* as-Saraḥ was the site described in the written sources as *Sarh al-Ghadir* / *Dayr al-Ghadir* which, according to Hamza al-Isfahani, was built by the Ghassanid *phylarch* Tha'laba ibn 'Amr.

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[89] Contrastingly, we have demonstrated that the Umayyad interventions within the "*qasr*" (i.e.: the Ghassanid compound), were merely decorative, removing existing mosaics and mural paintings that bear any political or religious message, and applying new mosaics, stucco panels and mural paintings with their own imagery. Changing use just to some of the dependencies (merely the monastic ones).

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المعاني والرموز في أيقونغرافيا فسيفساء قلعة عجلون [1]

ملخص البحث

تعد قلعة عجلون أنموذجا فريدا لفن التحصين الإسلامي الذي برز في القرن ٦هـ/ ١٢م (**الشكل ١**) وقد شهد على تطورها الباحثون والدارسون ومؤرخو العصور الوسطى الذي أكدوا بدراستهم أنها تمثل نقطة تحول وعلامة بارزة الحدوث في التاريخ الإسلامي (Boase 1967: 71-72) فكانت وما زالت مثالا عربيا للعمارة الحربية الإسلامية تعكس بعمارتها تراث الأيوبيين وتقاليدهم المعمارية. ويتناول موضوع البحث أرضية فسيفسائية اكتشفت في قلعة عجلون أثناء قيام دائرة الآثار العامة عام ١٤٢٠هـ/ ١٩٩٩م في تنظيف إحدى القاعات من الردم والأنقاض تمهيدا لإعادة تأهيل قنوات تصريف المياه وتمثل الفسيفساء المكتشفة أرضية بناء ديني عبارة عن كنيسة صغيرة أو مصلى (Chapel) ترجع للعصر البيزنطي وعند بناء القلعة عام ٥٨٠هـ/ ١١٨٤م تعرض البناء الديني لفصل أجزاء منه ولم يبق من معالمه إلا بعض العناصر المعمارية والزخرفية. وتهدف الدراسة إلى إلقاء الضوء على تلك الفسيفساء، ودراستها من الناحيتين الأثرية والفنية، وكذلك التعرف على العناصر الزخرفية التي استخدمها الفنان في تلك الأرضية، وطبيعة تلك الزخارف وشكلها والتي تعكس الكثير من المعاني والدلالات والرموز في الميثولوجيا البيزنطية المرتبطة بمفاهيم دينية.

١. قلعة عجلون- منظر عام لواجهة القلعة الجنوبية.

الموقع

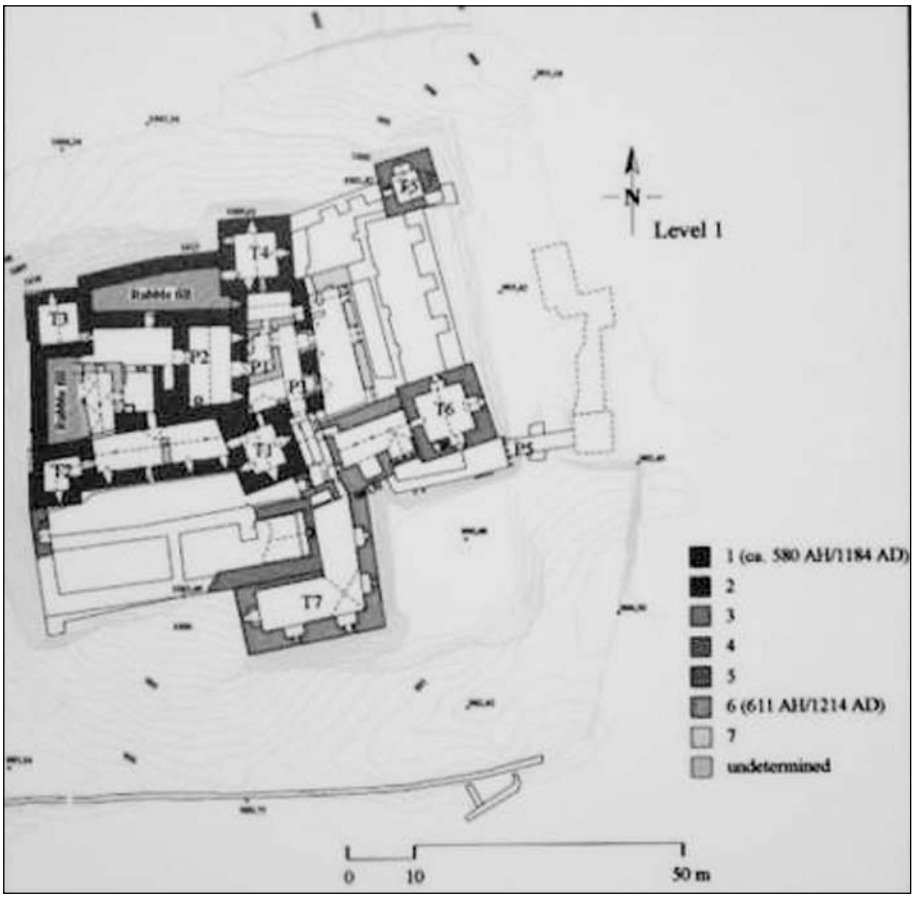
يقع البناء الديني المكتشف في إحدى القاعات الرئيسة التي أنشئت ضمن المرحلة الأولى من البناء زمن عز الدين أسامه ٥٨٠هـ/ ١١٨٤م (القلقشندي ١٩١٤ ج٤: ١٠٥) (ابن شداد ١٩٦٢: ٨٦) وتخطيط المرحلة الأولى من البناء مساحة مربعة المسقط محاطة بسور مرتفع وتشغل أركان المربع الخارجي أربعة أبراج ذات مسقط مربع (**الشكل ٢** الأبراج T1-T4) وزعت على الأركان بواقع برج في كل ركن تبرز عن سمت السور (أبو عبيلة ٢٠٠٥: ١٠٧) (Johns 1931: 23-29; Minnis and Bader 1988: 256-264) يتوسط ضلع المربع الشرقي مدخل رئيس (**الشكل ٣**) يكتنفه برجان دفاعيان يفضي إلى قبو معقود بعقد نصف دائري تغطي أرضية الجزء الشمالي من القبو فسيفساء ملونة كانت تزين أرضية بناء ديني يمثل كنيسة تتألف من ثلاثة أقسام، صحن الكنيسة وحاجز الهيكل والهيكل.

١. صحن الكنيسة (Nave)

تخطيط الصحن على شكل مستطيل طول كل من ضلعيه الشمالي والجنوبي ٤,٦٠م، وطول كل من ضلعيه الشرقي والغربي ٣,٥٤م، تزدان أرضية الصحن بمكعبات من الفسيفساء متعددة الألوان ذات زخارف متنوعة محصورة داخل إطار زخرفي يتألف من شريطين زخرفيين متوازيين من المكعبات الفسيفسائية السوداء على خلفية من المكعبات البيضاء تلتف حول أطراف المستطيل الخارجي (**الشكل ٤**). وقوام زخرفة أرضية الصحن زخارف هندسية تمثل أشكال المعينات (**الشكل ٥**) وزخرفة الصليب اليوناني تخرج من كل طرف من أطرافه الأربعة وريده ثلاثية الفصوص موضوعة باللون الأحمر على خلفية من المكعبات البيضاء ويشغل الصليب مكانة في الأرضية الفسيفسائية حيث يتقدم عتبة قدس الأقداس (**الشكل ٦**). وتعد هذه الزخرفة من

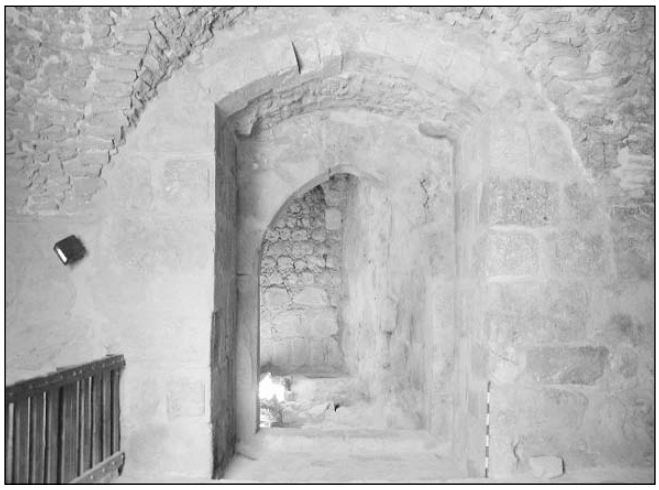
١- انظر الدراسة في اللغة الإنجليزية في مجلة كلية العلوم والفنون/ الجامعة الأمريكية بيروت.

Abu Abeileh M. New Mosaic Floor in the Castle of Ajlun (Qalat-al-Rabad). Berytus 2007 vol. L. 85- 88.



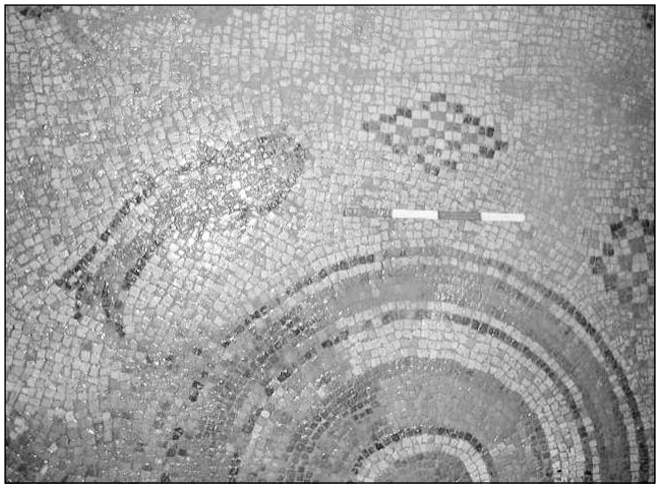
٢. قلعة عجلون– مسقط أفقي

الزخارف التي أخذت مكانتها في الفن البيزنطي ونفذت في الأرضيات الفسيفسائية تعكس معاني ودلالات في الأيقونغرافيا البيزنطية (Iconography) ذات مضامين دينية ترمز في رسمها إلى النجاة والإيمان والقبول طوعا بالمعاناة والموت والتضحية بالنفس (متى ٢٧: ٢٧– ٤٤) (مرقس ١٥: ٣٠ – ٣٢) (لوقا ٢٣: ٢٣– ٢٨) (يوحنا ١٩: ١٩– ٢٥). كما تتمركز في أرضية الصحن زخرفة رمزية تمثل خمسة دوائر متحدة المركز يصغر قطرها كلما اقتربت من المركز، قطر الدائرة الأولى ١,٤٣م فيما يبلغ قطر الدائرة الخامسة والأخيرة ٠,٢٩م (**الشكل ٧**). وعلى جانبي الدائرة الأولى زخرفة حيوانية تمثل سمكتين (**الشكل ٨**). وترمز هذه الزخرفة في الميثولوجيا البيزنطية معجزة المسيح في خبز الحياة الأبدي حينما تمكن بمعجزته إطعام ٥٠٠٠ من الجموع المحتشدة في الجليل سنة ٢٩م (يوحنا ٦: ٨– ١٤) (مرقس ٨: ٥– ١٢) (متى ١٥: ٢٢– ٢٩) (متى ١٦: ٥– ١٣) (عبد الملك وآخرون ١٨٩٤ ج٣: ٨٦٥–٨٨٨). كما تزدان أرضية الصحن بزخرفة تمثل طائر تعرض

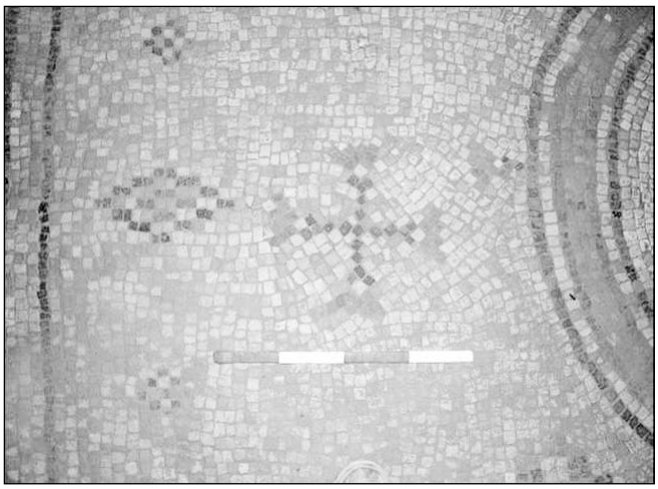


٣. قلعة عجلون– منظر عام للمدخل الرئيس في المرحلة الأولى من البناء من الداخل.

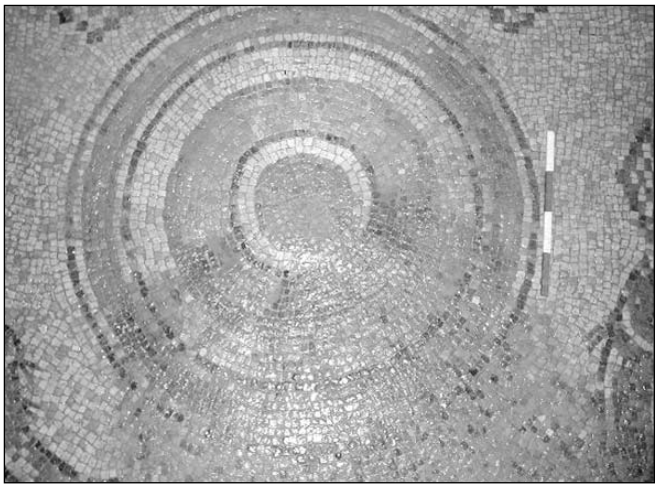
٤. قلعة عجلون– منظر عام للأرضية الفسيفسائية ويظهر الشريط الزخرفي الذي يلتف حول الأرضية والحاجز الذي يفصل منطقة الهيكل عن صحن الكنيسة.



٥. قلعة عجلون- منظر لأشكال المعينات التي تزين الأرضية.

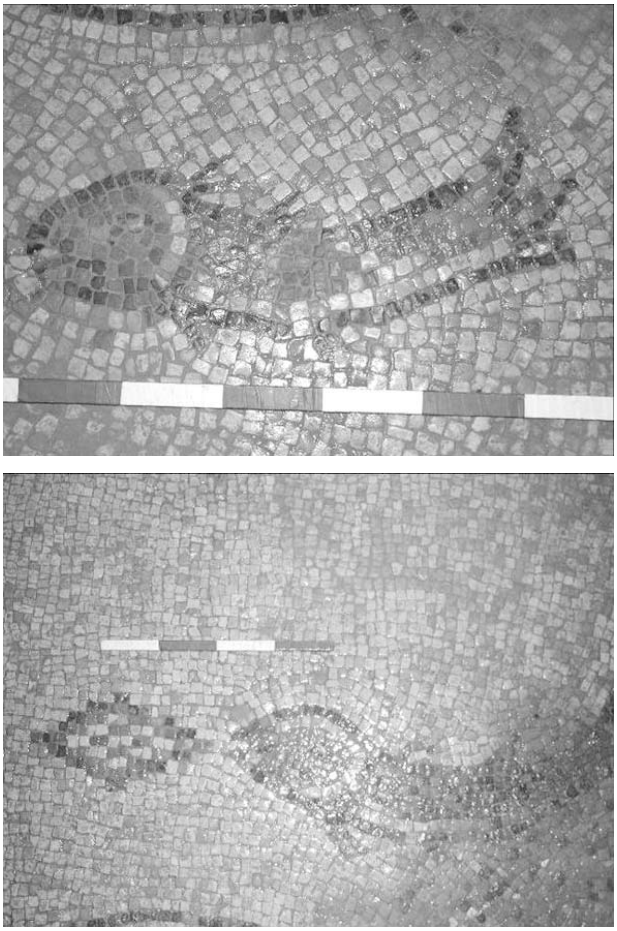


٦. قلعة عجلون- منظر لزخرفة تمثل صليب يوناني يتقدم قدس الأقداس.



٧. قلعة عجلون- منظر لزخرفة تمثل خمسة أرغفة خبز.

للتشويه إبان أزمة الأيقونات (Iconoclastic period) التي عصفت بالإمبراطورية البيزنطية ومرت بمرحلتين الأولى من سنة ١٠٨- ١٦٤هـ/ ٧٢٦- ٧٨٠م والثانية من سنة ١٩٨- ٢٢٩هـ/ ٨١٣- ٨٤٣م



٨. قلعة عجلون- منظر لزخرفة تمثل سمكتان تحيطان بأرغفة الخبز.

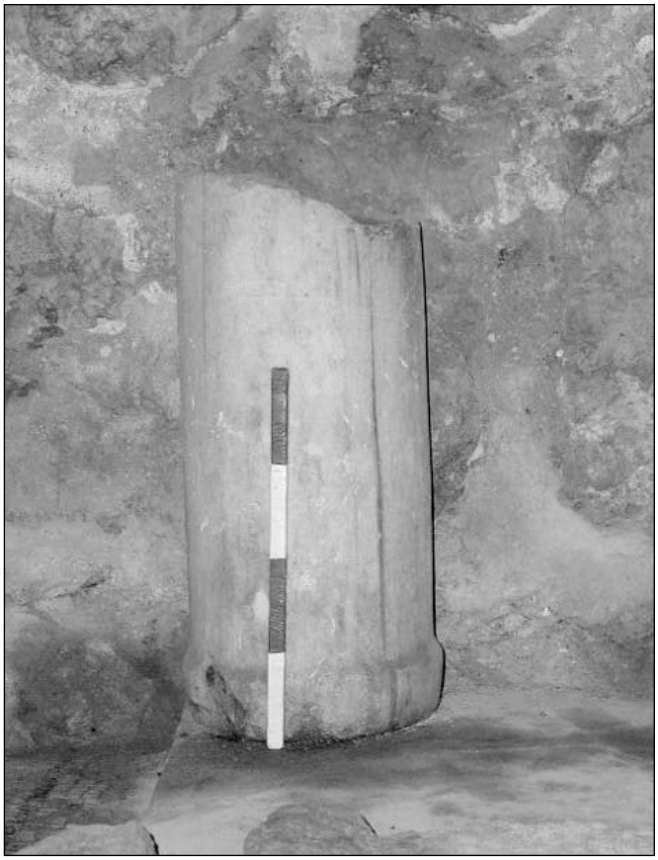
(Kleinbauer 1990: 448-449) (العريني ١٩٨٢: ١٧٩).

٢. حاجز الهيكل (Chancel Screen)

يفصل الحاجز منطقة الهيكل عن صحن الكنيسة ويتكون من قطع من الحجارة المشذبة وضعت بشكل أفقي يتوسطها تجويف اتساعه٠,٢٠م يمتد على طول الهيكل مسافة ٣,٥٤م، وتتخلله قواعد للأعمدة على الجانبين والوسط لتثبيت حواجز رخامية بين الأعمدة ويرتفع الحاجز عن الأرضية ٠,٣٠م وبالقرب منه عثر على عمود رخامي اسطواني الشكل(**الشكل ٩**).

٣. الهيكل

وهو الجزء المقدس في الكنيسة ويشغل الجزء الشرقي وتخطيط الهيكل على شكل مستطيل طول كل من ضلعيه الشمالي والجنوبي ١,٠٦م، وطول كل من ضلعيه الشرقي والغربي ٣,٥٤م، ترتفع أرضيته عن أرضية الصحن مقدار ٠,٣٠م وقد تعرضت أجزاء منه للفصل عند بناء القلعة شأنه شأن بقية أجزاء الكنيسة. تزدان أرضية الصحن بمكعبات من الفسيفساء متعددة الألوان ذات زخارف متنوعة. قوام زخرفتها شكل



٩. قلعة عجلون- منظر لعمود رخامي عثر عليه في منطقة الهيكل.

هندسي عبارة عن مستطيل يتكون من ثلاثة إطارات مستقيمة متوازية موضوعة ألوانها بالتناوب أسود وأحمر وأسود على خلفية من المكعبات البيضاء طول ضلعي المستطيل ٠,٦٤ X ٠,٧٤م شغل داخله بكتابة يونانية تعني (الشماس آريانو) تتألف من أربعة أسطر كتبت بمكعبات من الفسيفساء الحمراء على خلفية من المكعبات البيضاء (**الشكل ١٠**) متوسط أطوال الحروف ٠,١٠- ٠,١٢م، ومتوسط الفاصل بين الأسطر ٠,٣- ٠,٥م. وعلى يمين الكتابة زخرفة تمثل طائر تعرض للتشويه إبان أزمة الأيقونات في العصر البيزنطي في القرنين الثامن والتاسع الميلاديين ولم يبق من معالمه إلا أرجله (**الشكل ١١**).

قراءة النص(الشكل ١٠) [٢]

السطر الأول: APIA
السطر الثاني: NOY
السطر الثالث: ΔIAK
السطر الرابع: ωN

الأعلام الواردة في النقش

آريانو(Ariano) اسم علم يوناني قديم ورد في العديد من النقوش

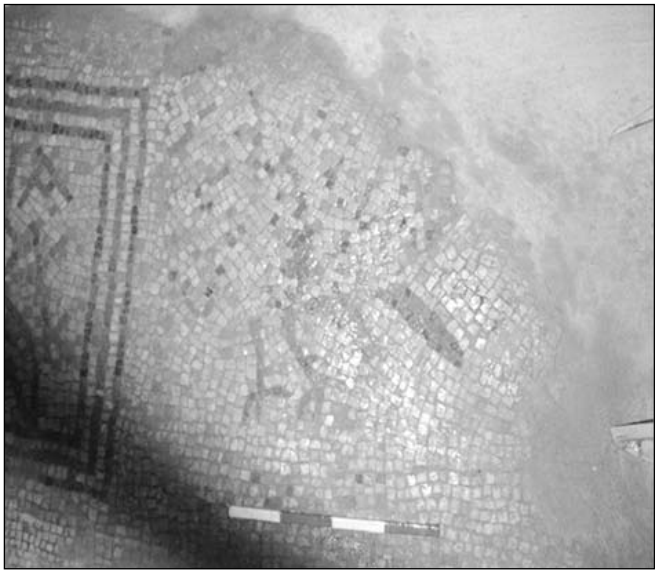
١٠. قلعة عجلون- منظر لكتابة يونانية تتوسط أرضية هيكل الكنيسة.

الكتابية في الأردن نذكر من الأمثلة الدالة على ذلك نقش مؤتة وخربة قرياطين (Canova 1954: nos. 318, 319, 292) كما عرف هذا الاسم في مواقع فلسطين نذكر من الأمثلة الدالة على ذلك موقع كفركما الذي يقع إلى الشمال الشرقي من جبل التجلي المعروف بجبل طابور (Saarisalo *et al.* 1966: no. 1). وحتى كتابة هذه السطور لا نستطيع الجزم بأن الاسم الوارد في نقش عجلون يعود إلى نفس الشخصية الواردة في النقوش أنفة الذكر.

الألقاب والنعوت الواردة في النقش

دياكون (Diakon) الشماس: لفظ يوناني قديم جمعها دياكونوي ومعناها خادم (Meimaris 1986) . أما في اللغة العربية فكلمة

٢- أقدم خالص شكري إلى الدكتور نبيل عطا الله أستاذ النقوش في كلية الآثار في جامعة اليرموك/ إربد على مساعدته القيمة أثناء إعداد هذا البحث.



١١. قلعة عجلون- منظر لزخرفة تمثل طائر تعرض للتشويه إبان أزمة الأيقونات.

شماس تعني من يقوم بالخدمة الكنسية ومرتبته دون القسيس وجمع الكلمة شمامسة (مصطفى وآخرون ١٩٧٢ ج١: ٤٩٤) وقد عرفت هذه الوظيفة في العصور التي سبقت العصر المسيحي. أما في العصر المسيحي فقد وردت في العهد الجديد تشير إلى عدة وظائف بمعنى خادم (متى ٢٠: ٢٦) (متى ٢٣: ١١). وخدمة الشماس خدمة روحية تظهر في إنجيل (تيموتاوس الأول ٣: ٨-١٣). ومن وظائفه أن يشهد للمسيح بالوعظ ومن الشمامسة الواعظين في التاريخ المسيحي نذكر استفانوس (أول شهداء المسيحية) وفيلبس (أحد الرسل الإثني عشر) وفي كنيسة فيلبي هنالك عدد ليس بقليل من الشمامسة يشاركون الأساقفة في خدمة الرب. كما ظهر في التاريخ المسيحي الشماسات وهن من السيدات كان عملهن عمل الشمامسة من الرجال. وهذه الخدمة تعود إلى العصر المبكر في الكنيسة الرسولية وأصبحت هذه الوظيفة من الرتب الكنسية (رؤيا ١٦: ١) ويسجل المؤرخ الروماني بليني في رسائله إلى الإمبراطور تراجان سنة ١٠٠ ميلادي عن خدمة الشمامسة في كنيسة بيثينه (عبد الملك وآخرون ١٨٩٤ ج٢: ٥١٩). وقد وردت لفظة الشماس في العديد من النقوش في الأردن نذكر من الأمثلة الدالة على ذلك نقش في أدر/ محافظة الكرك (Canova 1954: no. 208) وجرش (Supplementum 1934: no. 872)

ونقوش كتابية في كنيسة اسطفان في أم الرصاص ورد فيه اسم الشماس اسطفان (Piccirillo and Attiyat 1986: 341-351). كما ورد اسم لكسوس الشماس الكبير الحبيب إلى الله في كتابة في نفس الكنيسة وكتابة أخرى ذكر فيها الشماس قرياكوس (بيتشيريلو ١٩٩٣: ٢٩٠- ٢٩٣). كما وردت كلمة شماس في كنيسة شونة نمرين في الشونة الجنوبية وكتابة أخرى في نفس الكنيسة ورد فيها اسم تشانيسون شماس الكنيسة (Piccirillo 1982: 332-339). كما وردت لفظة الشماس في العديد من النقوش الكتابية في مادبا (Gatier 1986: no. 143) (Lux 1969: 401, 402) وغيرها من النقوش في المنطقة.

الخاتمة والنتائج

من خلال ما تقدم ذكره فإن الأرضية الفسيفسائية المكتشفة في قلعة عجلون تؤكد ما جاء في المصادر التاريخية بأن قلعة عجلون صغيرة المقدار أقيمت على أنقاض دير يسكنه راهب (العمري ١٩٨٦: ١٨٨) (القلقشندي ١٩١٤ ج٤: ١٠٥- ١٠٦) (ابن شداد ١٩٦٢: ٨٦- ٨٧). وهنا يظهر للباحث في فنون العمارة الإسلامية عن مدى التسامح الديني عند المسلمين فالمعماري الذي شيد قلعة عجلون أبقى هذه الفسيفساء بما تمثله من معان ورموز على حالها وشيد منشأته العسكرية لتلبي الوظائف الإنشائية التي أنشئت من أجلها. ومما تجدر الإشارة إليه أن هناك العديد من النقوش اليونانية واللاتينية التي اكتشفت في قلعة عجلون ومن هذه النقوش نقش عثر عليه بين الأنقاض بالطابق العلوي من القلعة محفوظ في متحف آثار عجلون تحت سجل رقم (AJ 82) تمكن الباحث ميتمان (Mittmann) من قراءة بعض كلماته التي تشير بأن شخصا اسمه مالكوس قد أسس بناءا ولم يستطع الباحث قراءة باقي النقش لوجود بعض الأجزاء من النقش مفقودة (Mittmann 1970: 182) (أبو عبيلة ١٩٩٨: ١١- ١٣). وهناك نقش يوناني آخر على لوح حجري يتوج إحدى مزاغل السهام في الطابق العلوي من القلعة شغل داخله بكتابة يونانية (Atallah and Abu Abeileh 1999: 119).

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دراسات
في
تاريخ وآثار
الأردن

المجلد العاشر

دائرة الآثار العامة – عمّان

دراسات في تاريخ وآثار الأردن

تصدر عن دائرة الآثار العامة، ص.ب. ٨٨، عمان ١١١١٨ - المملكة الأردنية الهاشمية

رقم الايداع في المكتبة الوطنية: (١١١٩/٥/٢٠٠٤)

الطبعة الأولى ٢٠٠٩
مطبوعات دائرة الآثار العامة، عمان - الأردن

تصميم
ماجدة ابراهيم

طباعة: المؤسسة الصحفية الأردنية (الرأي)

مؤتمرات «دراسات في تاريخ وآثار الأردن»

المؤتمر	العنوان	المكان	الفترة
المؤتمر الأول	دراسات في تاريخ الأردن واثاره منذ أقدم العصور وحتى العهد العثماني	جامعة أكسفورد / بريطانيا	٢٥-١٩٨٠/٣/٣١
المؤتمر الثاني	جغرافية البيئة الأردنية وتاريخها منذ أقدم العصور حتى يومنا هذا	فندق عمره / عمان	٤-١٩٨٣/٤/١٦
المؤتمر الثالث	صلات الأردن التجارية وعلاقاته الخارجية إلى نهاية العهد العثماني	جامعة توينجن / المانيا	٦-١٩٨٦/٤/١٢
المؤتمر الرابع	المواقع الأثرية وأنماط الاستقرار فيها عبر العصور التي مر بها الأردن	جامعة ليون / فرنسا	٣٠/٥ - ١٩٨٩/٦/٤
المؤتمر الخامس	الفن والتقنية في الأردن عبر العصور	جامعة العلوم والتكنولوجيا الأردنية / اربد	١٢-١٩٩٢/٤/١٧
المؤتمر السادس	مصادر البيئة الطبيعية والاستيطان الانساني في الأردن عبر العصور	مركز الأبحاث والدراسات الأثرية جامعة تورينو / ايطاليا	٥-١٩٩٥/٦/١٠
المؤتمر السابع	الحقب الألفية التي مر بها الأردن من أقدم العصور وحتى نهاية الحقبة العثمانية	جامعة كوبنهاجن / الدنمارك	١٢-١٩٩٨/٦/١٩
المؤتمر الثامن	الحضارة والهوية في الأردن عبر العصور	جامعة سدني/ استراليا	٧-٢٠٠١/٧/١٥
المؤتمر التاسع	التفاعلات الحضارية عبرالعصور	جامعة الحسين بن طلال / البتراء – الأردن	٢٣-٢٠٠٤/٥/٢٧
المؤتمر العاشر	الأردن عبر العصور	جامعة جورج واشنطن/ الولايات المتحدة الأمريكية	٢٣-٢٠٠٧/٥/٢٨
المؤتمر الحادي عشر	التغيرات والتحديات	جامعة السوربون/ باريس فرنسا	٧-٢٠١٠/٦/١٤

System of Transliteration from Arabic

Consonents

ء	' (except where initial)	ض	ḍ
ب	b	ط	ṭ
ت	t	ظ	dh
ث	th	ع	‘
ج	j	غ	gh
ح	ḥ	ف	f
خ	kh	ق	q
د	d	ك	k
ذ	dh	ل	l
ر	r	م	m
ز	z	ن	n
س	s	هـ	h
ش	sh	و	w
ص	ṣ	ي	y
ة	a or at	ه	a or ah

Long Vowels

ا ى	ā
و	ū
ي	ī

Short Vowels

ـَ	a
ـُ	u
ـِ	i

Common Nouns

تل	Tall	دير	Dayr
جبل	Jabal	عين	‘Ayn
خربة	Khirbat	وادي	Wādī