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General Introduction to the Theme "Sites and Settlements in Jordan"

I. INTRODUCTION

It is a great honour to introduce the theme on "Sites and Settlement Patterns in Jordan" and an extreme pleasure to synthesize the problems assumed in the different communications and more specially those of this morning in the context of this subject, for two reasons. First, because Jordan is a country which has been very recently "discovered" by the archaeologists and the epigraphs and represents a very new chapter in the "history and archaeology of the Near East"; this means that both geographical and archaeological reports in this conference are completely original and complementary to the "traditional well known" history of the Levant or the Near East in general. Second, because all the reports we received and read before attending this conference (this means more than a hundred papers), are extremely interesting, evoking various problems and introducing a lot of new ideas, as every contributor had his personal conception about settlement patterns, about excavation methods or about well defined archaeological or philological problems which will be discussed here.

All the papers are very stimulating, be it about Jordan in general, about one region or one site in particular, about different periods or one well defined epoch, as well as about a special topic of the archaeology of Jordan.

Till today, we have received one hundred and seventeen papers in this conference: ninety four are "thematic communications", of which we will discuss some aspects and twenty-three are "short communications", presenting briefly the results of different archaeological and epigraphical projects, some surveys and excavation reports, as well as the *"actuality"* information (researches on computer and other specific problems relating to the archaeology of Jordan).

If we have today more "diachronic" communications, including the prehistory till the modern times, in the coming days the discussions will be purely chronologically arranged.

All the reports have many points in common and the interventions this morning will surely be numerous as the same questions are often to be solved in different periods (be it BC or AD) and in the various regions (be it the fertile, the semi-desert or the desert regions of Jordan).

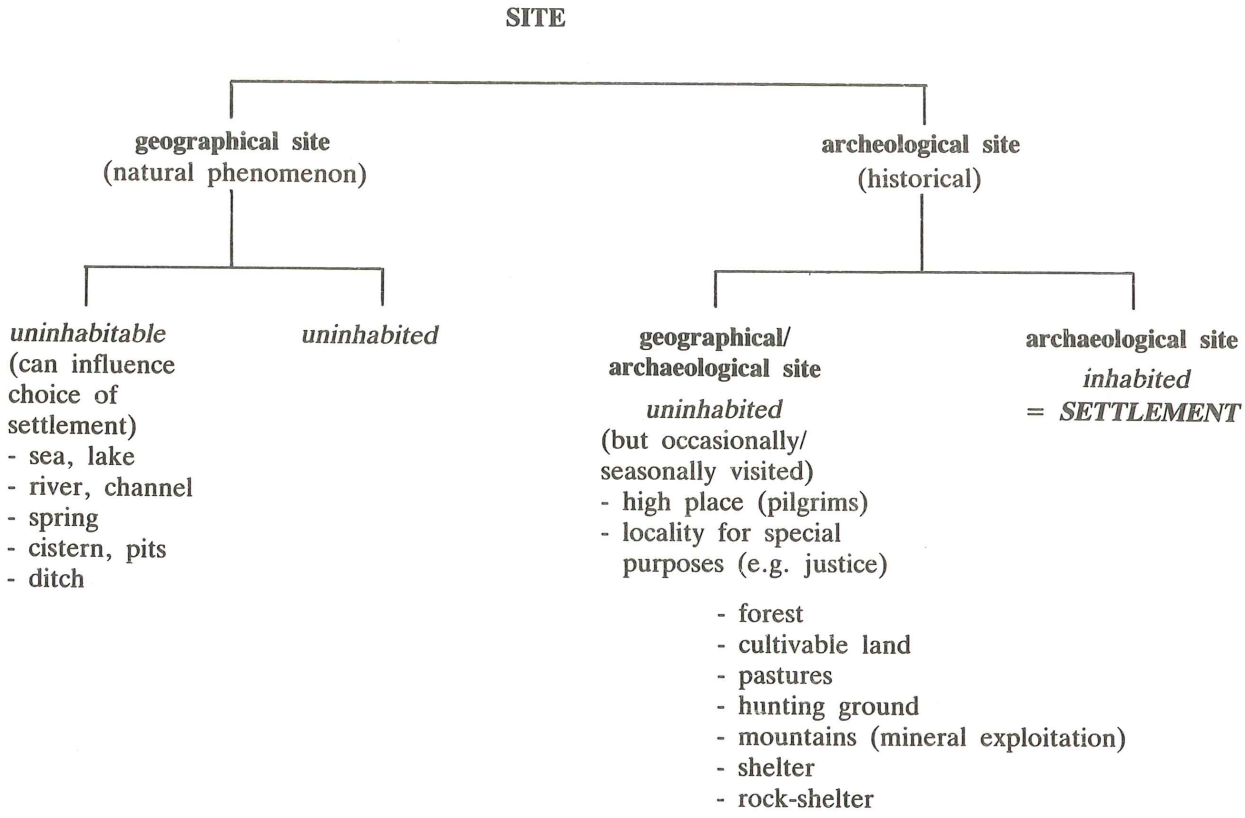
I would like to give first a "short theoretical introduction", discussing the variety of the used terminology, and ending with a summary of the problems evoked in the eight reports of this morning.

Terminology

The first question to examine is, as usual, a problem of terminology. In the different reports, various terms are used for the same idea: a *region* is called alternatively: area, zone, universe, component, component of an area and all of us know the difficulties of choosing adequate terminology, well accepted by everybody.

Our colleague, Dr. Denys Baley, who unfortunately died on July 27th 1987, evoked the theme and its problems in his comments to the Concept Group, when he wrote: "The terms "sites", "settlement" and "settlement patterns" have distinctly different meanings for archaeologists, historians and geographers. ... This does mean that we shall need to clarify this variety of meanings, to make clear the sense in which we are using the words... Very roughly speaking, *sites* are geographical phenomena and *settlements* are historical. In other words, the preliminary questions one asks about a site are: Where is it? Why is it there and not somewhere else? What are its connections with the surrounding region?".

In the reports we received, the terms "sites" and "settlements" are often mixed together and I would like to make first of all the distinction between a pure geographical site and an archaeological site. Therefore, I have tried to synthesize into a chart the terms used by Dr. Baley (a geographer) and the one found in most of the reports (archaeologists, historians and prehistorians as well as geographers).



If we accept this proposed chart, the term "Site" includes a geographical and an archaeological concept, while "Settlement" is more specially an archaeological historical phenomenon, always inhabited, and needs, in any case and necessarily, a human intervention. The geographical factors influence, of course, the choice of the settlement.

Definition of Settlement

A *settlement* is an archaeological site (always inhabited) and needs necessarily a human intervention.

First, we can distinguish temporary and permanent settlements. The ***temporary settlement*** shows a **single pattern**, e.g. a shelter, a rock-shelter, a fond de cabane, a hunting-gather, a fortress, a tower, as those mentioned in the survey reports.

The ***permanent settlement*** can include single or complex constructions.

The **single construction** can be isolated (e.g. a house, a castle, a fortress, a tower, a farm, a watchtower) or isolated but belonging to a construction complex (e.g. a house with esplanade, a castle or a palace with/without surrounding wall, a hunting lodge).

The **complex constructions** may consist of a hamlet, a village or a town. The *hamlet* represents a very small complex of habitations, which can be permanent or seasonal (pasture). The *village* includes a group of tents, huts, houses or farms, with/without granaries, storehouses, threshing floor (they find their resource mainly in agriculture and breeding). The *town* can be large or small, with/without enclosure walls. It represents a group of houses with/without important buildings/building-complexes as sanctuaries, palaces with living and residential quarters, annexes, fortresses with/without glacis, markets, workshops. Its resource can be commercial, cultural or military. It mostly has little agriculture or breeding.

Second, we can also examine **various aspects of settlements,** be they small or large: we can look at their **aims** (explaining often the origin of settlement): they can be religious, economic (agricultural, breeding, trade centre, metal or mineral exploitation), military, etc.

The **kinds of settlement** can be sporadic (seasonal), temporary or permanent. The **dimensions** of settlement depend on demography (growth of the population). their development and the decline of this population. The **reasons of origin of a settlement** can be natural (spring, mineral outcrop, good cultivable land, defensive position) or human (defensive position, pilgrim place which became a trade centre), while the **reasons for their development** depend on the wealth of the population, its political or economic role. The **reasons of decrease of a settlement** are various: food supply becomes insufficient, decrease of water supply, exhaustion of soil in general or of mineral supplies in particular, poverty of agricultural area, too intensive monoculture, deforesting, cattle breeding excess, natural or climatological reasons: erosion, earthquake, flood. The **reasons of desertion of a settlement** are mostly

conquest by enemy, war, epidemics, natural disasters or social evolution.

Most of those aspects are mentioned in the various reports. We have only made a selection so as to show the complexity of the study of a "settlement pattern".

Geographical, Chronological and Cultural Approach

In the publication of *The Archaeological Heritage of Jordan*, edited by the Department of Antiquities in 1973, 417 archaeological sites were mapped. Since then a considerable number of new sites and settlements have been discovered, listed and excavated.

On the map (FIG. 1), we have a slight idea of the numerous sites which have been examined over the last ten years. And still this map is far from being complete, as it contains only the reports that were received in time[1] for the publication of the *Archaeology of Jordan II.1-2. Field Reports. Surveys and Sites*, by J.B. Hennessy and D. Homès-Fredericq.[2] Chronologically, all periods are represented on FIG. 1.

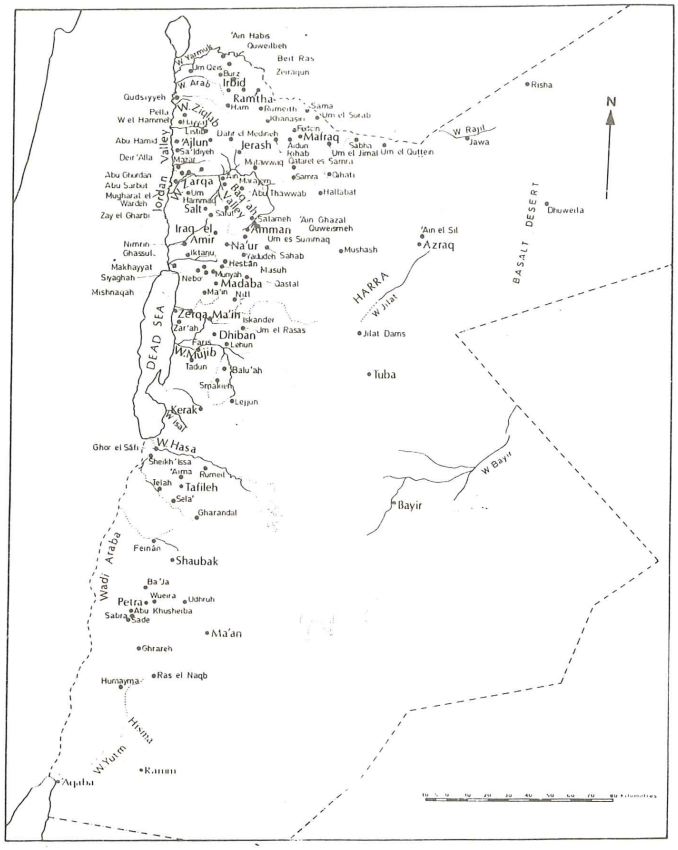
Geographically, Jordan is a wonderful source of study: nearly all regions have been investigated, showing the importance of the two big geographical entities:

1) the "better watered regions", including first of all the Jordan Valley, but also the region of Ammon, Moab, Edom, in general terms the regions of *permanent* settlements where nearly every chronological period is present;
2) and the "desert" and the "semi-desert" in the east of Jordan, often with more *seasonal* or *temporary* settlement patterns.

There is a third point that we have to examine when we study the sites and settlement patterns: the historical, cultural and trans-cultural influences in Jordan, as the country has been subjected to "cultural invasions", as stated by the different reports.

The "better watered regions", very rich due to their climate, fit for agriculture or breeding, are therefore settled by villagers and semi-nomad shepherds. They are also attractive to their neighbouring countries (Palestine, Syria, Mesopotamia, Arabia and Egypt) which means "military" invasions. Often they introduce what we could call "cultural" invasions (or external influences) which means change in settlement patterns. Here I think specially of the constructions of the Roman "highways" with their repercussions on settlements. At certain periods, (e.g. in the Nabataean) we observe a "trade" invasion (studied in the last Conference at Tübingen) with its influence on the King's Highway settlements.

The eight communications of this morning show those geographical, chronological and inter-cultural phenomena.



1. Map of principal sites excavated in Jordan. [D. Homès-Fredericq and J.B. Hennessy, *Archaeology of Jordan II.1. Field Reports. Surveys & Sites A-K* (Brussels: Leuven 1989), p. 98].

They illustrate also the problems with which the archaeologists, historians and geographers have to struggle.

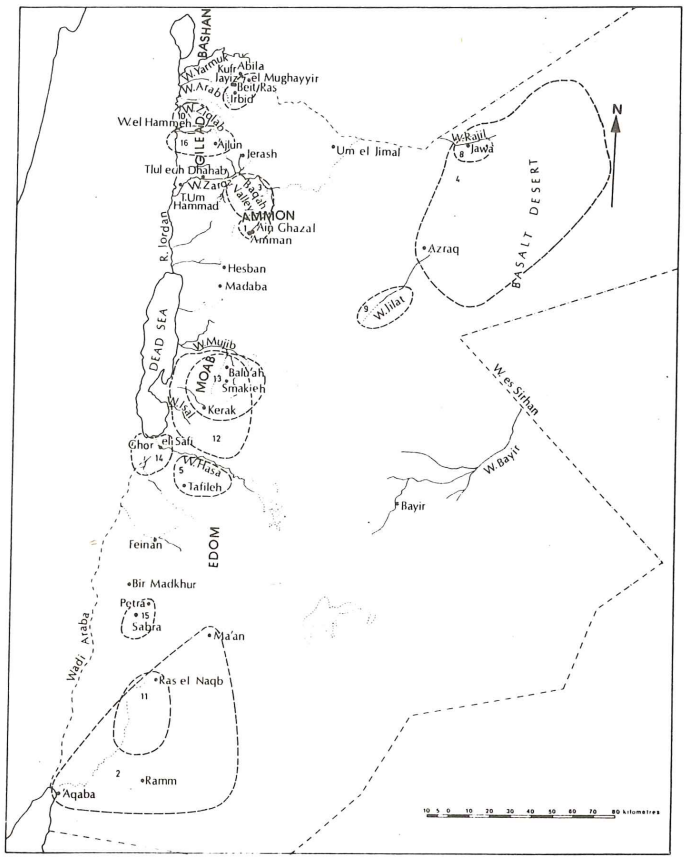
II. THE REPORTS AND THE EVOKED PROBLEMS

This morning we have six survey reports, including *chronologically* all periods and *geographically* Wadi Ziqlab, Wadi al-Ḥammeh, Wadi al-Yabis, 'Ain Ghazal, the northwest Arḍ al-Karak and al-Ḥasa regions. There is also one report on the interpretation of a *Palaeolithic* design on a stone found at *Jabal 'Amud* (southern Jordan) and another paper studying the repercussions of the earthquake on the settlement patterns of the Bilad ash-Sham (Greater Syria, including some towns of Jordan) in the *Islamic* period.

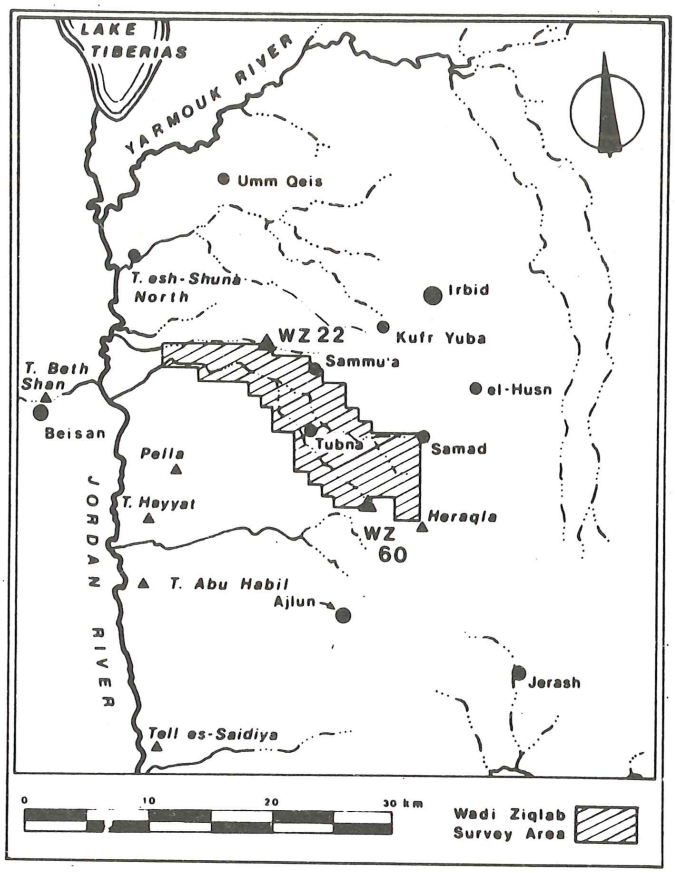
Surveys are very important (FIG. 2): they represent always the first step of any archaeological research. The surface finds give general indications about a region (whose periods are represented by the lithics, the ceramics, the

[1] I would like to take this opportunity to thank all the colleagues who have so efficiently collaborated to this "team" publication as well as those who have promised a report for the additional volume in preparation.

[2] D. Homès-Fredericq and J.B. Hennessy, *Archaeology of Jordan I. Bibliography*, (Brussels: Leuven 1986 = Akkadica Supplementum III); *Archaeology of Jordan. II.1. Field Reports. Surveys and Sites A-K* and *II.2. Sites L-Z*, (Brussels: Leuven 1989 = Supplementum ad Akkadica VII-VIII).



2. Map of surveyed regions (Homès-Fredericq & Hennessy, *op. cit.*, 1989, p. 12).



3. Map of the Wadi Ziqlab area survey [Banning *et al.*, *Annual of the Department of Antiquities of Jordan* 31 (1987), p. 322, FIG. 1].

architectural remains) but can also give much information about geology, biology, numismatic, epigraphy, etc.

The six reports of this morning are not the only surveys in the Conference, as the Irbid and Beit Ras Survey, the Baq'ah Valley Survey and the Moab Survey will illustrate, not forgeting the epigraphical surveys in Jordan in general and the Jawa region in particular (FIG. 2).

1. The Wadi Ziqlab Area Survey (FIG. 3)[3]

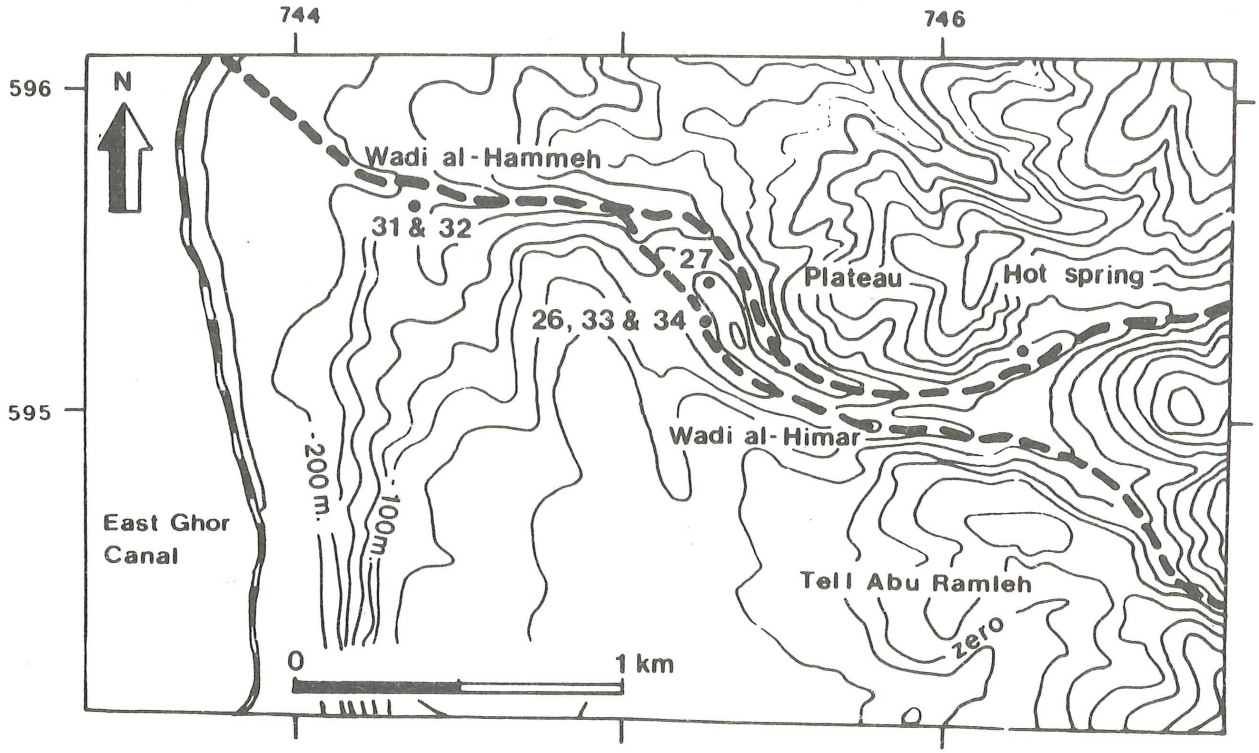
The Wadi Ziqlab area survey (northern Jordan) was directed in 1981 by Drs E.B. Banning and C. Fawcett, while "test excavations" and a "phytogeographical survey" were done in 1986, to complete the 1981 survey. Almost all periods are represented.

I must point out that there is a small problem with the Wadi Ziqlab communication, as I did not receive the announced paper and the summary I will give is based on the article of Dr. E.B. Banning in the *Annual of The Department of Antiquities of Jordan,* 31,[3] giving the conclusions for his working seasons of 1981 and 1986. The survey intended to understand the ancient natural environment of the region and to examine if traces of pastoral and agricultural land use would be revealed. Two sites were selected in 1986 to test the agricultural settlements. A sounding was made in *Wadi Ziqlab 22* (northern part) to see if the site was a Late Roman - Early Byzantine pastoral camp (Khirbet Maḥrama). Two probes were made in *Wadi Ziqlab 60* to find a sequence of lithics and ceramics.

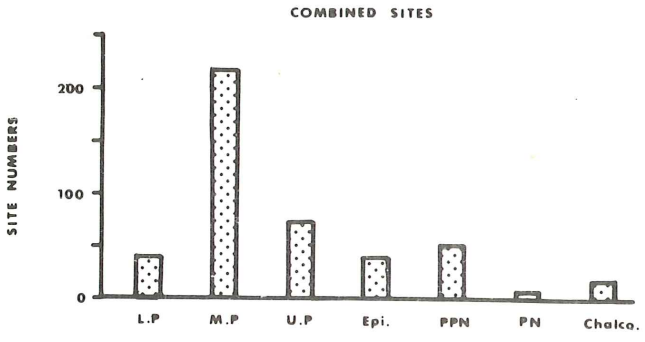
The author points out the following problems:

1. The importance of a survey combined with "subsurface" test excavations, to strengthen or replace the survey assumptions.
2. The difficulty to distinguish pastoral camp from agricultural land and to know the special purpose of a site, because we cannot be certain that the physical environment of sites have not changed in antiquity (importance of the palaeo-, ethno-, palaeobotanic- and botanical survey).
3. Difference that allows to localize village mounds (easier) and campsites (very difficult), with the real problem being: the difficulty to discover campsites

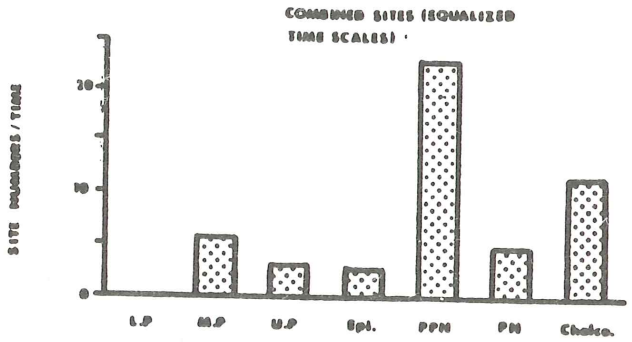
[3]Title of the paper of E.B. Banning (absent) 'Survey of Settlement Patterns in the Wadi Ziqlab'. For information see E.B. Banning, R. Dodds, J. McCorriston, S. Monckton and P. Sheppard, 'Report on the Wadi Ziqlab Project 1986 Season of Excavations', *Annual of the Department of Antiquities of Jordan* 31 (1987), pp. 321-342.



4. Pella, lower Wadi al-Ḥammeh showing location of Pleistocene sites (Hennessy *et al.* in Homès-Fredericq & Hennessy, *op. cit. II.2. Field Reports - Sites L-Z*, 1989, p. 406, FIG. 1).



5. Combined archaeological site numbers from four regions in Jordan. (Paper presented by P.C. Edwards.



6. Combined archaeological site numbers from four regions in Jordan (with equalized time scales). (Paper presented by P.C. Edwards.

because of their poor state of preservation and to distinguish them from other types of sherdscatter in the dense oak forest of the Wadi Ziqlab region where probes are often impossible. This problem is common to all the surveys we will discuss.

4. Is it possible to solve the problem of protection of the archaeological sites and prevent clandestine excavation?

2. The Lower Wadi al-Ḥammeh Survey (FIGS. 4-6)[4]

Dr. P.C. Edwards has surveyed Wadi al-Ḥammeh, 2km north of ancient Pella/Ṭabaqat Faḥl. So far six dated *in situ* Pleistocene sites (numbered on the map, FIG. 4) have been excavated by the University of Sydney. Two sites (WH 31-32) are located at the south bank of Wadi al-Ḥammeh near its mouth, four others on the plateau (WH 26, 27, 33 and 34).

Dr. P.C. Edwards studies the demography, a particular aspect of settling and attempts to reconstruct the population size in the Pleistocene from physical characteristics of settlement, centered on the ethnographically observed

[4]Paper presented by P.C. Edwards, 'Demographic Issues in Pleistocene Prehistory: A Perspective from Wadi al-Ḥammeh'.

relationship between a number of people and the floor area, as has been done in other countries (Kurdistan, Yemen).

The inter-regional and diachronic comparisons are presented in different figures, although the author attracts attention on the difficulty to estimate population levels from archaeological data. On FIGS. 5-6, survey data from four intensively surveyed regions of Jordan have been studied to investigate the relationship between site numbers and time. They present a variety of landforms and environment, as they belong to Wadi Ziqlab, Wadi al-Ḥasa, the Azraq Basin, and Ras an-Naqab.

1. FIGS. 5-6 show the importance of combining the number of sites with the length of each archaeological period; in FIG. 5 higher site numbers appear in the Middle Palaeolithic but their importance is relativated in FIG. 6, in comparison with the Prepottery Neolithic.
2. To take site area as index of population also presents difficulties and a simple correlation between numbers or sizes of archaeological sites and population cannot be substantiated.
3. The author also shows the important role of the climatic variations during the Pleistocene.
4. The fact that the older a site is, the more scarce the archaeological data are (although this is not always true).

3. The Wadi al-Yabis Survey (FIG. 7)[5]

The Wadi al-Yabis Survey, conducted by J.B. Mabry (University of Arizona) and Dr. G. Palumbo (Università di Roma) was carried out in August 1987. The entire Wadi al-Yabis drainage basin and part of the Jordan Valley were examined: this includes an area of *c.* 187km^2, ranging between 1200m above sea level and 300m below sea level, with of course a highly varied landscape. This explains the different settlement patterns, corresponding with various adaptive strategies of the humans with the landscape.

From the seventy sites known from previous surveys in this area, eighteen were visited and twenty six new sites were identified. Additional periods of occupation were recognized at thirteen of the eighteen previously known sites. These sites range *in date* from the Epipalaeolithic to the Ottoman period.

To summarize the demographic tendencies and the changes in settlement patterns, the authors show a "diachronic" evolution on different maps, which can be summarized as follows:

1. The recurring, indigenous pattern of settlement in the Wadi al-Yabis catchment is the location of autonomous sedentary villages and nomadic camps in every potential ecological niche.
2. Periods of stable, centralized political and economic structures encouraged agricultural intensification, such as terracing of the hill sides, as well as resistance to nomadic incursions.
3. On the other hand, periods of uncentralized, or local political structures often led to intrusions of nomadic-pastoralists, dispersion of population, and neglect of the land (abandonment of terraces, etc.).

The history of settlement and land use in the Wadi al-Yabis highlights "the fragility of the natural equilibrium between man and land", a balance which is particularly threatened by modern development.

4. The 'Ain Ghazal Archaeological Survey 1987 (FIG. 8)[6]

Presented by Dr. A.H. Simmons (Desert Research Institute, University of Nevada System) and Dr. Z. Kafafi (Yarmouk University). The survey took place in the summer of 1987, in the northern suburb of Amman, where the intensive development of the modern town is a real danger for archaeological remains.

Six separated zones were systematically surveyed, comprising a area of 8.40km^2, west and north of the spectacular Neolithic settlement of 'Ain Ghazal, discovered in 1982 and excavated by Drs. G.O. Rollefson, Z. Kafafi, and A.H. Simmons.

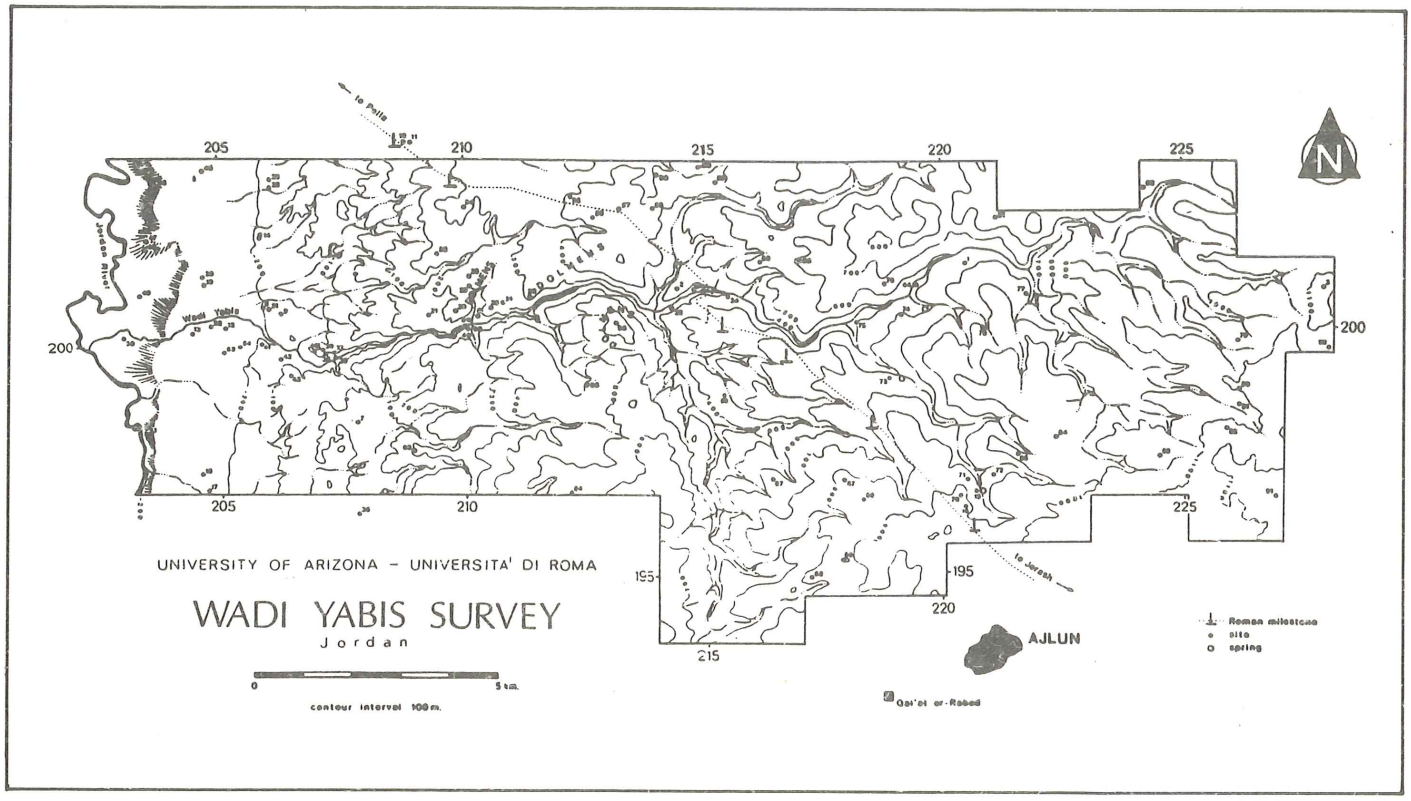
In the six areas, the wadi floodplains and the adjacent terraces and slopes were carefully investigated: eighty one archaeological sites, with one hundred and eight components, were recovered.

For the 'Ain Ghazal archaeological survey we can conclude:

1. There is a high density of 9.6 sites per km^2, ranging from the Palaeolithic (Late Lower Palaeolithic) to the Umayyad period.
2. The survey has proved that the site of 'Ain Ghazal was larger than previously thought and a new transitional period, called Prepottery Neolithic C, was distinguished between the PPN B and the Yarmoukian.
3. Up to now, it seems that no smaller satellite Neolithic villages, farmsteads or pastoral sites were dependant on 'Ain Ghazal, but it is always possible that they have not yet been discovered or have been covered by geomorphic processes.
4. The chronological evolution of the site shows that the earliest Prehistoric periods are the best represented and are interesting for their settlement patterns. There was a Chalcotlithic/Early Bronze occupation and a relatively well represented Iron Age period, although sites are small. There was a surprising *lack* of Middle Bronze/ Late Bronze occupation as well as of the classical Hellenistic period. The Roman, Byzantine and Umayyad periods are also poorly represented.
5. The lack of major post-Neolithic settlements may be

[5]Paper presented by J.B. Mabry and G. Palumbo, 'Environmental, Economic, and Political Constraints on Ancient Settlement Patterns in the Wadi al-Yabis Region'.

[6]Paper presented by A.H. Simmons and Z. Kafafi, 'The 'Ain Ghazal Survey: Patterns of Settlement in the Greater Wadi az-Zarqa Area, Central Jordan'.



7. The Wadi al-Yabis survey area (J. Mabry and G. Palumbo in Homès-Fredericq and Hennessy, *op. cit. II.1.*, p. 93, FIG. 1).

due to the severe environmental degradation supposed to have been caused by the residents of 'Ain Ghazal.

5. The North Arḍ al-Karak Survey (FIG. 9)[7]

Several intensive surveys were conducted between 1983 and 1986 by Dr. U. Worschech, with the collaboration of Dr. E.A. Knauf in 1984. This area had been previously covered by N. Glueck as well as by the "Central Moab Survey" directed by Dr. J. Max Miller, whose investigations extended further south, to Wadi al-Ḥasa.

The survey area of Dr. U. Worschech is geographically defined by Wadi al-Karak in the south, the Dead Sea in the west, Wadi al-Mujeb in the north and the edge of the Moabite Plateau (Arḍ al-Karak in Arabic) in the east.

The region comprises different ecological zones which influences the settlements and their pattern: the desert of the Southern Ghor next to the Dead Sea and the slopes of the Moab plateau are characterized by micro-climatic regimes depending on the elevation (between 1000m above sea level and 300m below sea level). Eighty-five percent of the area has been surveyed and a hundred ancient sites discovered. Almost all the periods are represented.

Dr. U. Worschech draws attention to the different problems concerning the Arḍ al-Karak region:

1. Problem of the Chalcolithic (or Middle Bronze?) tumuli and need of a systematic research of these tomb structures.
2. Cause of sudden appearance of Chalcolithic, Early Bronze settlements (indicated by a cross on the map). Fourteen new sites were discovered in all three zones, in addition to Bab adh-Dhra' (proposed answer for increase of settling is more favourable climate, trade and commerce).
3. Difference of evolution of the settling of western and eastern Palestine (with an inter-cultural "invasion" of the Egyptians) and the problem of the Shasu-type nomads who developed into the settled life-style with one of their "sheikhs" as first "king of Moab".

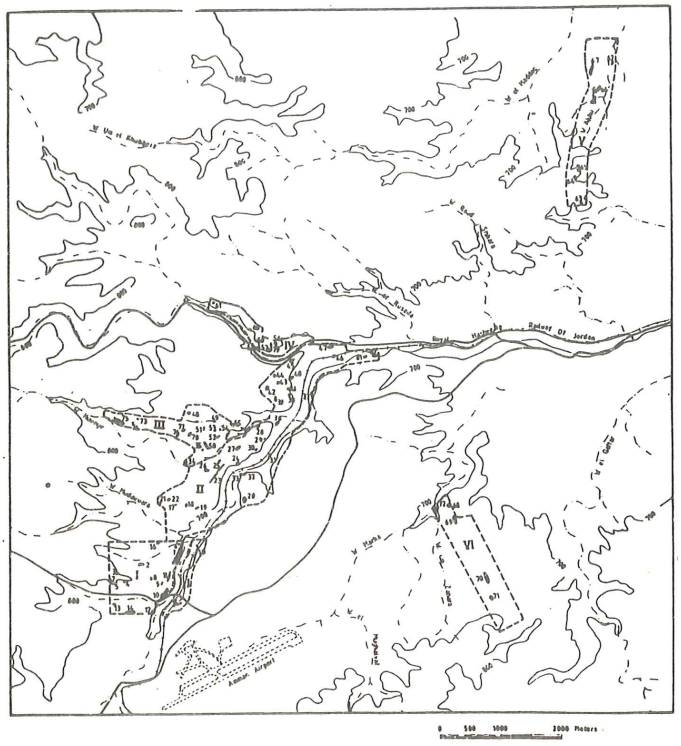
6. The Wadi al-Ḥasa Archaeological Survey (FIG. 10)[8]

The Wadi al-Ḥasa archaeological survey was directed by Dr. B. MacDonald and covered West Central Jordan, on the south bank of Wadi al-Ḥasa, delimited westward by the Southern Ghor, and more specially the towns of aṭ-Ṭafilah and 'Aima and eastward by the modern desert highway, near the village of al-Ḥasa.

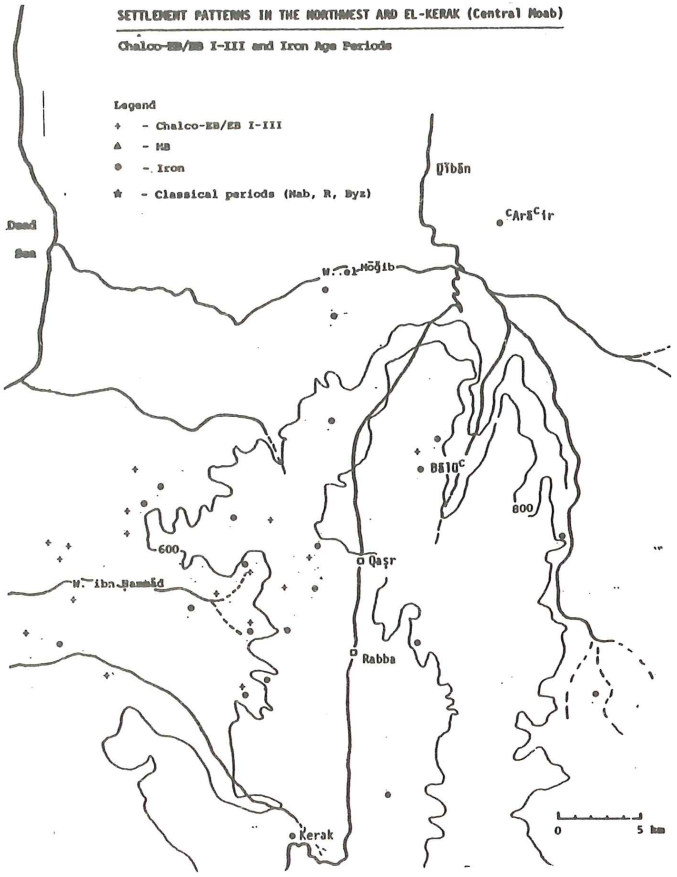
This region, cut by a number of impressive and deep wadis, was divided into three "universes" or regions by the

[7]Paper presented by U. Worschech, 'Ancient Settlement Patterns in the Northwest Arḍ al-Karak'.

[8]Paper presented by B. MacDonald, 'Settlement Patterns Along the Southern Flank of Wadi al-Ḥasa: Evidence from "The Wadi al-Ḥasa Archaeological Survey".'



8. The 'Ain Ghazal Archaeological Survey 1987 (Z.A. Kafafi and A.H. Simmons in Homès-Fredericq and Hennessy, *op. cit. II.1.*, FIG. 1).



9. Settlement patterns in the North Arḍ al-Karak (central Moab). (Paper presented by U. Worschech, FIG. 1).

surveyors and examined in 1979, 1981 and 1982. In this region 1074 sites were surveyed, belonging to the different chronological periods and reveal an occupation for more than 100,000 years.

1. From the Neolithic period onwards, Wadi al-Ḥasa seems to follow the same evolution as the Arḍ al-Karak region, as well as most regions of Jordan: increase of population from the Chalcolithic period onwards, through the Early Bronze with a decline in the Early Bronze II-III; increase of population in the Iron Age with small, permanent settlements, and acceleration of the process in the Iron Age II as with sedentarization and pastoral occupation attested in the eastern universe. Pottery Neolithic, Middle and Late Bronze as well as Early Islamic evidence is poorly attested. As in Arḍ al-Karak, Nabataean settlements are most numerous (forts and/or caravansera in the east), continuing into the Roman period.
2. The Byzantine period, one of the biggest populations in the area, has its own settlement pattern. The population did not make use of the wadis, as did the Nabataeans.
3. Importance of the interpretation of the past environment has been revealed by rather detailed descriptions of different travellers during the 19th century.
4. The Wadi al-Ḥasa area is a marginal region for farming but stable for grazing, and therefore the first "to empty out" and the last to "fill up", as was the case for Arḍ al-Karak, in opposition with the other more favourable regions.

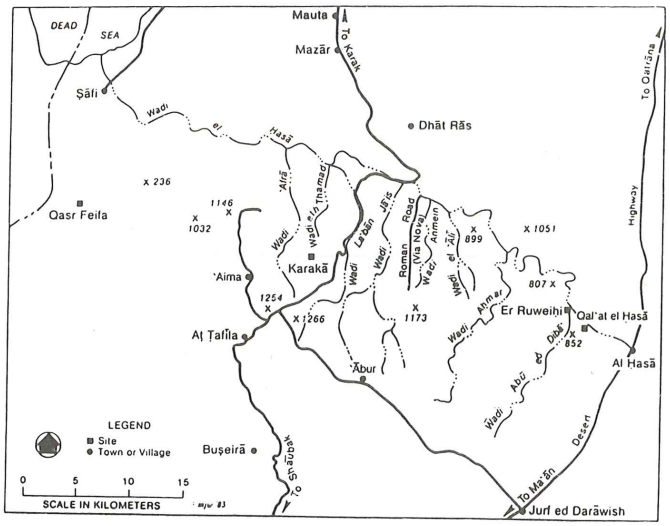
7. The Map of Jabal 'Amud (FIG. 11)[9]

The paper of Dr. E. Borzatti von Lowenstern gives an interpretation of a recent discovery in the region of Jabal 'Amud (in southern Jordan in Wadi Ramm).

A large stone of 2.80m by 1.70m represents an enigmatic drawing of two flat areas with small dots, a hundred and fifty large and smaller holes and lines of different length and thickness. The flat areas have been made by grinding stones; the holes and the lines by intentional cutting. This stone has generally been interpreted as a religious feature.

Dr. E. Borzatti von Lowenstern reads this stone as a

[9]Paper presented by E. Borzatti von Lowenstern (absent), 'Insediamenti e siti. Un suggerimento dalla Preistoria'.



10. The Wadi al-Ḥasa Survey (B. MacDonald, in Homés-Fredericq and Hennessy, *op. cit. II.1.*, p. 49, FIG. 1).

prehistoric, topographical map of the region, on the scale 1/60,000. He dates it from 3000-2500 BC, and thinks the holes represent small and larger settlements, the lines indicating the roads, channels and bypasses. He assumes this map allowed people to communicate with each other, giving information about the best places to hunt and the roads to follow in antiquity.

With this hypothesis in mind (which will seem hazardous at the first approach), he reexamined the whole region and discovered many prehistoric "abris sous roche", a great number of tumuli and small settlements, important for agriculture and breeding but never mentioned or mapped before.

8. Earthquakes in Southern Syria (Jordan and Palestine)[10]

The last communication, by Dr. Y. Ghawanmeh about "*Earthquake Effects on Bilad ash-Sham Settlements*", presents a very interesting aspect of decrease or abandonment of settlements, due to a natural phenomenon, a catastrophe independent of human will, in the Islamic period, between the eigth and the 18th centuries AD.

Earthquakes have an important impact on population and architecture and many negative results on cultural, economic, commercial, agriculture and social life.

His conclusions are:

1. During the Islamic period, seventy six earthquakes have been listed between the eighth and the 18th centuries AD by the ancient authors. The most important ones for Jordan are between the 11th and the 13th centuries, affecting North, Central and South Jordan.
2. Different towns in Jordan were completely destroyed, and the tables given by Dr. Ghawanmeh are very useful in establishing the years, the towns, the degrees of earthquakes and their results.
3. People leave their houses or their country because they fear new earthquakes. Some urban centres are rebuilt or repaired. Those settlements which were impossible to rebuild, were deserted, introducing a decrease of population, with various effects on economical or agricultural life.

It would be very interesting if a comparable study could be done from the prehistory to the early historic periods of Jordan, as has been done for the Islamic and the Roman periods.

11. L'incisione di Gebel Amud. (Paper presented by E. Borzatti von Lowenstern.

[10]Paper presented by Y. Ghawanmeh, 'Earthquake Effects on Bilad ash-Sham Settlements'.

9. Ore Exploitation and Metal Production in the Area of Feinan[11]

Drs. A. Hauptmann and G. Weisgerber entered a completely different type of subject, giving a short overview of their work at Feinan, the largest mining and smelting copper site of the Near East, located in Wadi 'Arabah between the Dead Sea and the Red Sea. They found more than 150,000 tons of slag in this area. By chemical analysis at the "Deutsches Bergbau Museum" at Bochum, and with the collaboration of the Department of Antiquities of Jordan, they try to find an answer to the complex history of metallurgy and the trading of copper. As the authors stated, there are still many problems concerning this starting project on a "production" site.

III. GENERAL CONCLUSIONS

Terminology "Sites" and "Settlements"

Although there was no general agreement at the beginning of this conference on how to interpret: "sites and settlement patterns", we can now conclude, after five days of discussion, that:

1. *Site* is an abstract and theoretical concept, which covers many aspects: geographical and historical, and that we should use it in the archaeological sense of the word including cultural association with the historical background: a ceramic site, a burin site, a seasonal site, a Prepottery Neolithic site, a site of flint scatter. It includes archaeological "records" of unexplainable human activity.
2. Everybody agrees that there must be a human presence at a certain location for it to become a *settlement* but that the word can also be used as a synonym for site, if people are living together and if there is evidence of organisation of an area.
3. That the word site *pattern* for a settlement pattern can also be differently interpreted, such as: studying a particular site, a region, a country or an interregional area.

"Survey Reports"

In connection with the survey reports, the following conclusions have been stated:

1. There are many "gaps in our knowledge" concerning the history and the archaeology of Jordan, as well as the settlement patterns, including their geomorphic processes.
2. The surveys are absolutely necessary for any kind of archaeological research, as they give the first information about the periods represented at a site or a region.
3. It would be advisable to always combine the surveys with "subsurface tests", excavations or "probes" to strengthen or replace the preliminary conclusions derived from the surveys.
4. The country has often been unsystematically surveyed and many sectors are not prospected.
5. There remain many questions to be solved for the surveyors/excavators:
   - a chronological problem: the evolution of settlements and the difference in density of the population in the various periods, typology of each period;
   - a geographical problem: the influence of the landscape on a settlement, the modification of the regional context by human intervention, the difficulty to make definitive maps by period;
   - a historical question regarding the political situation.
6. There are often difficulties in dating the surface material. It is also advisable to publish the "UD" or "undetermined" material.
7. Last but not least, there are problems in dating the transitional periods or "dash periods" mentioned by Dr. A. Leonard.[12]

[11] Paper presented by A. Hauptmann and G. Weisberger, 'Periods of Ore Exploitation and Metal Production in the Area of Feinan, Wadi 'Arabah, Jordan'. (No text available before the start of the conference).

[12] Paper presented by A. Leonard, 'A Comparison of Settlement Density in the Jordan Valley and its Highlands During the Late Bronze Age' (on 31/5/1991).