

TALL AL-ḤAMMĀM SEASON SIX, 2011: EXCAVATION, SURVEY, INTERPRETATIONS AND INSIGHTS

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with contributions by*

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Abstract

The Tall al-Ḥammām Excavation Project (TaHEP) is a joint scientific project between Trinity Southwest University, Albuquerque, New Mexico, USA and the Department of Antiquities of the Hashemite Kingdom of Jordan. The goal of TaHEP is to study the relationship of this immense and strategically-located site within its ancient period socio-cultural, economic and political contexts, and to ascertain its position, function and influence within those contexts.

In addition to this broader focus incorporating historical and archaeological data from neighboring sites in the southern Jordan Valley and beyond, the Project is studying the site as a microcosm of life and activity within its own local environment, seeking to determine its phases of settlement, urbanization and the reasons for its decline, destruction and/or abandonment at archaeological period interfaces.

Within this micro-context the Project seeks to shed light on how the inhabitants of Tall al-Ḥammām adapted to the local environment and environmental changes, and utilized available resources, enabling them to attain levels of city planning and building on a resultantly large scale, particularly during the Bronze Age.

The present report seeks to provide a general overview and introduction to the geographical, chronological, and archaeological data distilled from six seasons of exploration and excavation at this remarkable site, and to foster interest in Tall al-Ḥammām as a significant source of present and future information regarding the history of the southern Jordan Valley and, indeed, of the southern Levant.

Introduction

The Tall al-Ḥammām Excavation Project (TeHEP) began Season Six under the auspices of the Joint Scientific Project Agreement signed in 2008 between Trinity Southwest University (TSU) and the Department of Antiquities of Jordan (DoA) for the duration of five years, extending through the 2013 season. On 30 December 2010, a new Joint Scientific Project Agreement was signed by Dr. Steven Collins (TSU) and Dr. Ziad Al-Saad, Director General of the DoA. The former 5-year Agreement was thus replaced by the new 10-year Agreement, extending TeHEP through what will be Season Sixteen in 2020.

Season Six (for previous seasons see Collins, Byers, Luddeni 2006; Collins, Byers, Luddeni, Moore 2007; Collins, Abu Dayyeh, *et al.* 2008; Collins, Hamdan, *et al.* 2009a; Collins, Hamdan, *et al.* 2009b; Collins, Hamdan, *et al.* 2010) of the Tall al-Ḥammām Excavation Project, including set-up and wrap-up, was conducted from 10 December 2010 through 27 January 2011, with the authorization and support of Dr Ziad Al-Saad, Director General of the DoA. TeHEP Season Six was co-directed by Dr. Steven Collins (Dean, College of Archaeology, TSU; Chief Archaeologist) and Mr. Hussein Aljarrah (Regional Director, Middle Jordan Valley Directorate of Antiquities, DoA; Senior Archaeologist), with the assistance of Mr. Jehad Haroun (DoA, Head of Excavations and Surveys; Senior Archaeologist), Mr. Khalil Hamdan (DoA; Excavation Sector; Senior Archaeologist), Mr. Gary Byers (TSU, Senior Archaeologist), Dr. Steve McAllister (TSU, Senior Archaeologist), Ms. Carroll Kobs (TSU, Field Archaeologist), Mr. Michael C. Luddeni (TSU, Director of Photog-

raphy), Dr. Carl Morgan (TSU, Field Archaeologist), Mr. Hal Bonnette (TeHEP Field Methods Instructor, Field Archaeologist), Ms. Lucy Clayton (Binghamton University; Senior Anthropologist), Mr. Kennett Schath (TSU; Field Archaeologist), Dr. David Graves (Crandall U.; Field Archaeologist), Dr. Scott Stripling (Wharton Co. Junior College; Field Archaeologist), Ms. Heather Reichstadt (Conservator), Dr. John Leslie (TSU; Osteologist), Dr. John Moore (TSU; Osteologist, Geographer), and Mr. Qutaiba Dasouqi (DoA, Surveyor). Mr. Adeib abu-Shmais (former DoA Archaeological Inspector of Amman; Senior Archaeologist) served as principal diagnostician during the analysis of ceramic indicators. Dr. Leen Ritmeyer (Cardiff University, Wales; Architectural Reconstruction Specialist, Ritmeyer Archaeological Design, Wales) joined the TeHEP Team once again toward the end of the season to continue his work on the master top plan of the site, and section and reconstruction drawings for publication.

TeHEP professional archaeologists and specialists were assisted by a team of Square Supervisors consisting of TSU graduate and doctoral students in archaeology, along with independent scholars: Mr. Thomas Winder, Ms. Jennifer Fair, Ms. Brandy Forrest, Mr. Matt Ewert, Mr. Chris Craig, Ms. Carolyn Dunaway, Mr. Carl Fink, Mr. Kip Tyler, and Mr. Scott Handlin. Volunteer excavators from the USA, Canada, Germany, and Russia, along with 30 local workers, rounded out the TeHEP Season Six Team.

Tall al-Ḥammām (TeH) is located 12.6 km NE

of the Dead Sea, 11.7 km E of the Jordan River, 8 km south of the modern village of South Shūna (the location of Tall Nimrīn), and approximately 1 km SSW of the Kafrayn Dam. This area of the southern Jordan Valley, particularly the eastern half of what should properly be called “the Jordan Disk”¹ (the circular alluvial area north of the Dead Sea, approximately 25 km in diameter, also called the middle Ghawr), lies on the crossroads of the region’s ancient N/S and E/W trade routes.² Several significant sites, all variously occupied during the high points of Levantine Bronze Age.³ civilization, hug the eastern edge of the Jordan Disk beyond the spread of the ancient flood plain, bounded on the north by the throat of the Jordan Valley, and on the south by the rocky terrain of the Dead Sea area—Tall Nimrīn with Tall Bulaybil and Tall Muṣṭāḥ in close proximity, and sprawling Tall al-Ḥammām encircled by Tall Tāḥūna (NE), Tall Barakāt (N), Tall Kafrayn (NW), Tall Rāmā (SW), Tall Muways (SSW), Tall Iktānū (SSE), and several small un-named sites, all within a .75 to 2.7 km radius of Hammam (Glueck 1945; Ibrahim and Yassine 1988; Khouri 1988; Leonard 1992; Chang-Ho 2002). Although the ancient eastern Jordan Disk towns and villages vary site to site as to periodization, particularly during the Bronze Age, Tall al-Ḥammām was their connecting common denominator positioned at the center of what must surely be described as a city-state—and a relatively large one at that.

Also nearby are several large dolmen fields (Prag 1995; Aljarrah tpb) and tombs that, for the most part, remain unexcavated or robbed out.⁴

1. The wide, circular, flat alluvial area of the southern Jordan Valley immediately north of the Dead Sea is approximately 25 km in diameter, and split down the center by the Jordan River. The biblical term for this phenomenologically disk-shaped region is *kikkar* (= disk, circle), appearing as *hakikkar* (the disk/circle) and *kikkar hayarden* (disk/circle of the Jordan River). When not used geographically, *kikkar* refers either to a talent (flat, circular weight of metal) or a flat, circular loaf of bread. Although cognate forms of *kikkar* appear in virtually all ANE languages (including Akkadian, Ugaritic, and Egyptian), the term is never used in a geographical sense outside the Old Testament, but always refers to a disk-like “talent” or “loaf.” The rare, geographical usage of *kikkar* lies at the core of the phrases “Plain (*kikkar*) of the Jordan River” and “Cities of the Plain (*kikkar*)” as seen in Genesis 10-19. The entire area was visible from the highland hilltops near the Jordan Valley WNW of Jericho, the location of Bethel and Ai (see Genesis 13:1-12).

2. There is debate regarding whether or not some kind of

traversable road or trail existed on or near the eastern and western shores of the Dead Sea by which travelers could move N and S through the Dead Sea Valley. Even though much of the terrain was difficult, it is hard to believe that at least some kind of stable footpath did not exist, affording one the opportunity to move from towns/sites near the Dead Sea shore northward into the Jordan Valley without having to mount up into the high terrain to connect up with roads on the Trans- and Cis-jordan plateaus, then return to the Jordan Valley at a location farther to the N.

3. See the new archaeological period abbreviations in section, “Stratigraphy” in Collins, Hamdan, Byers *et al.* 2009a.

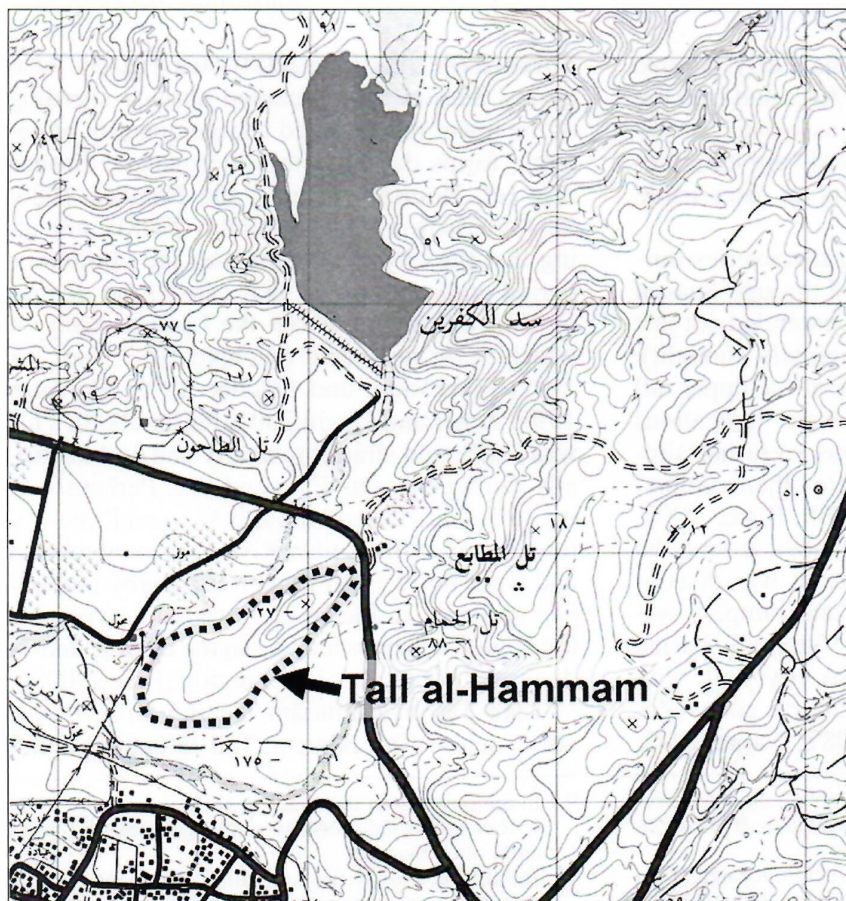
4. The Ḥammām (ar-Rawḍa) dolmens tend to be on the higher, flatter parts of the hills to the ESE of Tall al-Ḥammām, while the tombs are below them in the steeper walls of the wadis. However, there is evidence that at least a few dolmens were located very close to the tall itself, on the adjacent alluvial plain.

The Hellenistic, Roman, and Byzantine periods are represented architecturally at and near the site, including forts, guard towers, aqueducts, large cisterns, and by at least one monumental structure located on the S side of Tall al-Ḥammām near two springs, one thermal, one sweet.⁵

Tall al-Ḥammām is the largest of the Jordan Disk sites. It is certainly one of the largest, of not the largest, Bronze Age site in Jordan. The tall proper spreads over approximately 36 ha (360 dunams), bounded by the Wādī al-Kafrayn on the north and the Wādī ar-Rawḍa on the south, and by the main road to the E of the tall, against the foothills, and the confluence of these two wadis to the W (see **Figs. 1 and 2**). The site footprint for general settlement is well over 400 dunams (100+ acres). These dimensions approximate the areas of the site occupied in more remote antiquity, from at least the Chal-

colithic Period through the late Iron Age (there are likely period gaps in some locations on the site footprint)⁶. There is, additionally, ample evidence of Hellenistic/E Roman/Byz Period occupation just off the upper tall to the immediate south (see **Fig. 2**). Reports about the site from the late 19th century (Tristram 1874: 330-333; Thomson 1882: 371-376) describe an aqueduct that fed the area south of the upper tall, much of which we have identified. There also seems to have been some re-use of earlier structures on the upper tall (particularly those built initially during the Iron Age) periodically from the Iron Age through the Late Islamic Period. However, sherds from the Islamic Period are rare.

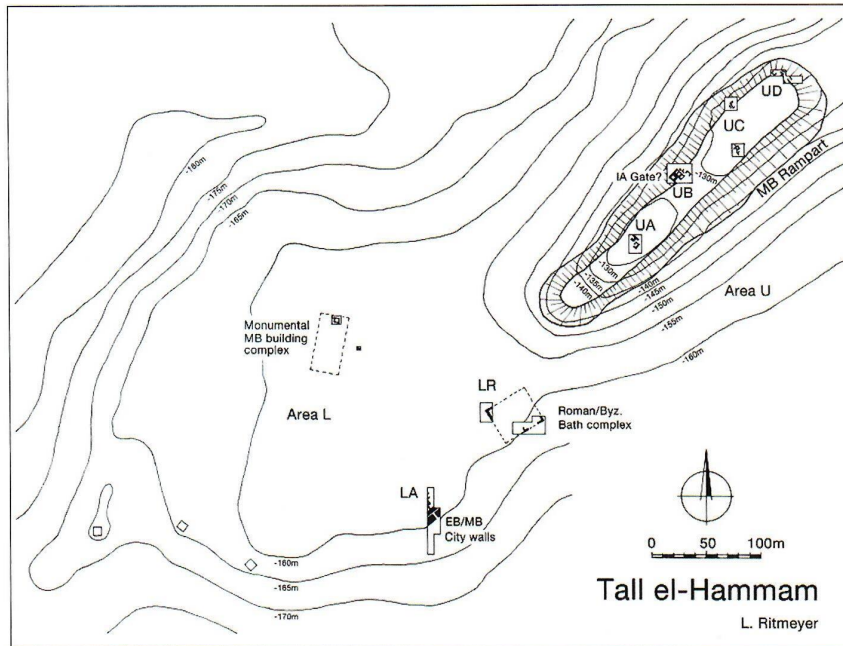
Surface surveying and excavation reveal occupation beginning at least during the Chalcolithic Period (some Pottery Neolithic material may also be present) and extending with de-



1. Location of Tall al-Ḥammām relative to the al-Kafrayn Reservoir.

5. Dr. David Graves and Dr. Scott Stripling reason that this must somehow be connected to the ancient Roman city of Livias, perhaps a guesthouse or palatial structure

on the eastern edge of the Livias precincts.
6. For example, the smaller Iron Age occupation, confined to the upper tall, covers approximately 12 ha.



2. General Plan showing excavation Areas and Fields.

tectible consistency through the Early Bronze Age, the Intermediate Bronze Age, and into the Middle Bronze Age (all with associated architecture). Late Bronze Age sherds are extremely rare in the area, and there is no discernable LBA⁷ architecture thus far.

One of the more surprising discoveries during Season Four and confirmed through Season Six was that the EBA city wall extended not just around the lower tall (as originally thought), but also around the entire base of the upper tall as well. Equally surprising were indications that the MBA city fortifications were not simply confined to the mudbrick/earthen rampart ringing the upper tall (Parr 1968; Burke 2008; McAllister 2008), but also extended around the lower tall. During Season Five, it was discovered that the MBA city wall and rampart system, aggregately from 33m to 50m thick, buried and dwarfed the 6m-thick EBA city wall, with many towers⁸ and (likely) multiple gates (Zayadine, Najjar, and Greene 1987; Najjar 1992;

Burke 2008; Falconer 2008) (see Fig. 3). Also during Season Five, detailed surface sharding of the lower tall revealed a large quantity of ceramic forms dating to the Intermediate Bronze Age (cf. Homès-Fredericq and Franken 1986: 98-114; Brown 1991; Palumbo 2008), indicating that the city likely survived the ubiquitous period-ending calamity that caused the demise of EBA cities throughout the Levant, many of which never recovered (Richard 1987; Ben Tor 1992; Finkelstein and Gophna 1993; Harrison 1997; Avner and Carmi 2001; Philip 2008). This was confirmed stratigraphically and architecturally during Seasons Five and Six. Perhaps owing to Tall al-Ḥammām's access to multiple water resources (the Jordan River, seasonal rainfall and wadi flows,⁹ and numerous nearby and on-site springs), residents seem to have overcome the negative factors leading to the decline and/or demise of other cities in the region (Prag 2007).¹⁰

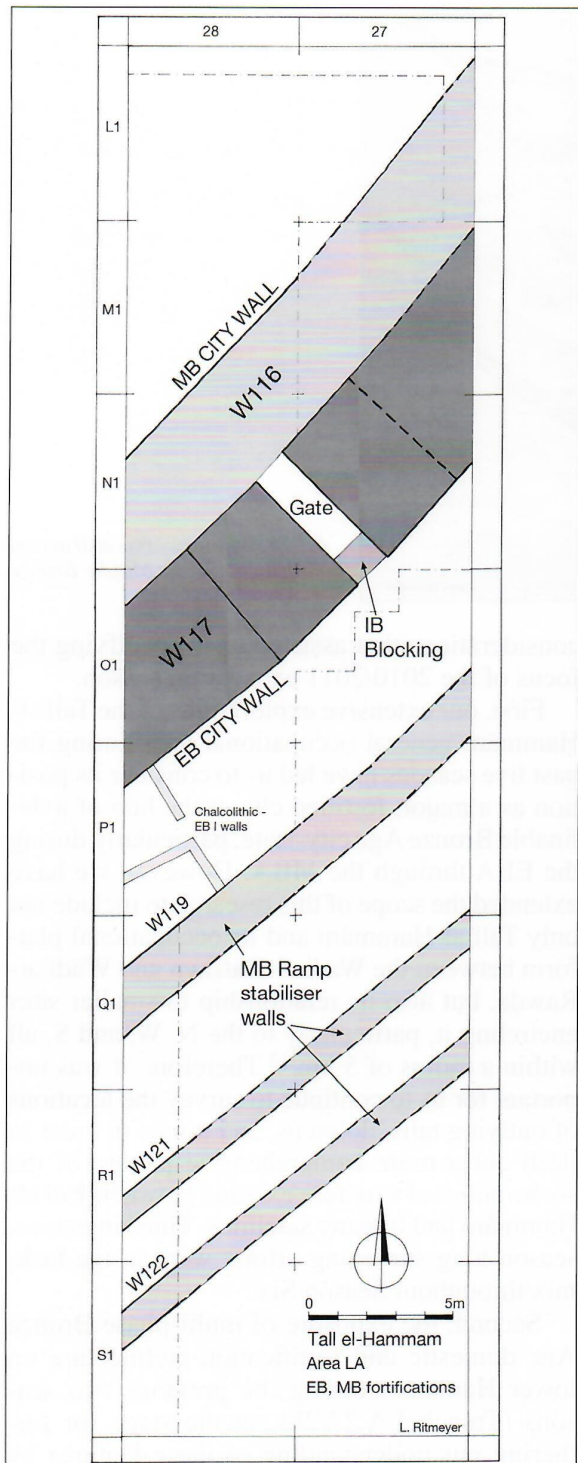
Like Tall al-Ḥammām, nearby Bronze Age sites such as Tall Nimrīn, Tall Iktānū, and Tall

7. See the new archaeological period abbreviations in section "V. Stratigraphy" in Collins, Hamdan, Byers *et al.* 2009a.

8. One particularly massive tower structure located at the far W extremity of the lower tall seems to be of MBA design, using large boulders (some slightly squared) not typical of EBA builders. MBA pottery is present in the area, but no excavation has taken place there to date.

9. In antiquity, both the Wādī al-Kafrayn and the Wādī ar-Rawḍa/Ḥisbān probably sustained perennial flows more often than not.

10. Tall Iktānū, 2 km to the S of Tall al-Ḥammām, also has strong IBA occupation, but not fortified. Although Tall Iktānū has generally been seen as a defining IBA representative in most of the relevant literature, it must now be interpreted as one of many satellites of the much larger, and fortified, Tall al-Ḥammām.



3. EBA city wall (W117) and gate with IBA blocking; MBA city wall (W116) and mudbrick rampart with stone stabilising walls (W119, W121, W122).

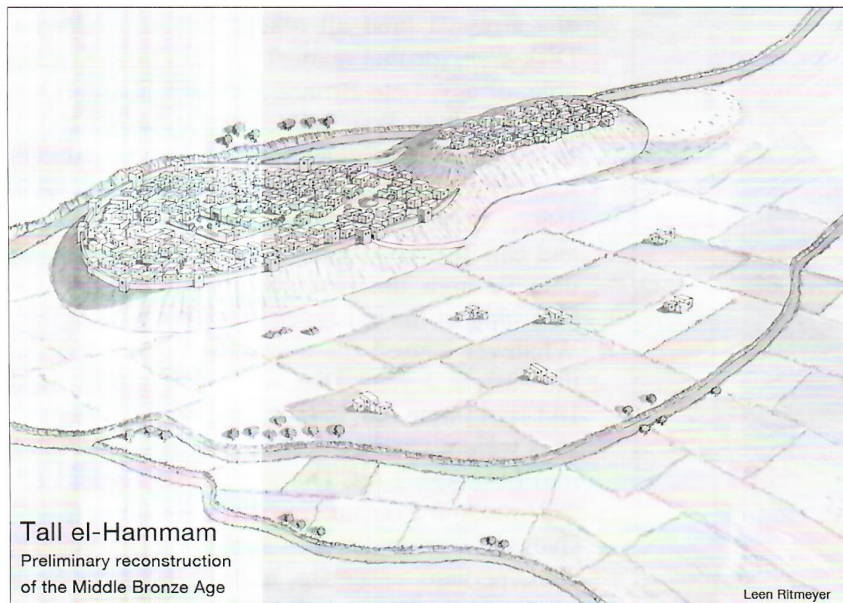
al-Kafrayn¹¹ (and all others in eastern Jordan Disk area, for that matter) seem to lack discernable, or any, Late Bronze Age occupation (Dornemann 1990; Prag 1974, 1991; Strange 2008). Is the “LBA gap”—as the Tall Nimrin excavators call it (Flanagan, McCreery, Yassine 1990, 1992, 1994, 1996)—a regional phenomenon, and can TeH shed light on what caused it? The data through the first six seasons of excavation support the existence of such a gap at TeH. Whatever caused the absence of occupation at the eastern Jordan Disk sites during the LBA/IA1 timeframe did, in fact, not continue, as most sites were resettled toward the end of Iron Age 1 into Iron Age 2 (cf. Dornemann 1983). Indeed, the Iron Age 2 occupation at TeH is quite extensive, and surrounded by a 3+m thick fortification wall, perhaps casemate, at least in part. What gave rise to the site’s Iron Age city, and what brought about its demise? The answers to these questions are only beginning to be answered.

During Season Six we concentrated our efforts in Field A on the lower tall, extending excavations in three principal locations: Trench LA.27-28 (the city’s southern defenses and adjacent domestic architecture), Trench LA.47 (another section of the city’s southern defenses), and Trench LA.35-45 (the sacred precinct at the geographical center of the lower tall). Each of these segments of the excavation has yielded important results in terms of the site’s occupational profile and phasing, with some remarkable results. Throughout season six we continued to examine closely and make survey notes on TeH’s many surface-visible features that are ‘readable’ stratigraphically by comparison with, and physically traceable to, excavated and ceramically dated features. A very good general understanding of the layout of the Bronze Age city is now emerging, and preliminary reconstruction drawings of the EBA/IBA and MBA cities at Tall al-Ḥammām are now available (see Fig. 4).

Season Six also produced excellent advancements in the area of landscape archaeology and anthropology in terms of the Hammam city-state as a phenomenologically-defined, holistic integration of urbascap, agriscap, sacrescap, necroscap, and infrascap. The inter-relationship

11. Although not much has been published on the ongoing excavation at Tall al-Kafrayn, our personal contact with the director of the excavation confirms that there

is not an LBA architectural presence at the site. There is a strong EBA and MBA presence, as at Tall Nimrin.



4. Preliminary reconstruction drawing of the Middle Bronze Age city.

ships between these city-state components is leading us to consider new ideas about socio-cultural-religious-economic aspects of the EBA-IBA-MBA urbanization processes, based on data and observations from six seasons of excavation and related research and exploration during intervening off-seasons. We have no doubt that new insights on, and interpretations of, the southern Levantine Bronze Age will emerge from this growing body of material.

Tall al-Ḥammām certainly holds key pieces of the archaeological puzzle from which a greater comprehension and appreciation of the regional history can emerge. The focus of the sixth season of excavation was to continue to identify and sound sections of the site determined to offer reasonable opportunities to expose stratigraphic sequencing on the lower tall (Area L) while, at the same time, continuing to survey, map, and document important geographical features and archaeological sites on the eastern Jordan Disk, with a view to determining the relationship of Tall al-Ḥammām to the territory under its hegemony and to surrounding polities.

Methodology

When considering its constituent components collectively, TeH is enormous. But there are four

considerations that assisted us in specifying the focus of the 2010/2011 excavation season.

First, our extensive explorations of the Tall al-Ḥammām general occupational area during the past five seasons have led us to consider its position as a major, fortified city at the hub of a definable Bronze Age city-state, particularly during the EBA through the MBA. However, we have extended the scope of this research to include not only Tall al-Ḥammām and its occupational platform between the Wādī al-Kafrayn and Wādī ar-Rawḍa, but also its relationship to smaller sites encircling it, particularly to the N, W, and S, all within a radius of 5 km.¹² Therefore, it was important for us to continue to survey the locations of outlying tall, dolmens, and tombs in order to flesh out a more comprehensive picture of the socio-political structure existing between Tall al-Ḥammām and its many satellites. Thus, intensive, season-long surveying efforts were in the task-mix throughout Season Six.

Second, the exposure of multi-phase Bronze Age domestic and fortification architecture on lower Hammam during the previous two seasons (Trench LA.27-28) set the stage for furthering our understanding of these features by continuing to expand those excavation squares during Season Six. The area was originally sin-

12. Many of these sites tend to hug the circle of foothills to the S and N, while others occupy positions on the alluvial plain to the SW, W, and NW. Distances from the center of Tall al-Ḥammām range from .25 km to

approximately 5 km. All are within direct line-of-sight from the top of al-Ḥammām's upper and lower tall within a visually and geographically defined and defensible space.

gled out for several reasons: (a) it was adjacent to, and included, a well-defined section of the city wall(s); (b) it included several visible (what appeared to be) domestic structures; (c) it was a raised area offering the potential of deep layering; (d) it had dense Bronze Age sherd scatter; and (e) it had not fallen prey to “deep ripping” agricultural activity. Indeed, the Season Five work in this trench suggested unbroken occupation in the form of Chalcolithic, EB1-2-3, IB1-2, and MB1-2 architectural remains, but further clarification was needed. Thus, the continuation of excavations in Trench LA.27-28 was a key focus. As an extension of the excavation of the EBA-IBA and MBA fortifications in LA.27-28, we decided to add another key trench (LA.47) further to the W where the exterior slope of the MBA rampart clearly rose several meters higher.

Third, the large Roman/Byzantine structure in Area L, Field R needed continued work as the central Classical Period feature at the site. Thus, we designed to expand upon what was accomplished there in previous seasons. Several architectural phases are now visible.

Fourth, the excavation process over six seasons, with subsequent erosion, has created the necessity of stabilizing selected stone foundations and other features against further erosion and potential damage due to collapse. Additionally, the requisite conservation of objects, plasters, and select skeletal remains required the attention of our conservator, Ms. Heather Reichstadt.

Fifth, because archaeological interpretations of excavated data can often be rather two-dimensional, we knew that, for the city-state of Tall al-Ḥammām, a holistic integration of multiple lines of inquiry was in order. The growing body of field data from surveys, excavations (in the urban center, dolmens, tombs, stone circles and menhir alignments), observations vis-a-vis landscape usage and alteration, and data from surrounding sites required intensive on-site consultation with TeHEP Anthropologist, Ms. Lucy Clayton.

Sixth, due to the extensive bulldozing and agricultural activities which have taken place on Tall al-Ḥammām over the past decades, we determined that a select overburden of disturbed soil/stone debris should be removed from two principal locations: a) .50m of soil/stones badly scoured and ripped by both military and agricultural activity over several Squares of Trench

LA.35-45; and b) various depths (generally 1m or less) of bulldozed soil/stone rubble across the southern wall of the Roman/Byzantine structure in Field LR.

Seventh, as a result of (now) six years of comprehensive exploration, surveying, and excavation on both upper and lower Tall al-Ḥammām [along with the nearby megalithic field(s) and tombs], we have assembled adequate data allowing us to continue the site-mapping and reconstruction drawing begun last season by archaeological architect, Dr. Leen Ritmeyer. This season we set forth to incorporate new stratigraphic and architectural data into our formal site plans, section drawings, and reconstruction drawings for publication purposes.

During Season Six, we were able to successfully address all of the methodological procedures outlined above.

Survey Activity

GIS/MJ Topographical Survey

TeHEP Surveyor, Mr. Qutaiba Dasouqi, continued to survey and ‘boom’ photograph working excavation squares throughout the season. Many additions were made to the topographical site-map, including newly-observed features. The grid was also expanded to include several areas where sherd/object-scatter revealed extra-defensive settlement areas. Additionally, aerial balloon photos were also taken after the end of the season under the direction of co-Director, Hussein Aljarrah.

GIS/MJ Excavation and Feature Documentation

Each square is routinely photographed from a 7m boom camera with walls, installations, and features incorporated into the site grid and GIS, with layered drawings and photographs available to Square Supervisors the next morning. Important finds are also located in three dimensions on the survey, with embedded photographs.

GPS/GIS/MJ Survey of the Hammam Megalithic Field

With the Hammam Megalithic Field surveyed and mapped in detail during Season Five, the concentration in Season Six was to survey and ‘boom’ photograph all the features in Discreet Field A (the sub-field in which intact dolmen HD.78 was excavated during Season Five).

That clan(?) -field not only holds numerous symmetrically-placed dolmens, but also several menhirs and stone circles with alignments of (likely) astronomical significance. Hussein Aljarrah, DoA Director for the Middle Jordan Valley, had already performed a detailed survey of what has generally been called the ar-Rawḍa Dolmen Field (still awaiting publication as of the date of this report), documenting more than 220 of what had been a much larger number of the funerary monuments in antiquity (Aljarrah *tbp*). Most of these dolmens fall well within a .5 to 2.5 km radius of Tall al-Ḥammām's extensive EBA/IBA/MBA city, mostly to the E and SE. During Season Five we extended the size of that dolmen field by re-surveying, photographing, and describing all of the previously documented dolmens (adding 5% to that dolmen total), and extending our documentation efforts into contiguous areas to the N, E, S, and W. Through Season Six, we have now—in total—registered more than 500 dolmens, and have continued to identify areas where dolmens have obviously been destroyed by military activity and residential development. When extrapolations of the number of now-missing dolmens are projected, it is now clear that the original number of the ancient megalithic monuments in the area may have approached or exceeded 1,500. We now refer to this collective field as the Hammam Megalithic Field (HMF), which reveals that TeH was the epicenter of the funerary/cult rites/activities

that created and used a significant repertoire of megalithic monuments and alignments beginning in the Chalcolithic Period and extending through the Middle Bronze Age (Prag 1995).

Activity in Area U: Upper (NE) Tall

Field UB: Stabilization

Several places in the E monumental IA2 gate tower needed to be packed against possible collapse. A removable-but-stable mixture of sand, lime, and local soil were applied to the wall segments in question.

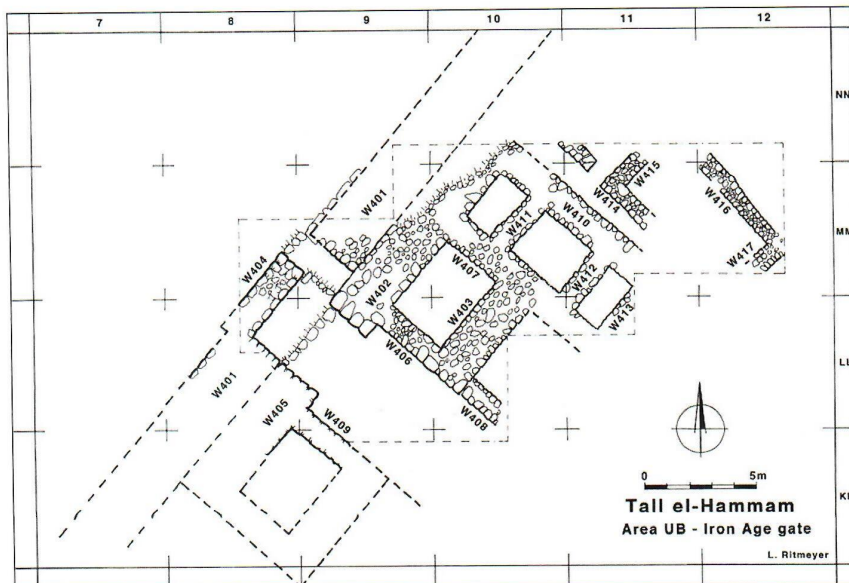
Field UB: Section and Reconstruction Drawings

The primary focus of excavations in Field UB in past seasons was the Iron Age 2b/c monumental gateway. This is a four-chambered (two opposing chambers on each side of the entrance) gate system, flanked by two massive towers, and entered by making a right, then a left turn into the entrance (see **Figs. 5 and 6**). Additional measurements, photos, and sketches were done. The area was also assessed for future excavation and preservation.

Activity in Area L: Lower (SW) Tall

Field LR: Excavation and Stratigraphic Interpretation

Excavation of the monumental Roman building continued this season. The length of the southern wall of the structure was exposed, revealing the use of massive stones on the cor-



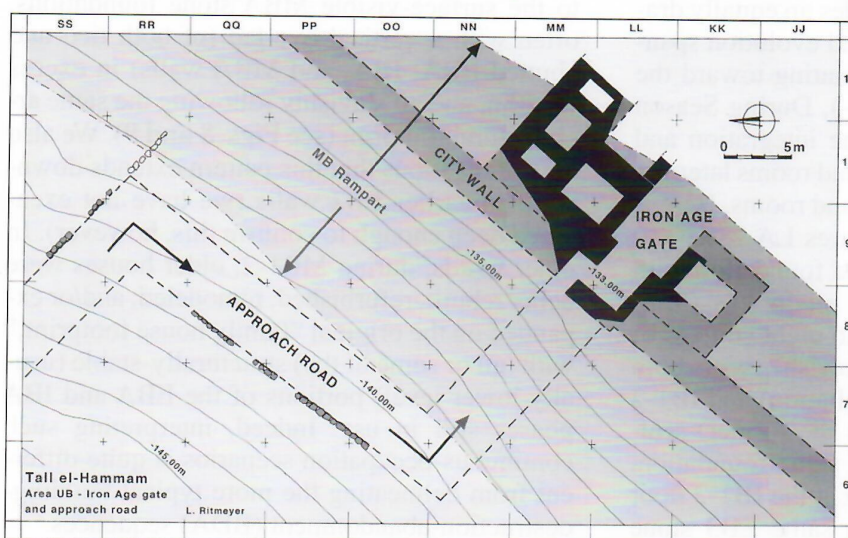
5. Top plan of the Iron Age 2 city gate, upper tall (Area U, Field B).

ners (the SE corner had been excavated to its foundation footing last season). Construction of this magnitude suggests some sort of water retention system, even fortification architecture, that may later have been converted into a bath complex and/or other public building or palatial residence. The LR team unearthed a beautiful Byzantine-to-Umayyad, finely-plastered bathing pool with multiple 'single' benches and drains (See Fig. 7).

Field LA: Excavation and Stratigraphic Interpretation

During Season Four we laid out a trench down the 28 N/S gridline comprised of Squares

LA.28J¹, LA.28K¹, LA.28L¹, LA.28M¹, LA.28N¹, LA.28O¹, LA.28P¹, LA.28Q¹, LA.28R¹, and LA.28S¹.¹³ In previous reports, we refer to this as Trench LA.28. Initially we thought that a surface-exposed, 4m-thick wall was probably an EB3 city wall phase of boulder-and-chink construction (EB1c and EB2 city walls were generally made mostly of mudbrick; Rast and Schaub 1980; Schaub 2007), but excavations in Season Five and Six overturned that speculation, revealing that it was, in fact, the MBA city wall, replete with a complex mudbrick rampart system (see Fig. 3). This season, we extended the trench to the E by the width of an additional square (6m) widening it to 12m



6. Juxtaposition of the IA gate system, with approach road, over the MBA upper city defensive rampart.



7. Portion of the bath complex used during the Roman, Byzantine, and Umayyad Period.

13. A note on the size of Tall al-Ḥammām: Our surveyed site grid now contains over 12,000 6mx6m squares

spreading over 43 ha.

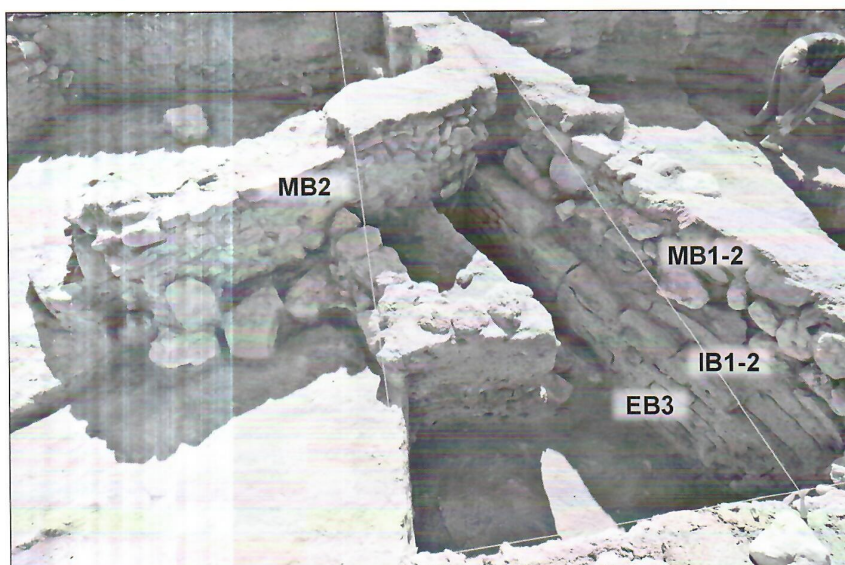
in most places. We now refer to it as Trench LA.27-28, and it spans 60m N to S.

Ceramic reads from mixed and sealed loci in Trench LA.27-28 suggest that no break in occupation occurred at this location on the site from the Chalcolithic Period through MB2. Thus far, Trench LA.27-28 reveals that, whatever befell the residents of Tall al-Ḥammām through the EBA, IBA, and MBA, they reorganized quickly to rebuild, refurbish, and re-create their urban environment.

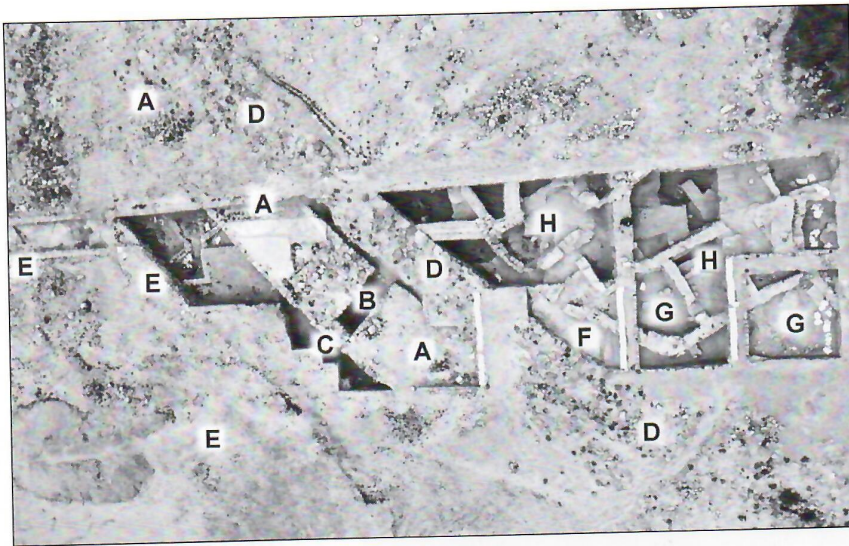
While the development of Tall al-Ḥammām's defensive systems reveals an unbroken occupation from the late Chalcolithic through MB2, the adjacent domestic architecture to the immediate N of the MBA city wall provides an equally dramatic testimony of architectural evolution spanning some 2,000 years, terminating toward the end of MB2 (ca. 1600 BC +/-). During Season Six, we were able to trace the integration and continuing use of older walls and rooms laterally and vertically into later walls and rooms. Here is a specific example from Squares LA.28K¹ and LA.27K¹: EB3 domestic stone foundation with six to eight courses of EB3 mudbricks (firm; brown), topped (tied) by six to eight courses of IB1-2 bricks (crumbly; yellowish), with both EB3 (w/EB3 jar-in-floor installation) and IB1-2 floors (the latter 20cm above the former) sealing against the original EB3 stone foundation, with door-socket-stone *in situ* at the IB1-2 floor level (both phases using the same EB3 stone threshold), with IB1-2 plaster still coating both

the IBA and EBA bricks; the IBA mudbrick wall portions are, in turn, built against and tied into by MB1 mudbrick wall segments with additional MB1-2 stone foundations (acting as wall stabilizers where the earlier/lower wall segments were still in use) following the exact same wall lines, with MB1-2 mud/ash plaster still covering portions of the surviving MB1-2 stone additions (also topped by mudbricks) and extending down onto the IBA and EBA wall surfaces. Further, MB1-2 pottery sherds were found as far down as the IBA floor associated with the EB3 foundation. All of these domestic structures throughout Trench LA.27.28 extend upward for as much as 3m from the lowest EB3 floor level to the surface-visible MBA stone foundations, often with a vertical overlap (of both tied and abutted EBA, IBA, and MBA walls) in excess of .50m, and all slavishly following the same architectural footprint (see **Figs. 8 and 9**). We also have indications that this pattern extends downward to earlier EB2 walls (we have not excavated deep enough to confirm this, however). In other words, during MB1-2, older houses were being rebuilt, refurbished, remodeled, and/or expanded on the original "family house footprint," with (all or some of the) structurally-stable (usually lower level) portions of the EBA and IBA phases still in use. Indeed, interpreting such continuous-occupation scenarios is quite different from delineating the more typical building-destruction-abandonment (BDA) sequences.

There is, however, significant evidence in



8. Squares LA.27K¹ and LA.28K¹ showing the EBA, IBA, and MBA structural evolution of a single dwelling. Note that the IB1-2 (X), and MB1-2 (X) renovations and additions follow the original structural footprint laid down during EB3 (X). This pattern of architectural evolution is present for all the domestic structures in Field LA excavated thus far (see Figure 9).

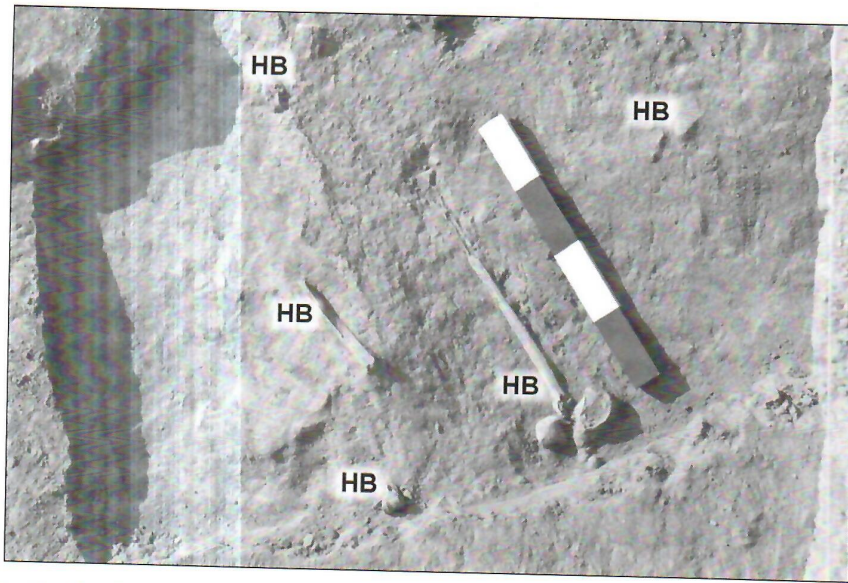


9. Aerial photograph of Trench LA.27-28 showing the EB2-3 city wall (A) and gateway (B), an IBA blocking of the gateway (C), the MB1-2 city wall (D) and components of the defensive rampart system (E), and domestic area including ring-road (F), courtyards (G), and houses (H).

Trench LA.27-28 of an MB2 terminal destruction of the city (which is also clearly present on the upper tall) which exhibits evidence of a major conflagration (similar indicators of this event are seen across the eastern Jordan Disk). We say 'terminal' because there is a six-to-seven-century occupational hiatus after said destruction horizon. During Season Six, Square LA.28K¹ revealed a significant amount of human skeletal remains as part of the MB2 destruction matrix marking the end of the Bronze Age at the site. The circumstances and condition of the bones and bone fragments signal that they were deposited within the associated ash layer by some kind of violent incident. Osteologists J. Leslie and J. Moore examined *in situ* portions of two sets of human adult and one set of child bones (the following observations are adapted from Leslie's field analysis). In both adult cases only the lower extremities were preserved. The adult bones and child bones were well formed, i.e., not showing evidence of rickets, osteoporosis or bone tumors, and were preserved-but-friable (possibly due to leaching or burning). They were encased in ashy, clayey matrices, including fragments of mudbrick, without any associated jewelry or clothing.

In the adults the knees, ankles, and foot bones (of those available) remained in proximity to each other; yet many of them showed some degree of disarticulation. The southernmost set from LA.28K¹ revealed a rotation of 70-90 degrees of the left knee femur to tibia bones. The body was rotated onto its right downward side,

and the legs were not crossed. The height was calculated by an intact right tibia length (with no growth plate present) and was approximately 173cm (5 feet 8 inches). As for the preserved northernmost adult extremities (from LA.28K¹; see Fig. 10) the bones were intact from mid-femur to the complete presence of the feet. The body was rotated face downward. The right femur had been fractured in antiquity, as a proximal section was separated from the more distal and had become calcified in the ground (with the same kind of calcite crystals present on much of the associated Bronze Age pottery). Approximately 10cm of the remaining (proximal) portions of both femurs showed evidence of burning, including the separated proximal section. The lower legs were crossed left over right, knees downward. The knees appeared to be approximated but the left tibia/femur were rotated in relation to each other. The feet were rotated 90 degrees to each other. As well, the tibia/calcaneus joint surfaces in both ankles were subluxed and abnormally rotated in relation to each other. The right foot was subluxed as well: proximal meta-tarsal bones were hyper-extended, with the proximal phalanges hyper-flexed at almost 90 degrees to the meta-tarsal bones. As well, a fragment of the left arm containing only the elbow region (assuming a relationship with the leg bones) was found in the deposition matrix several centimeters above and to the left of the left leg; and a rib fragment was found at the same level as the elbow piece at about the mid tibial area of the left leg. The height of this



10. Ash layer of the terminal MBA destruction showing *in situ* human bones and bone fragment scatter (HB) (Square LA.28K¹, locus 3).

individual was approximately 165cm (5 feet 5 inches) based on an intact left tibia.

The child bones were found in the removal of the LA.28K¹ north balk. It is unclear how much of the upper torso was present originally at the time of deposition, but fragments of what appears to be calvarium were initially extracted along with a fragment of mandible with an un-erupted molar tooth. Some of the bone material was friable-to-powdery, perhaps due to exposure to heat, or simply decomposition. The lower extremities from the pelvic bone (left) to above the ankles were in a much better *in situ* state of preservation. The femurs and tibia/fibulas were in an extended position and face down, legs not crossed. Both knees were disrupted, lying positioned over a cobble-sized stone. The left femur was completely disarticulated from its tibia; and the right knee joint, as well, was abnormally hyper-extended, likely as a result of the legs having impacted against the stone with enough force to hyper-flex the knee joint opposite its natural direction. The acetabulum and its orientation to the femoral head was intact on the left side. There was a growth plate present. The intact femur and the un-erupted tooth suggest an age of approximately 6-8 years, and a height of 123cm (4 feet 1 inch).

While the skeletons are incomplete, there are several observable phenomena which argue for catastrophic (perhaps violent) burial: 1) the disarticulation of several of the joints in all three skeletons, generally severe; 2) the presence of burning on the femurs at their fracture point (N

adult); 3) the fracture in antiquity of one femur with subsequent crystal-calcification of a portion of it (N adult); 4) the lack of demonstrable disease deformation, and their friability which is consistent with leaching or burning; 5) the lack of any indications of purposeful burial (indeed, the presence of numerous signs of sudden, simultaneous burial); 6) the proximation of the bones within ashy-clayey layers with clay brick fragments over, under, and around them; and 7) the presence of disintegrated human bone scatter through the ashy matrix. It is also worth noting that the balks of LA.28J¹ and LA.28K¹ show the continuation of this same ashy destruction layer also strewn with human bones and bone fragments, particularly to the west (which will provide ample opportunities for the continued study of these phenomena toward a possible explanation for their occurrence).

Trench LA.27-28 has also given us a detailed look at the phases of fortification evolution from the EB2 (first city wall) through the MB1-2 (final fortifications of the Bronze Age). Ceramic reads are now relatively clear that the 30m- to 50m-thick MBA defensive wall and rampart system (built of mudbricks and interior stone stabilizer walls) was constructed during MB1 (MB IIA in the older chronologies). It is also apparent that it was continuously used (with constant maintenance and repairs) through MB2, until the final destruction of the MBA city. We now have a very good handle on the construction of the MB1-2 city wall and rampart defensive system from Trench

LA.27-28 (Season Four, Five, Six), Trench LA.38 (Season Five), Trench LA.39 (Season Five), and Trench LA.47 which was started in Season Six. The width of the MBA wall and rampart system in Trench LA.47 exceeds 50m. We have good reason to believe that it was a tiered rampart system, using multiple 30-36° slopes interspersed with gentle-sloping terraces between stone stabilizer walls which prevented erosion at the resultant angles (in the rampart profile).

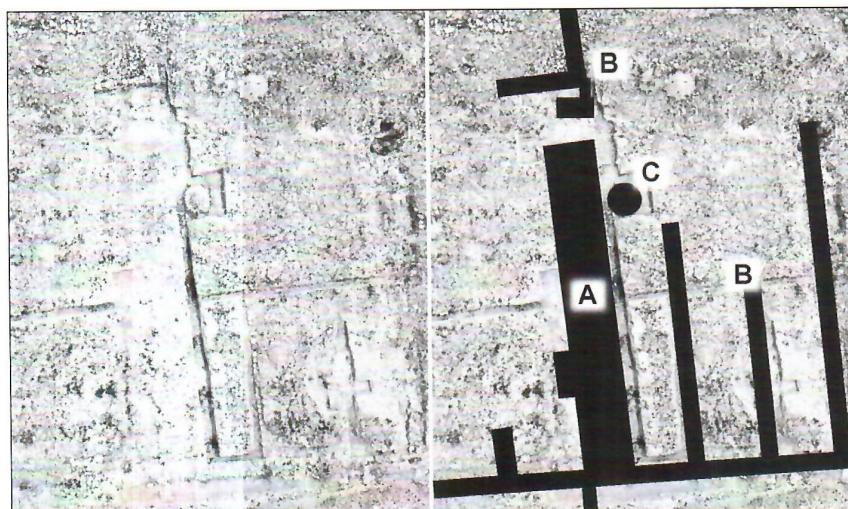
Based on three seasons of surveying, measuring, and excavating TeH's two mudbrick rampart systems (one around the upper tall, and another around the lower tall; see **Fig. 4**), we have now been able to arrive at their dimensions and the approximate volume of materials (mudbrick, stone, fill) in each. The linear dimension (length) of the lower rampart (not including the portions 'shared' with the upper rampart with which it connects) is 1,300m. With a general width of 33-50m at a 30-35° slope (supplemental rampart type; Burke 2008) on the outside of the city wall, rising from its lowest, outer grade to an average height of 22-25m, and 40-45% of that height taken up by the sloping/undulating bedrock beneath, the lower rampart system had an original volume of ca. 520,000m³. Thus, the construction of the lower rampart required an estimated 40-45 million mudbricks, given the average size of TeH's MBA mudbricks (25x50x10cm), with 80 mudbricks per m³.

The computation for the upper rampart is slightly different, given its freestanding form (cf. Burke 2008) with both inner and outer 35-38° slopes (with 500m³ rather than 400m³ per linear meter of rampart), resulting in a rampart volume of ca. 400,000m³ requiring the manufacture and installation of ca. 30-35 million mudbricks, depending upon the contours of the substrate. The total number of mudbricks used in the TeH MBA integrated defensive ramparts is, therefore, between 70 and 80 million (not including the mudbrick superstructure of the lower city fortification wall). We have yet to calculate the amount of material required to build the city wall topping the lower city rampart (the upper/inner city rampart has no topping wall). The preserved stone foundation of the MBA city wall averages 4m in thickness, with a height of up to 2.5m (All of this will be published subsequently in detail, but suffice it to say that the site's defensive architecture is substantial.)

Toward the end of Season Four, approximately 200m NNW from Trench LA.27-28, we discovered and surveyed what appeared to be a monumental Bronze Age building measuring over 20x60m, with many interior walls, and perhaps surrounded by platform terraces. It sits on a rectangular, raised area at the geographical center of the city wall perimeter of the lower tall. Whatever its function, it must have been central to the daily life of the city. Last season, with the adjacent banana field to the E of this location removed, we could see that the raised platform area was approximately 100x100m. With the prospect of the banana trees returning later in the spring, we decided to do a quick probe to see what was below the 50cm rip-plowing depth which had destroyed many structures, evidenced from the thousands of medium-to-large stones covering the surface. We now know that most of the surface-visible stone foundations on the lower tall date to MB1-2. Thus, we were quite safe in assuming that most of these stones had once constituted MBA foundations. In short, the probe almost immediately revealed a 3m-thick stone foundation that we traced for 12m, and that was extended out to 22m by the end of the season. We have now found an opposing 3m-thick wall, several corners and smaller walls (1-1.4m), a section of stone pavement, and a circular altar in a courtyard to the immediate S.

The MB1-2 ceramic assemblage (mostly fragments) coming out of this severely damaged area has a high frequency of fineware including carinated bowls and chalices, piriform juglets, chocolate-on-white ware, and a host of forms typical of temples and ritual precincts. These are obviously the foundations of a monumental temple (the 3m-thick load-bearing S wall runs E-W for 22m with a parallel wall likely of the same dimensions to the N) and its associated buildings and courtyards (see **Fig. 11**). This kind of raised platform with a monumental building in the center of a surrounding precinct of large-but-less-substantial structures is reminiscent of several MBA cultic complexes in the southern Levant (cf. Warner 2008).

We have also opened up several squares on the W half of the sacred precinct terrace, the location of the 20x60m monumental building servicing the temple (Square LA.42J¹ and adjacent squares). The surface walls (70cm in



11. Aerial photograph of the geographical center of the lower tell (left, raw photo; right, visible architecture enhanced): Clearing of agricultural ripplowing debris reveals a foundation wall of a monumental building, 3m thick and 22m long (A; temple?), with associated (administrative? storage?) structures (B), and a circular altar (C). The large (20x60m) building (see Figure 14) to the immediate W of these structures is contiguous, and seems to date to the MB2 terminal phase of the city.

width) seem to date to MB1-2 based on diagnostic ceramic reads, but there are indications that some of the rooms have an IA2 “squatting” presence. Many lower walls on various levels came to light in the probe from the previous season, but we have now opened up additional squares in the area in order to get a wider look at the structure (which also has several underlying structures). What we had thought (previous season) was perhaps an IA2 ‘farmhouse’, now looks more like a modest cultic center (likely of the open-air variety). There is a good concentration of IA2a-b pottery (cooking pots, juglets, and storage vessels), but some of the artifact distribution, ‘re-use’ features, and the presence of a plaque figurine (see Fig. 12) and stone altar (see Fig. 13) suggest that the IA2 occupants may have performed fertility rituals within the enclosing walls of the then-ancient ruins of the MBA temple precinct (see Fig. 14).

Currently, the stratigraphy has taken us from the meager remnants of the ‘squatting’ IA2 ‘cult center’, onto a massive spread of MB1-2 monumental walls, and down through variously-aligned walls from IB1-2, and EB3; and all of that at only 1.5m depth. To say that there is much more to come from this segment of Field LA is an understatement.

Activity in the al-Ḥammām Megalithic Field (Necroscape): Dolmens and Tombs

Al-Ḥammām Dolmens ‘A’, ‘B’, and ‘C’: Excavation and Interpretation

In Season Five, HD.78 was selected for ex-



12. Asherah with a frame-drum; IA2 cultic space; Square LA.42J-K.

cavation because it gave all indications of being intact, which is extremely rare. It was, in fact, intact (sealed in antiquity after its final use), and contained a remarkable range of vessels and bones that have significant interpretive potential

(see Fig. 15). This season, dolmens A, B, and C (pending assignment of survey numbers) gave us corroborative data, with one remarkable addition: Two of the vessels from undisturbed Demi-Dolmen A dated to MB2 (a small carinated bowl and a button-base piriform juglet; see Fig. 16). This is highly significant, for it mirrors the long, unbroken occupation of the site (at least) from the late Chalcolithic through the MBA, and signals an enduring-yet-fluid socio-religious-cultural community, likely nurtured by genetic (tribal) continuity.

Without going into possible anthropological meanings, it seems clear that the Hammām dolmens were not tombs in the formal sense of containing primary or secondary burials. Although



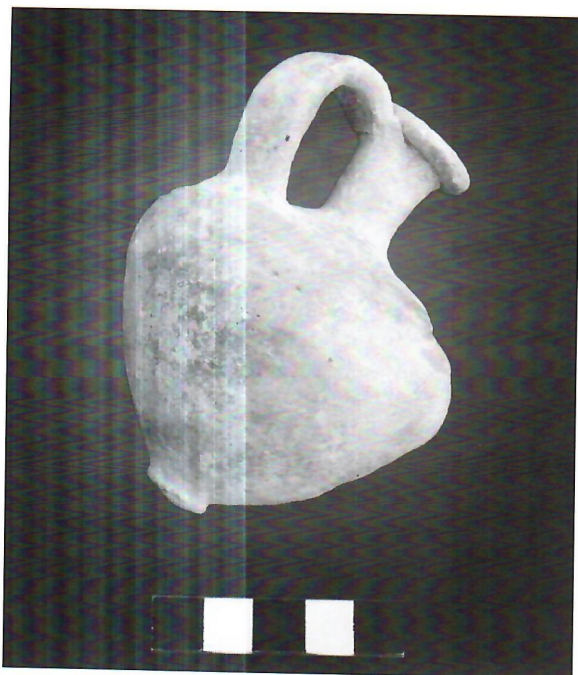
13. Stone altar/incense burner; IA2 cultic space; Square LA.42J-K.



14. IA2 cultic space (X) “squatting” within a much larger MBA sacred precinct (administrative?) structure (Squares LA.42J-K).



15. Bronze Age ceramic vessels from the excavation of an intact dolmen (HD.78) laid in a spatial arrangement approximating in situ context.



16. MB2 button-base piriform juglet from a dolmen “memorial deposit” (demi-dolmen HD.A).

there were scattered bones from (likely) several individuals, including some in the infantile state, there were no indications that whole skeletons were ever interred in the chambers. About twenty intact and mendable vessels (mostly small) were found in HD.78, along with fragments and sherds from at least 20 others, ranging in date from the Chalcolithic Period, EB1, EB2, EB3, and IBA, with demi-dolmen A (from the present season) extending the tradition of dolmen ceramic deposits to MB2.

It seems likely that the ‘token’ bones and small vessels comprising the contents of the dolmen chambers were periodically placed during rituals linked to ancestor worship and/or memorial practices according to a prefigured astronomical calendar of both solar and lunar alignments as suggested by solstice/equinox and lunar menhir alignments closely associated with discreet dolmen groups. There also seem to be obvious alignments of menhirs and dolmens with the sacred precinct platform at the center of the lower tall. Several members of the TeHEP Team were in the dolmen field at the winter solstice sunrise and sunset to observe and make notes, and we were able to gather some interesting data. All these features are under study, and will be published in the near future.

Al-Hammām Monumental Tomb ‘A’: Screening and Interpretation

This particular feature seems unique in the Hammam Dolmen Field. It is a square-ish structure (c. 5x5m) with an outer wall built from large boulders. The resultant enclosure has been partially robbed out by ‘night diggers’, and the cast-up debris from their activities is full of human bone fragments and pottery dating (thus far) from the IA2b and MB1-2. This material was screened, and several carnelian beads were also found. Perhaps it is a monumental tomb of some sort. The inner ‘chamber’ seems to be undisturbed below the relatively shallow diggings of the tomb robbers. This will continue to get careful attention, and is scheduled for excavation during Season Seven (2012).

Stratigraphy: Insights through Season Six

When no subperiod designations are identified, general references to the archaeological periods use the following abbreviations: Pre-Pottery Neolithic Period = PPNP; Pottery Neolithic Period = PNP; Chalcolithic Period = CP; Early Bronze Age = EBA; Intermediate Bronze Age = IBA; Middle Bronze Age = MBA; Late Bronze Age = LBA; Iron Age = IA; Hellenistic Period = HP; Early Roman Period = ERP; Late Roman Period = LRP; Byzantine Period = BP. Islamic Periods use the traditional designations.

We are applying the following general chronology (Collins, Hamdan, Byers *et al.* 2009a), with new abbreviations given first:

PN1: Pottery Neolithic/early	6000-5500 BC
PN2: Pottery Neolithic/middle	5500-5000 BC
PN3: Pottery Neolithic/late	5000-4500 BC
CH1: Chalcolithic/early	4500-4100 BC
CH2: Chalcolithic/middle	4100-3800 BC
CH3: Chalcolithic/late	3800-3500 BC
EB1a: Early Bronze 1/early	3500-3350 BC
EB1b: Early Bronze 1/middle	3350-3250 BC
EB1c: Early Bronze 1/late	3250-3100 BC
EB2a: Early Bronze II/early	3100-3000 BC
EB2b: Early Bronze II/middle	3000-2900 BC
EB2c: Early Bronze II/late	2900-2800 BC
EB3a: Early Bronze III/early	2800-2650 BC
EB3b: Early Bronze III/middle	2650-2500 BC
EB3c: Early Bronze III/late	2500-2350 BC
IB1: Intermediate Bronze/earlier	2350-2200 BC
	(old EB IV)

IB2: Intermediate Bronze/later	2200-2000 BC (old MB I)
MB1: Middle Bronze I	2000-1800 BC (old MB IIA)
MB2: Middle Bronze II	1800-1550 BC (old MB IIB-C)
LB1: Late Bronze I	1550-1400 BC
LB2a: Late Bronze IIA	1400-1300 BC
LB2b: Late Bronze IIB	1300-1200 BC
IA1a: Iron IA	1200-1100 BC
IA1b: Iron 1B	1100-1000 BC
IA2a: Iron IIA	1000-900 BC
IA2b: Iron IIB	900-700 BC
IA2c: Iron IIA	700-539 BC
IA3: Iron III/Persian Period	539-332 BC
Hellenistic Period	332-63 BC
Early Roman Period	63 BC-135 AD

The stratigraphic profile of Tall al-Ḥammām had long been suspected, but has needed to be confirmed by excavation (Prag 1974, 1991; Ibrahim, Yassine, and Sauer 1988). The following is a theoretical stratigraphic profile based on observations from extensive sherding, clearing and clarification of MT disturbances, and the results of scientific excavation through six seasons. By “theoretical stratigraphy” we mean what is suggested by a “general assessment” of the ceramic indicators over the whole of the site, giving consideration to the frequency of certain period diagnostics. In other words, significant amounts of pottery from a given period would indicate, theoretically, that an architecturally-based occupation would be likely. On the other hand, rare occurrences of ceramics from a given period would suggest, theoretically, the unlikelihood of a substantial architectural complex dating to that timeframe. Of course, only excavation can reveal the *actual* stratigraphic profile of a given location on the site. Ceramic indicators with associated architecture suggest the following occupational sequence at Tall al-Ḥammām:

Early-to-Late Islamic Periods

These ceramic forms seem to be mixed into contexts with the latest (surface) structures on the upper and lower tells. Re-use of older structures may account for this, especially in the area of the Roman/Byzantine bath complex on the lower tell (Field LR), where Umayyad pottery is fairly common. However, such sherds are extremely rare on

the site as compared to Bronze and Iron Age pottery forms. Only an occasional campsite can be extrapolated from these few Islamic sherds.

Late Hellenistic/Early Roman Period and Byzantine Period

The Late Hellenistic and Early Roman periods are represented at the site, but play a minor role in comparison to the Bronze and Iron Age ceramic assemblages. Roman and Byzantine sherds are present, but are mostly found in two isolated locations, Field LR (monumental building) and Field UA (small guard tower).

Iron Age 1, 2, 3

The Iron Age city is quite extensive on the upper tell, but at this point periodization/phasing is not entirely clear. Iron I pottery is infrequent at this point, but present (such as the IA1b pilgrim flask found in Field UB). The IA2b-c monumental gateway in Field UB has an earlier phase dating to IA2a (perhaps late IA1b), with the terminal phase dating to IA2c, perhaps IA3. The principal Iron Age city at Tall al-Ḥammām seems to have been built during IA2a-b. IA3 (Persian Period) sherds are present-but-infrequent at this point.

Late Bronze Age

Material from the Late Bronze Age are systematically absent from the tall proper. However, LB2 pottery vessels were found in a nearby tomb containing vessels dating from the Chalcolithic Period through the Iron Age. Thus, some kind of LB2 presence in the area can be surmised; however, no architecture from that period is known in this vicinity of the valley E of the Jordan River.

Middle Bronze Age

Both MB1 and MB2 are strongly represented in the TeH ceramic repertoire, typical MBA bronze weaponry (see Fig. 17), and in related fortification, monumental, and domestic architecture on both the upper and lower tells. That the strongly fortified MBA city spread over most or all the site footprint is now clear.

Intermediate Bronze Age

IB1 and IB2 pottery forms appear with high frequency across the entire site. These occupants also seem to have re-built and re-used many of the



17. One of several MB2 bronze "battle axes" unearthed at Tall al-Ḥammām.

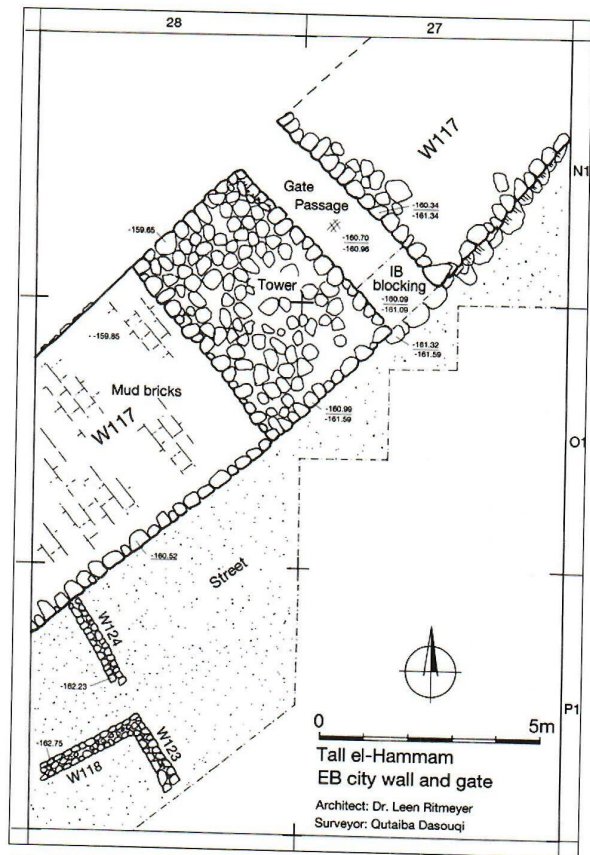
previous EB2/EB3 structures including the city fortifications. IBA domestic structures are clearly confined inside the city walls, with relatively clear indications of fortification alterations (such as the blocking of one of the EB2/3 gateways).

Early Bronze Age

The EBA city of Tall al-Ḥammām is unmistakable and massive. On the basis of excavations during Season Five, three phases of the EBA city are clearly visible. EB1 houses protrude from under the EB2 city wall foundation and associated outer roadway (see **Figs. 18, 19, and 20**). The 5.2m-thick EB2 city wall was dramatically strengthened during EB3. The EBA fortification system surrounds both the lower and upper tells (around the base of the upper tall).

Chalcolithic Period

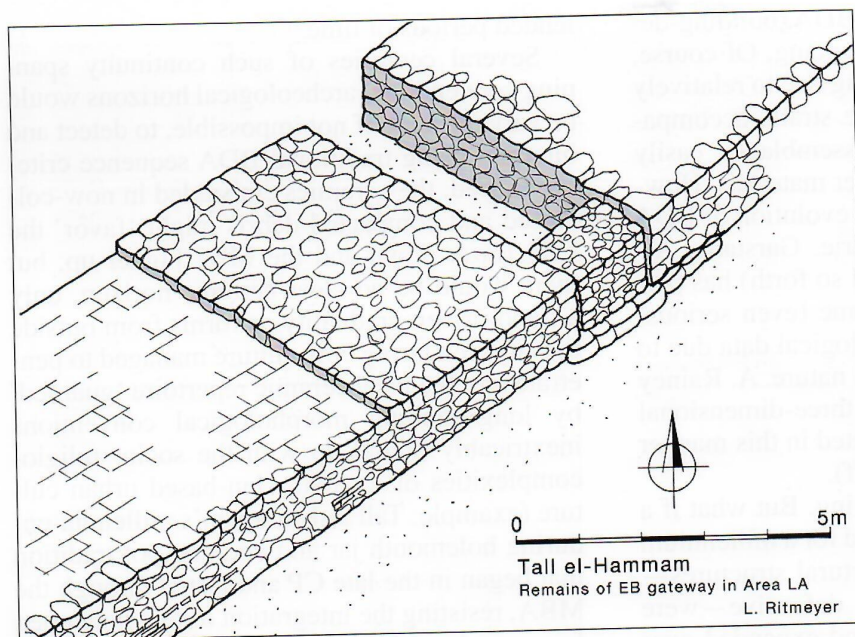
Chalcolithic pottery forms of the Ghassulian variety are found with some frequency, as are various basalt bowl fragments. The lithic artifacts from this period are fairly common. It would be understandable if Chalcolithic residents (perhaps moving from Tulaylāt al-Ghasūl?) had come to Tall al-Ḥammām to take advantage of its abundant water resources. Given the immense size of the EBA city, it is in the realm of possibility that the footprint of an underlying Chalcolithic settlement at TeH might eventually come to light. Season Five has now revealed Chalcolithic architecture (broadhouses) built on bedrock.



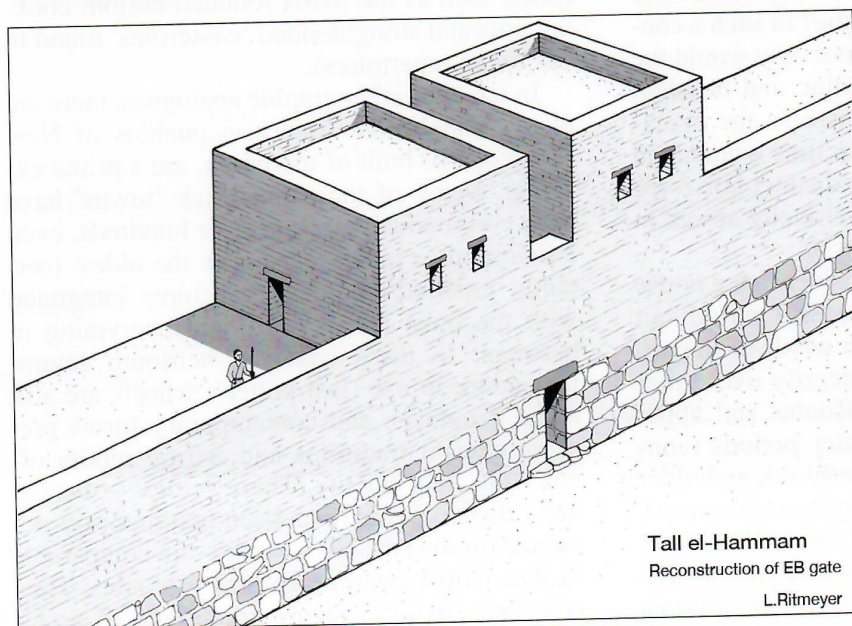
18. Top plan of EB2-3 gateway (Trench LA.27-28). Note the remnants of two Chalcolithic/EB1 broadhouses (W124, W118, W123) likely demolished when the EB2-3 city wall was constructed. The street is contemporary with the city wall, and covers the earlier domestic structures.

Confirmed Stratigraphy

A Chalcolithic architectural presence is now confirmed at TeH. The EB2 occupants of the site were the original builders of the extensive fortification systems that surround both the upper and lower tells, strengthened significantly during EB3 (Mazar 2002; Schaub 2007; Schaub and Chesson 2007). The Intermediate Bronze Age occupants seem to utilize most or all of the EBA footprint, including the fortifications. Excavation on the lower tall suggests a continuous occupation from the CP through MB2. The Middle Bronze Age is strongly attested architecturally at TeH, particularly in its fortification ramparts and walls on both the upper and lower tells, and in numerous domestic contexts. No structures belonging to the Late Bronze Age or Iron Age 1a are presently known. Perhaps one structure in Field UB can be dated to IA1b, but that identification still needs



19. Isometric rendering of the EB2-3 city wall and EB3 gateway (there is evidence for numerous such gate passages at the site), subsequently blocked during the IBA when more limited access to the city may have been a response to the social disruptions of that period.



20. Reconstruction drawing of one of Tall al-Ḥammām's EB3 city gates. 100% of the stone foundation (6m thick x 5 courses) and several courses of the original mud-brick superstructure are still intact in Trench LA.27-28.

more study. The IA2 city is extensively attested by both monumental and defensive architecture, and in domestic contexts. Iron 3 seems present, but yet unconfirmed by anything more than re-use of older buildings. Hellenistic, Roman, and Byzantine architecture (re-used?) seem confirmed on the south side of the site, and perhaps in Field UA on the upper tall. Islamic structures are presently unknown, except (perhaps) some minimal re-use of earlier architecture.

Methodological Insights for Determining Stratigraphy Based on Data and Observations at Tall al-Ḥammām

Based on our stratigraphic analysis of Tall al-Ḥammām, we offer the following observations and insights in light of the 'traditional' interpretive criteria generally applied in S. Levantine archaeology (such as the Wheeler/Kenyon approach).¹⁴

Conventional excavation/interpretation is

14. Based on the research and analysis of TeHEP Chief

Archaeologist, S. Collins.

based on what may be called BDA (building-destruction-abandonment) sequencing. Of course, such sequences do exist, giving rise to relatively clear cultural horizons in site strata, accompanied by discreet ceramic assemblages easily separable from earlier and later materials. However, we now suspect that the evolution of BDA interpretive criteria (a la Petrie, Garstang, Albright, Wheeler, Kenyon, and so forth) has perhaps been responsible for some (even serious) misinterpretations of archaeological data due to its generally two-dimensional nature. A. Rainey has wisely noted that sites are three-dimensional in nature and must be interpreted in this manner (Rainey and Notley 2006: 23ff).

A BDA sequence is one thing. But what if a site was continuously occupied for a millennium or more, wherein the architectural structures—domestic, monumental, and defensive—were used, re-used, re-furbished, and expanded over an extremely long period of time? In such a continuous-occupation scenario, not only would the local culture be more monolithic and resistant to change from ‘outsiders’, but also the evolution of the material culture over time would lend itself to ‘blurred’, generally indistinct horizons; indeed, separability might be virtually absent in many locations around a give site.

By way of an example, consider that a house was originally built during the EB3 period, but was continuously occupied (in whole or in part, depending on its structural integrity over time) through the IBA and MBA. Rooms and upper floors may be added on in later periods (continuously in an evolutionary fashion), and older sections of the same house may be re-plastered, re-floored, or re-buttressed during subsequent times. Certain lower/older rooms might be filled in with debris for structural reasons, or continue to be used. Some upper stories may be later in construction, or earlier, and some lower ones may also be earlier or later, as the structure(s) evolve bit by bit in response to accidental fires, natural (annual) deterioration (typical of mudbrick construction), earthquakes, replacement of rotting roof beams (vigas and latillas in Spanish) and associated floor plasters, the necessity of adding storage and living space, etc., over ex-

tended periods of time.

Several centuries of such continuity spanning conventional archeological horizons would be very difficult, if not impossible, to detect and interpret using traditional BDA sequence criteria. Indeed, the ceramics embedded in now-collapsed and compacted debris might ‘favor’ the EB3 lower down and the MB2 higher up, but there would be no clear ceramic horizon, only a trend-driven graduality as forms from outside the city’s enduring core culture managed to penetrate into the local ceramic repertoire ‘guarded’ by long-standing morphological conventions inextricably bound up with the socio-religio-complexities of a tribal, clan-based urban culture (example: Tall al-Ḥammām’s millennia-enduring holemouth jar and cooking pot tradition that began in the late CP and lasted through the MBA, resisting the integration of the more open forms such as the MBA rounded-bottom cooking pots and straight-sided ‘casseroles’ found in Cisjordan repertoires).

In terms of ethnographic analogues, there are many. The Native American pueblos of New Mexico, also built of mudbrick, are a prime example. Many of these mudbrick ‘towns’ have been continuously occupied for hundreds, even a thousand or more years, with the oldest (certainly repaired/modified) structures integrated with the most recent ones, and everything in between. In these contexts, heirloom ceramics endure in use (fast potter’s wheels are still resisted today!), and contemporary forms preserve ancient traditions and artistic motifs often with great fidelity. These ‘cities’—such as Taos Pueblo, which has been continuously occupied for the past 1,200 years—are comparable in size with Levantine Bronze Age sites. They constitute living, organic complexes of architectural evolution without a ‘traditional’ stratigraphic character in the generally-understood ANE sense. Indeed, at Taos, residents continue to maintain, refurbish, and dwell in houses with foundations, walls, and floors spanning the pueblo’s 1,200-year history.¹⁵

Such an enduring city, when approached by the archaeologist after millennia of abandonment subsequent to its many centuries of con-

15. Co-author, S. Collins, is intimately familiar with Taos Pueblo and has personally examined the site on numerous occasions. His background in Southwest Na-

tive American ethnology has been extremely beneficial in helping to interpret the occupational patterns at Tall al-Ḥammām.

tinuous occupation—perhaps followed by one or more BDA sequences—would, minimally, be extremely difficult to interpret via the traditional stratigraphic concepts of BDA-based analysis. In such a context, there may very well be MB2 material sitting directly on an EB3 floor. There may be an IBA floor added into an EB3 room with MB1 sherds on that floor. There may be an MB2 installation built on/into an IBA floor and sealing up against an EB3 mudbrick wall plastered over (again) during MB1. These are only a few scenarios that obtain from a continuously occupied, architecturally-evolving site, not to mention all of the socio-cultural dynamics that would have attended such instances.

These are exactly the kinds of phenomena we are observing on the lower city at Tall al-Ḥammām. In several places it is possible to trace the evolution of the same basic domestic structure from its EB3 foundations, IBA rebuilds/additions, and MB1/2 refurbishments and additions, all following the same basic footprint and wall-lines, producing a dramatic three-dimensional record of architectural evolution spreading not only horizontally, but also vertically.

There is no rational means of interpreting such complex phenomena when relying on BDA-based methods alone.

Therefore, we are suggesting the development of a new interpretive methodology with (at this point) four main categories of stratigraphic sequencing criteria (we thought it prudent to document some of our thinking in this regard in this report while the data from the most recent season are still fresh in our minds):

Building-Destruction-Abandonment (BDA) Sequence: An enumerative explanation of predictive, observable phenomena (criteria) resulting from a BDA sequence (we will not burden the reader with the details here, but one will see the pattern).

Continuous-Occupation-Expansion (COE) Sequence: An enumerative explanation of predictive, observable phenomena (criteria) resulting from a COE sequence, i.e., a site that is continuously occupied and growing architecturally, with no intervening BDA sequences.

Continuous-Occupation-Maintenance (COM) Sequence: An enumerative explanation of predictive, observable phenomena (criteria) resulting from a COM sequence, i.e., a site that is

continuously occupied and maintaining an architectural status quo, with no intervening BDA sequences.

Continuous-Occupation-Reduction (COR) Sequence: An enumerative explanation of predictive, observable phenomena (criteria) resulting from a COR sequence, i.e., a site that is continuously occupied but diminishing architecturally, with no intervening BDA sequence in some locations, but with a BDA sequence(s) in other locations.

One must also consider potential ephemeral (tents? squatting?) occupation, erosion, period site alteration/destruction, modern farming and military activities, and host of other factors.

What we hope to accomplish through this is a rational, logical means of assessing architectural, artifactual, and depositional data (with an attending excavation methodology) that is sensitive to both BDA and continuous-occupation sequences and their attending phenomena (criteria).

Based on some recent examination of excavation reports and even final publications, we detect what is perhaps a degree of potential misinterpretation of data in terms of alleged site abandonments and even alleged site continuation. Perhaps this kind of approach will free some from the straightjacket of previous methods of stratigraphic analysis, allowing a clearer assessment of what, heretofore, had been virtually un-interpretable. Indeed, the concept of a 'sealed' locus would only be categorically applicable in a BDA or COR context, whereas the stratigraphy of a COE or COM sequence would manifest itself in the temporal evolution of at least some components of a site's architectural repertoire (this would be particularly true of domestic architecture, and perhaps less true as a generalization in terms of monumental and defensive architecture).

Insights on Landscape Archaeo-Anthropology from the Tall al-Ḥammām City State

That Tall al-Ḥammām was the political and cultural epicenter of a significant Bronze Age city-state is by now quite obvious. One can easily comprehend the ancient phenomenological interpretation of the definable and defensible landscape visible from Tall al-Ḥammām when standing at almost any location on the site. Field

UA (location of the MBA palace) provides a particularly dramatic vantage point from which to view the territory under TeH's control (the most logical candidate for the formulaic geography of the Cities of the Plain in biblical lore). In order to make sense of the interwoven complexities of such a socio-political entity, a holistic, integrative approach to the archaeology and anthropology of the area is required.

For purposes of studying the interrelated features of the city-state—such as its central city, outlying towns, villages, and hamlets, agricultural fields, dolmen/menhir fields and tombs—we propose a theoretical structuring of city-state components in terms of landscape utilization based on the readily observable (obvious) partitioning of the local geography by its ancient inhabitants. Since it is clear that the citizens of the TeH city-state incorporated virtually every square kilometer (indeed, square meter) of their landscape environment, the terminology we are suggesting seeks to describe the purposes for which they utilized, augmented, and altered the local terrain. For the TeH city-state in particular, we have (thus far) organized it into five principal macro-features: *urbascape*, *agriscape*, *sacrescape*, *necroscape*, and *infrascap*.¹⁶

Urbascape: that portion of the landscape utilized, augmented, and altered by the principal population of a city-state incorporating political, religious, administrative, economic, domestic, and defensive architecture, the perimeter of which is defined by fortifications, the aggregate of which is phenomenologically defined by the city-state's inhabitants as the 'core' of their 'kingdom'.

*Agri*scape: that portion of the landscape utilized, augmented, and altered by the collective agricultural enterprises of the city-state for fields and groves, water management, housing laborers, processing installations, storage and distribution facilities, and the handling of traded agricultural commodities, including interspersed towns (perhaps fortified), villages, and hamlets inhabited by farmers, workmen, and their families.

Sacrescape: that portion of the landscape utilized, augmented, and altered by the collective

religious/ritual practices of the city-state community, including many or all of the following components: sacred architecture (such as temples and ritual enclosures), ritual monuments (such as menhirs, stone circles, megalithic alignments, and dolmens), sacred places (such as hilltops, groves, and other topographical features of ritual significance), the necroscape, and the processional thoroughfares by which they are connected and accessed.

Necroscape: that portion of the landscape utilized, augmented, and altered by the collective funerary activities of the city-state community, where the dead are treated, tended, buried, and memorialized, including tombs and monuments of all types devoted to the passage, remembrance, or worship of ancestors, such as cave and shaft tombs, dolmens (various types), menhirs (+ alignments), stone circles, and ritual avenues.

Infrascap: that portion of the landscape utilized, augmented, and altered by the collective activities of the city-state population in support of building and maintenance activities, transportation needs, refuse/sanitation management, and various industries, including stone, earth, and clay quarry sites, roadways, production facilities for mudbricks, ceramics, metallurgy, stonework, wood-work and other materials.

Each of these macro-components of the TeH city-state has a distinct, visual impact on the observer. These are the 'larger-than-life' physical manifestations of city-state life which incorporate, overlay, and sculpt the landscape via the human enterprise of surviving and thriving within a local environment. As the Tall al-Ḥammām Excavation Project continues through the present decade, it will provide a wealth of data and insights for understanding Bronze Age civilization at the city-state level in the southern Jordan Valley.

Thoughts, Conclusions and Recommendations

The eight-week 2010/2011 excavation season was successful in clarifying the answers to many questions remaining from previous seasons, and has also provided a good foundation for the bal-

16. This is the terminology developed by S. Collins, TeHEP co-Director. This section is based on the research

and analysis of S. Collins and L. Clayton, TeHEP Senior Anthropologist in collaboration.

ance of the Project. Of course, many new questions have arisen that must be answered in future seasons. Not only has the excavation proper continued to clarify a great deal on the lower tall relative to the EBA and MBA defensive systems, but also it has given us a dramatic look into the EBA, IBA, and MBA occupations on the lower tall vis-à-vis clear 'stratigraphic' horizons.

Further, additions to the topographical and area surveys—including dolmens, tombs, and related town/village sites—has given us a much clearer picture of Tall al-Ḥammām's central role in the history of the eastern Jordan Disk and the region in general. Indeed, at approximately 36ha, the sheer size of the heavily fortified Bronze Age city (EBA, IBA, MBA) at Tall al-Ḥammām—with its many satellite towns and villages tightly clustered around it—is shedding new light on the interpretation of the evolution of urban polities in the Transjordan context. It is becoming increasingly clear that most of the archaeological sites in the vicinity, upon which interpretive analyses of the Transjordan Bronze Age have heretofore been based, were, in fact, subordinate satellites within the gravity of Tall al-Ḥammām's political influence (cf. Levy, Michele Daviau, Younker, Shaer: 2007; Adams 2008; Collins, Hamdan, Byers *et al.* 2009b).¹⁷ This is no casual cluster (cf. Savage, Falconer, and Harrison 2007). What we have here is an EBA/IBA/MBA city-state configuration of significant proportions that, until the present work at Tall al-Ḥammām, has not found its way into any of the past or recent discussions of the Transjordan Bronze Age¹⁸ (cf. Dornemann 1983; Najjar 1992; Savage, Falconer, and Harrison 2007; Falconer, Fall, and Jones 2007; Falconer 2008; Palumbo 2008; Philip 2008).

The complex Bronze Age fortifications at Tall al-Ḥammām, including outer and inner city walls and mudbrick/earthen ramparts, are reminiscent of some Bronze Age urban centers in Mesopotamia (Burke 2008). TeHEP is contributing significantly to our understanding of the Transjordan Intermediate Bronze Age (aka EB IV or Intermediate EB-MB), as all indicators seem to support that Tall al-Ḥammām was both large and fortified during that enigmatic period, and surrounded by smaller IBA sites—such as Tall Iktānū—in close proximity (cf. Richard and Long 2007), for which a city-state interpretation is not out of the question.¹⁹

The 100x100m raised platform of the sacred precinct at the center of the lower tall contains a massive Canaanite-style temple and associated buildings and courtyards, the study of which in coming seasons will enhance our knowledge of such religious complexes (cf. Warner 2008).

Although not as large as the Bronze Age occupation, the Iron Age city at Tall al-Ḥammām was obviously an important crossroads center that played a considerable role in the local socio-political milieu. Without a doubt, the excavation of this magnificent site will contribute a wealth of new information for all of its represented periods. It is possible that it has direct links to Solomonic Jerusalem and the subsequent Israelite hegemony as a Transjordan district commercial center.

Further, the continuation and building of relationships with local officials and residents, the extensive exploration of area geographical features and archaeological sites, and the experience of working side by side with our colleagues from the Department of Antiquities, have all come together to build positive expectations for the continuation of TeHEP over the

17. Tall al-Ḥammām and its intimate geographical cluster of sites is systematically absent (save for a few graphs of site-size comparisons listing TeH at 15 ha) from all past and recent discussions of the Transjordan Bronze Age both for the southern Jordan Valley, and Jordan in general. The only exception to this is the 1990 probe excavation on TeH by Kay Prag (1991). Dr. Prag was, and is, well-familiar with the size and prominence of TeH, but her work at the site is little known and less considered. Drs. Prag and Collins explored the expanse of Tall al-Ḥammām together at the end of the 2009 season.

18. This is not meant as a criticism, simply a statement of fact. One cannot expect an unexcavated, unpublished site, regardless of its size, to play a very large role in

the interpretation of a regional archaeological picture, however inaccurate the picture may be without it. New interpretations will arise as information from Tall al-Ḥammām is integrated into the available corpus of archaeological data. But again, Prag's probe excavation report and description of TeH have been available since 1991, so it cannot be said that information about the site was altogether invisible.

19. Once again we have an example in which a secondary townsite, Tall Iktānū, had, by default, become the interpretive epicenter for understanding the IBA in the southern Jordan Valley, even for much of the region. Tall al-Ḥammām will now be able to interject relevant data from a primary IBA urban site into the discussion.

next ten years of the new Joint Agreement.

As is now widely accepted, Tall al-Ḥammām remains the most logical candidate for biblical Sodom based on a detailed analysis of the relevant biblical and historical materials regarding the chronology and location of the city (Tristram 1874: 330-333; Thomson 1882: 371-376; Collins 2002a, 2002b, 2002c, 2008; cf. MacDonald 2000: 45-61). Extensive research, along with archaeological data from five seasons of excavation, are now leading many scholars to entertain or adopt this theory on its evidential merits. That the enduring and powerful presence of Tall al-Ḥammām and its associated towns and villages on the eastern Jordan Disk during the Bronze Age gave rise to the Cities of the Plain tradition reflected in the stories of Genesis 10-19 is a reasonable theory commensurate with all of the available geographical and archaeological data. Future tourism potential for such a site as Tall al-Ḥammām must not be overlooked or underestimated. From all perspectives, preservation of this highly important site is imperative.

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