

Special Issue on the Symposium:
Central Settlements in Neolithic Jordan
with
A LIST OF SCHOLARS INVOLVED IN THE PRE-
BRONZE AGE PREHISTORIC RESEARCH OF JORDAN (Dec. 1997)

Advisory Board

Ofer Bar-Yosef
Harvard University

Jacques et Marie-Claire Cauvin
Institut Préhistoire Orientale, Jales

Frank Hole
Yale University

Marc-Louise Inizan
C.N.R.S., Paris

Peder Mortensen
Det Danske Institut i Damaskus

Hans J. Nissen
Freie Universität Berlin

Mehmet Özdoğan
University of Istanbul

Symposium

Central Settlements in Neolithic Jordan

Patronage: H.R.H. Prince Raad

Petra Mövenpick Hotel, Wadi Musa

21st - 25th of July, 1997

Editorial Board

Hans Georg K. Gebel
Gary O. Rollefson

General Programme:

- evening of 21st of July: Registration and Welcoming Addresses
- 22nd of July: Spatial and Social Organization of Central Settlements
- 23rd of July: Excursion to 'Ain Jamam, Basta, Baja, and Beidha
- 24th of July: The Human Ecology of Central Settlement Developments
- 25th of July: Excursion to as-Sifiya, Wadi Shu'aib, and 'Ain Ghazal

Address
NEO-LITHICS
c/o Gary O. Rollefson
'Ain Ghazal Research Institute
Pragelatostr. 20
D - 64372 Ober-Ramstadt
tel./fax 0049 6154 53642
e-mail: gorikr@t-online.de

organized by the

German Protestant Institute of Archaeology, Dept. Amman

&
ex oriente e.V., Berlin

Orders
ex oriente e.V.
Berni Müller-Neuhof
c/o Free University of Berlin
Bitterstr. 8-12, D-14195 Berlin
fax 0049 30 8314252
e-mail: bmueller@zedat.fu-berlin.de

Published and distributed by *ex oriente*, Berlin
ISSN 1434-6990

NEO-LITHICS 2/97

supported by
Petra Mövenpick Hotel
Petra Regional Council, Wadi Musa
Petra Moon Tourism Services, Petra
Munich University, Kerak
German Embassy, Amman

A Newsletter of Southwest Asian Lithics Research

Reprint

Courtesy of the British Library, London

Editorial

With this special publication we offer for the first time three issues of *Neo-Lithics* in one calendar year, and we intend to continue three issues each year in the future (see this already announced in the editorial of *Neo-Lithics* 1/97). In order to reduce unnecessary costs and to improve the quality of illustrations we gave up to print on green paper, too. The "philosophy" of our newsletter remains the same: broad and quick information by a non-costly presentation.

Neo-Lithics 2/97 is intended to inform the readership of a focus of interest for researchers currently involved with the Neolithic in Jordan, but of course the topics are of concern to everyone connected with later prehistoric archaeology throughout the Levant as well as the Old World in general. This edition of *Neo-Lithics* was compiled from the abstracts of contributions and the minutes of section and general discussions of the Symposium *Central Settlements in Neolithic Jordan*, organized and hosted in Petra by H.-D. Bienert and H.G.K. Gebel on behalf of *ex oriente* and the *German Protestant Institute for Archaeology* at Amman from 21 - 25 July, 1997. We present the abstracts and minutes according to their sequence in the program, together with the further details of the symposium's scope.

Gary O. Rollefson and Hans Georg K. Gebel

N.B. The addresses of contributors to the symposium can be found in the *Blue List of Scholars Involved in the Prehistoric (Pre-Bronze-Age) Research of Jordan (Dec. 1997)* attached to this issue of *Neo-Lithics*. The photos in this issue were taken by Bernd Müller-Neuhof (*) and Hans Georg K. Gebel (**).

Preface

Hans Georg K. Gebel¹

In recent years one of the most outstanding topics of Near Eastern prehistory is the "mega-site" phenomenon in the 7th millennium BC in the semiarid zones of Jordan. The situation of immense settlements gained widespread attention and developed into an increasingly controversial discussion. Raised as an issue as early as the 1980s by Gary Rollefson, who excavated such evidence with Zeidan Kafafi and Alan Simmons at 'Ain Ghazal in Central Jordan, the idea of the megasite was further promoted by excavations starting in 1986 at Basta in southern Jordan. More fuel was added to this discussion with excavations at newly identified megasites in the 1990s: 'Ain Jammam in southern Jordan (carried out by Muhammad Waheeb, Nazeh Fino and others) as well as es-Sifiya in Wadi Mujib (undertaken by Hamzeh Mahasneh). Furthermore, discussions in recent years returned to older arguments that had already emerged in the second half of the 1950s from the PPNB Jericho findings (the Oldest Town debate), a chrono-stratigraphical reconsideration of an architectural sequence like that of Beidha appeared necessary, the increasing evidence of clay vessels in Pre-Pottery Neolithic B layers at least demanded some comments, etc.

However, it was not until the provocative statements of Gary Rollefson in recent articles on temples, shrines, and towns that I felt it imperative that all colleagues gather in a symposium in order to discuss the actual findings and to see the chances for a mutual understanding of a phenomenon which started to invoke so many highly speculative explanations. The term "Proto-Urbanism" was a most useful incentive for the necessary discussion, and for raising funds, but was it justified to apply it for phenomena in the Near Eastern Neolithic?

In Hans-Dieter Bienert, the *German Protestant Institute of Archaeology* at Amman, I found a person highly interested in co-organizing the symposium, which was well-attended and very successful in a friendly but cooperative-controversial spirit and stimulating atmosphere during 21- 25 July at the *Petra Mövenpick Hotel*.

As stated before, Rollefson's provoking interpretations were instrumental for the planning of the symposium, and we felt that this productive spirit needed to be introduced into the symposium

itself. We were well aware that a "mutual understanding" (see the invitation circular) of a new prehistoric phenomenon could not be achieved in a symposium, and that even "minimum understanding" might not be reached (as the final discussion attested). At this status of research, it seemed best to provoke a vivid "brainstorming" to help clarify one's own understanding and to develop a sharpness of personal definitions and insights by confrontative discussion.

The sequence of the opening lectures (Gebel/ Rollefson/ Bienert/ Nissen, see below) thus followed the strategy to establish the tension the topic entailed right from the beginning, including the presentation of contradicting views. In that respect, Nissen's efforts to avoid flights of fantasy with respect to the use of the term "Proto-Urbanism" were most helpful. The strategy worked: less ambiguous arguments and strong reactions from the audience started to form the levels and milieus of the following day's discussions. Existing differences and uncertainties came to light, and many open questions could be formulated more accurately.

Visits to and on-site discussions at Basta, 'Ain Jammam, Beidha, Ba'ja, es-Sifiya, Wadi Shu'eib, and 'Ain Ghazal greatly supported this discursive atmosphere. However, the strategy was not completely successful -or better: could not succeed- for a mutual understanding: we still found ourselves too much concerned with finding personal understanding and views of what is now more widely accepted as a new phenomenon of the Early Neolithic.

The megasite phenomenon of Jordan has been recognized at springs in the semi-arid fringes of the country. I would not exclude its possibility in similar settings near steppic hinterlands or along migration routes of herds of ungulates outside the East Bank, e.g., Jericho, the Ghuta, or even farther north, wherever MPPNB population dynamics could provoke such expansive adaptations.

Contributors to the Proceedings of the

Symposium "*Central Settlements in Neolithic Jordan*"
are kindly asked to obey the deadline for submissions
by **31st of January, 1998**

Contributions are to be sent to: *ex oriente*, Free University of Berlin,
Bitterstr. 8-12, D-14195 Berlin

For submissions it is imperative to consider the Format Requirements for the *Studies in Early Near Eastern Production, Subsistence, and Environment*, in which the proceedings will appear as Volume 5 (for the format rules see the last page of this *Neo-Lithics*. Please note that meanwhile the format needs for references to authors names were changed: no capital letters to be used anymore.).

But does anything allow us to see this development in the socio-economic trends of the early Near East? A sudden rise in settlement sizes is attested, but not necessarily an increased number of settlements. A central function may be stated for the megasites with respect to their organization of habitats, but not necessarily "centrality" in the sense of central places in a web of subordinate settlements. Division of labor can be observed in the *chaînes opératoires* but not necessarily coincident with advanced social hierarchies. *Et cetera*. The phenomenon in my view happened to be a premature start of a development for which it is not justified to make a prognosis with reference to proto-historic Near Eastern developments. It deserves its own parameters of explanation, and we should not hesitate to search outside the Near East for comparative aspects ...

It was the policy of the organizers only to invite those colleagues to the symposium who actually work on primary material deriving from the sites discussed in order to have the freedom and privacy for primary exchange: the organizers apologize for not having been able to consider invitations beyond this restriction. Thus this special issue of *Neo-Lithics* is devoted to the symposium in order to inform our other colleagues concerned with the Near Eastern Neolithic prior to the publication of the proceedings, which will appear in the near future.

¹ The preface for this special issue of *Neo-Lithics* partially refers to thoughts expressed by the author in his opening address to the symposium.

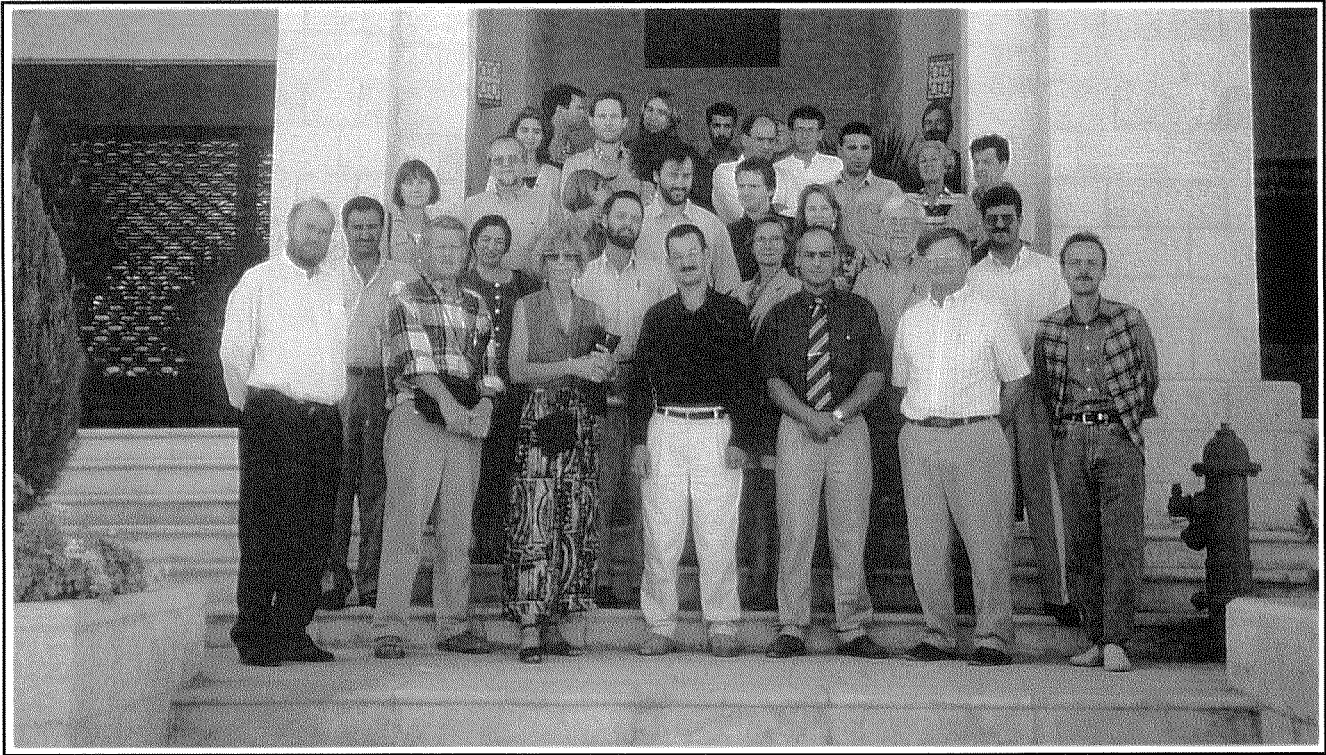


Fig. 1. Symposium participants on the staircase of the *Petra Mövenpick Hotel*.*

Acknowledgements and Thanks

Central Settlements in Neolithic Jordan

a symposium under the patronage of
H.R.H. Prince Ra'ad bin Zeid

held on 21st - 25th of July, 1997
in the *Petra Mövenpick Hotel*, Wadi Musa/ Jordan

hosted by the
German Protestant Institute for Archaeology at Amman
&
ex oriente e.V., *Free University of Berlin*

organized jointly by
Hans Dieter Bienert and Hans Georg K. Gebel,
in collaboration with Bernd Müller-Neuhof

Symposium Concepts by
Hans Georg K. Gebel in collaboration
with Hans-Dieter Bienert and Gary O. Rollefson

Guests of Honour:
H.R.H. Prince Ra'ad bin Zeid
H.E. Dr. Ghazi Bishi, Director-General
of the *Department of Antiquities*
H.E. Dr. Kamal Mahadin, Director-General
of the *Petra Regional Council*
H.E. Prof. Dr. Eid Dahiyat, President of *Mu'tah University*
H.E. Dr. Peter Mende and wife, *German Embassy*

Organizational Supports and Sponsorships:

Mu'tah University, Kerak
Petra Regional Council, Wadi Musa
Embassy of the Federal Republic of Germany
Petra Mövenpick Hotel and (Robert Fierz)
Petra Moon Tourism Services (Wendy Botham
and Eid Nawafleh)
ex oriente e.V. at *Free University of Berlin*
German Protestant Institute for Archaeology at Amman

Contributing Participants:

Cornelia Becker, Margit Berner, Hans-Dieter Bienert,
H.E. Ghazi Bisheh, Bo Dahl Hermansen,
Ricardo Eichmann, Suleiman Farajat, Nazeah Fino,
Hans Georg K. Gebel, Zeidan Kafafi, Ian Kuijt,
Alison McQuitty, H.E. Kamal Mahadin,
Hamzeh M. Mahasneh, Peder Mortensen,
Bernd Müller-Neuhof, Muhammad Najjar, Reinder Neef,
Leslie A. Quintero, H.R.H. Prince Ra'ad bin Zeid,
Gary O. Rollefson, May Shaer, Tyede H. Schmidt-Schultz,
Michael Schultz, Alan Simmons, Hamdan Taha,
and Phil Wilke

Guests:

Salaheddin al-Abbasi, Aysar Akrawi, Katrin Bastert,
Michelle Bonogofsky, Ilka Eichmann,
Abdel Nasser Hussein al-Hindawi, Faiza Kafafi,
Tobias Krämer, Roland Lamprichs, Ghattas Sayej,
Sonja Striegl, Inge Mortensen, Phil Rassmann, and Issa Sarie'

Chairs of Workshop Sessions:

Zeidan Kafafi: Welcoming Addresses and Opening Lectures
Ricardo Eichmann: Spatial Organization
Gary O. Rollefson: Social Organization
Cornelia Becker: Human Ecology
H.-D. Bienert and H.G.K. Gebel: Symposium General Discussion
Suleiman Farajat: Brainstorming Session on Restauration

Minutes of Discussions:

Aysar Akrawi, Ricardo Eichmann, Hans Georg K. Gebel,
Ian Kuijt, Gary O. Rollefson, Alan Simmons, Phil Wilke

Mu'tah University generously provided the excursion bus; the *German Embassy* funded a small photo exhibition, the symposium cases, etc. The *Petra Regional Council*, welcomed us with a reception during a break in the *Mövenpick*. Our special thanks go to the *Petra Moon Tourism Services* for the splendid *Zarb- Diner* with folkloristic entertainment, the organization of the registration desk, and many other support. Much success of the symposium came through the excellent atmosphere in the *Mövenpick*, which provided the meeting rooms free of charge, many services, and good room rates. All this help and support was instrumental for the symposium's great success.

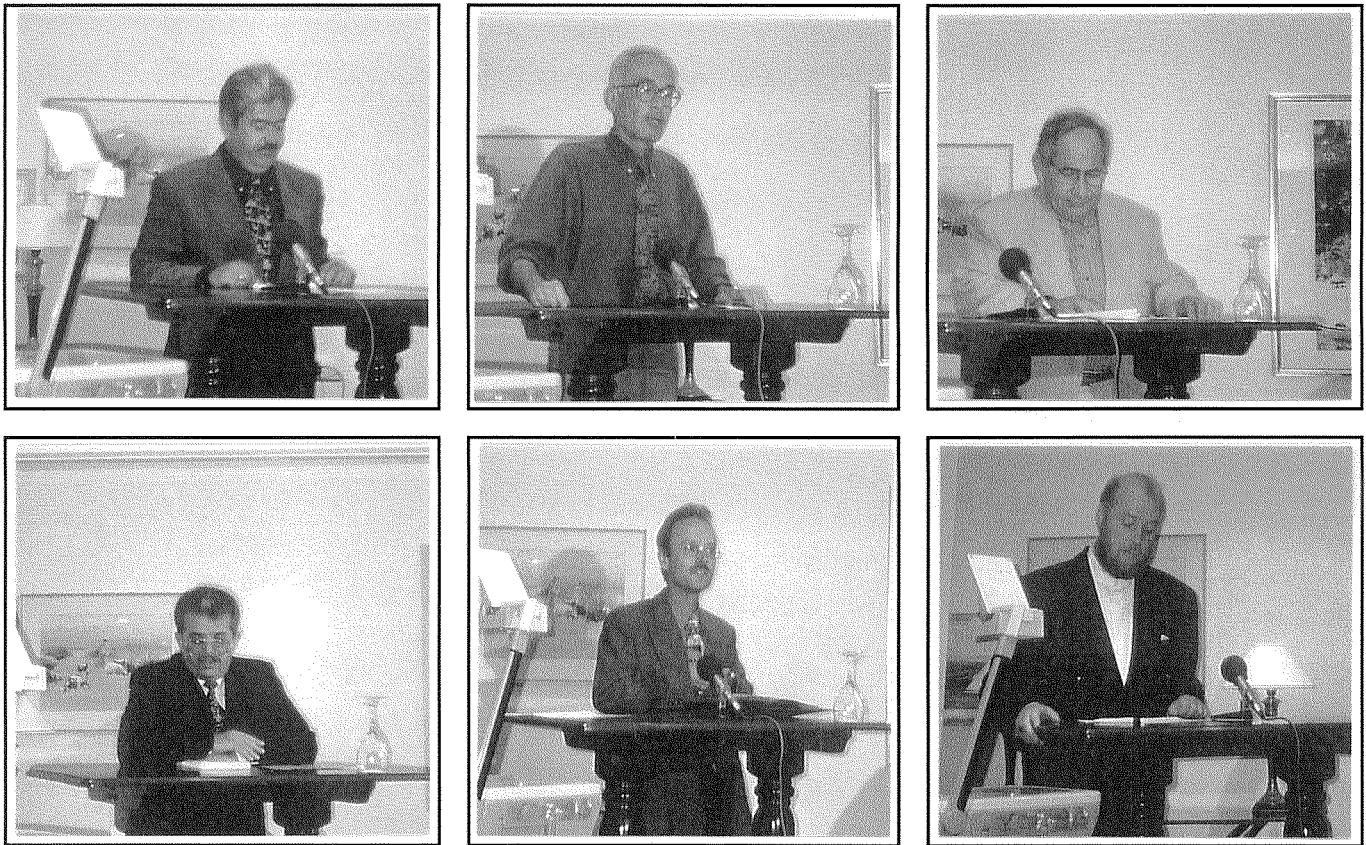


Fig. 2. Five speakers wishing success for the symposium in their opening addresses (from right to left -top-: H.R.H. Prince Ra'ad bin Zeid, H.E. Prof. Dr. Ghazi Bisheh, and H.E. Prof. Dr. Kamal Mahadin, -bottom- Hans Georg K. Gebel and Dr. Hans-Dieter Bienert); and the chairman of the opening section, Prof. Dr. Zeidan Kafafi (bottom left). *

Symposium's Programme, Abstracts of Contributions, Minutes of the Section and Plenum Discussions

Welcoming Addresses and Opening Lectures
 Chair: Zeidan Kafafi
 21 July 1997 (late afternoon/ evening)

Opening Address by H.R.H. Prince Raad

H.E. Dr. Ghazi Bisheh: Opening Address on Behalf of the Department of Antiquities

H.E. Dr. Kamal Mahadin: Opening Address on Behalf of the Petra Regional Council

Hans-Dieter Bienert, Hans Georg K. Gebel, and Gary O. Rollefson: Proto-Urban Tribal Centers?

Hans Georg K. Gebel: The Settlements - Central to What ?

Little information is available on LPPNB settlement systems. Although nodalised settlement patterns may have started in the LPPNB (the MPPNB is expected to have had more isolated, self-sufficient patterns), there is no clear evidence for structures involving subordinated settlements: settlements being central in the sense of hierarchical settlement patterns (central places). Evidence so far indicates one major growing settlement in a favoured area, to which it is central in terms of land-use activities and possibly transit/ distribution functions for long-distance exchange of goods. They were independent and not functionally tied, although the diffusion of innovative knowledge and goods created a relatively homogeneous cultural, religious and economic basis. Comparisons with the case of pueblo settlements in the American Southwest are suggested. The emergence of competitive structures among the settlements at the end of the LPPNB, expected to have been triggered by both

over-exploitation and specialized surplus production, may have caused organized defensive behavior on the settlement level. This would have been the background for the formation of new social and spatial hierarchies, which were impeded by adaptations to environmental degradation.

The "centrality" topic should be raised for the LPPNB, but it will remain speculative for the time being. As a working hypothesis, regional centers in local low-structured exploitation/acquisition systems have to be assumed, being on their way to commercial, defensive and even religious centers in at least the corridor settings. Nodalisation into true central places did not emerge in the LPPNB.

Gary O. Rollefson: Tribal Territories? When is a Tribe a Chieftdom?

Surveys and excavations over the past two decades have shown that a major relocation of populations in the southern Levant occurred between 6,500 - 5,500 bc. The abandonment of many settlements in the Jordan Valley and in Israel appears to have resulted in part in the rapid growth of large population centers in the Jordanian highlands. The distribution of the new "megasites" suggests that some principles of tribal territorial exclusivity may have been in operation in the major wadi systems and their principal tributaries, a circumstance witnessed in tribal societies such as the Hopi and Zuni of pre-contact times in the American Southwest, as Gebel has suggested. Burial practices in the MPPNB and LPPNB indicate that egalitarian principles were not universal, and some degree of social inequality is further supported by other elements of the ritual sphere, particularly in the probable presence of full-time shaman/priests. How this kind of local social organization translated into regional sociopolitical relations remains obscure, but there appears to be growing evidence for increased political complexity during a time of heightened environmental pressures on local populations.

Hans-Dieter Bienert: First Steps Towards Proto-Urban Societies?

The excavations of sites dating to the Pre-Pottery Neolithic B (PPNB) period reveal more and more evidence of a very sophis-

ticated culture. The size of settlements of that period reached up to 14ha (e.g., 'Ain Ghazal, Es-Sifiya, Wadi Shu'eib). Stone buildings with sometimes two floors, large housing complexes and streets as found at 'Ain Ghazal are common features of the time, especially in the late PPNB. Some of the settlements may have had a population of up to 3,000 people, a number which exceeded by far any settlement of previous periods (e.g., PPNA). A rich art repertoire and the variety in burial customs are further outstanding features of the PPNB. It seems quite likely that only a well developed and organized society, sharing responsibilities in many ways, was able to sustain such large settlements. Taking into consideration these aspects, we may detect in the late PPNB the first steps towards a proto-urban society. This paper will discuss this phenomenon.



Fig. 3. H.E. Peter Mende (German ambassador, left) and his wife in discussion with H.R.H. Prince Ra'ad (second left) and H.-D. Bienert (utmost right) during a break in the *Mövenpick*.*

Hans J. Nissen: Proto-Urbanism, an Early Neolithic Feature? (contribution presented by C. Becker)

Increasing archaeological activities in the prehistoric periods of southern Jordan are about to change some of our traditional views. This concerns the size of late aceramic settlements, their architecture and their relations with each other. On the one hand, the PPNB sites of Basta and Wadi Feinan, and lately of 'Ain Jammam and Es-Sifiya, seem to be extraordinarily large, reaching sizes of 10ha and more. The architecture not only displays intricate technological features pointing to a long tradition of stone masonry and building expertise, but also closely built-up areas pointing to a high population density within the settlements. On the other hand, intensive surface surveys in the wider surroundings of Basta reveal the existence of a number of potentially contemporaneous sites which, because of their proximity, could be expected to have had regulated relations with each other.

The population density both within the settlements and within the entire area could have supported an organizational scheme which with rules, institutions and social stratification could be taken to indicate proto-urban structures; however, there is no indication that these structures developed into a more complex status, nor that they even survived into the following periods. While obviously an unusual complexity had been reached by PPNB times, the term "proto-urban" should be avoided and reserved for features actually leading to urbanism.

Section Discussion, "Opening Lectures" (Summarized by Gary O. Rollefson)

The discussion began with a question by Peder Mortensen concerning just how reliable was the settlement pattern information for the Jordan region in the Neolithic period: he warned that reaching conclusions on the basis of weak or even non-existent evidence was dangerous and perhaps counterproductive. G. Rollefson concurred that immense areas of Jordan were poorly investigated, so that overall settlement patterns remained weakly defined at best; but certain areas had received intensive exploration, including the region around 'Ain Ghazal, the Wadi el-Hasa, several wadi systems in northern Jordan, and in particular the territory in the Wadi Musa region. H.G.K. Gebel noted that the surveys by Kirkbride and by himself in the Petra Basin and its immediate environs were quite intensive. He mentioned

specifically that there was simply no evidence at all for a classic Central Place hierarchy of settlements, in the sense that while large LPPNB sites do exist, smaller "satellite" villages are absent.

The possibility of tribal territories and complex sociopolitical organization received less discussion than might have been expected from these controversial topics. Nissen's paper certainly recognized the limits we should place on our imagination, particularly in view of the differential scales of complexity involved in truly urban societies versus what can be detected in the LPPNB. Michael Schultz noted that the tribal political organization of the Hopi and Zuni pueblos of SW United States (used by Rollefson in his presentation) could be amplified by other examples from the New World, such as Cahokia in Pre-Columbian central North America and other social units in Mexico and Central America; while some of these latter examples occurred on a higher level of sociopolitical organization, the absence of walls around such cities as Teotihuacan demonstrate that definitions and implications of "urban" centers are not universally applicable.

Finally, there was general agreement that, as stated by Nissen, the term "proto-urban", with all the implications this term implied, was not the proper nomenclature to describe and deal with the Neolithic "megasite" phenomenon. Rollefson suggested that the term "town" would be more appropriate, since it had its own implications for size and organizational distinctions.

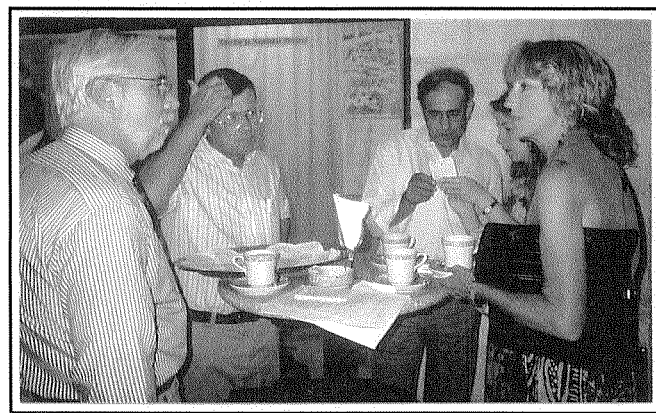


Fig. 4. A coffee break in the *Mövenpick* (from right to left: Leslie Quintero, Michelle Bonogofsky, Hamdan Taha, Gary Rollefson, and Alan Simmons)*

Spatial Organization Chair: Ricardo Eichmann 22 July 1997 (forenoon)

Hamzeh Mahasneh: Spatial and Functional Features of Area B in Es-Sifiya

During the second half of the 7th millennium bc an incipient pastoral economy based on goat herding and cereal cultivation existed in Wadi el-Mujib in southern Jordan. This factor led to the establishment of the large sedentary community at Es-Sifiya covering an area of ca. 120 dunams. Surface indications reveal a great deal of cultural material. Increased agricultural activities and new irrigation installations as well as erosion have recently exposed more of the site.

Three excavation campaigns by the Department of Archaeology of Mu'tah University were conducted in 1994, 1995 and 1996 in order to obtain stratified material culture from areas that had undergone minimal disturbance and damage. The results show strong connections with other Neolithic sites of southern Jordan: Basta, 'Ain Jammam, Ba'ja, Ghwair I and the later levels of Beidha.

The excavation of Area B in 1996, which forms the bulk of this paper, produced tangible evidence that makes Es-Sifiya among the most important PPNB sites encountered so far in southern Jordan, particularly in view of its large size and the well-preserved and well executed architecture. This has striking

similarities to structures at Basta and 'Ain Jammam, including the curious subfloor channel-like system. The chipped lithic industry as well as the ground stone industry fully reflect close affinity with Basta, 'Ain Jammam, Ghwair I and Ba'ja. This leads to the conclusion that southern Jordan witnessed a homogenous culture during the LPPNB (6500B.C.-6000B.C.)

The investigations conducted at Es-Sifiya have clearly indicated the potential of the site for further investigation of LPPNB lifeways in the region of Wadi el-Mujib. More extensive horizontal and vertical exposures in the future should provide much needed information for comparative data regarding the full range of early Neolithic cultural components.

Muhammad Najjar: Chronology and Complex Settlement Organization in the Southern Levantine PPNB : the Case of Ghwair I

Nazeh Fino: Evidence of Settlement Organization at 'Ain Jammam

'Ain Jammam is a medium-sized (6-8ha) settlement in southern Jordan that appears to span the LPPNB, PPNC and Pottery Neolithic periods. Throughout the sequence considerable differences in room sizes show variability in functions, including an LPPNB house with a room used ceremoniously at least at some times. Later occupational phases revealed new constructions as well as remodeling of earlier ones. Although the sample sizes are small, there is a suggestion that rooms decrease in size over time.

Zeidan Kafafi: The Collapse of the Late PPNB Settlement Organization: The Case of 'Ain Ghazal

This paper discusses ideas and arguments stated by many archaeologists concerning the end of the seventh and the beginning of the sixth millennia bc. It also presents the latest archaeological data obtained from strata related to this period from the site of 'Ain Ghazal. It is argued that the suggested hiatus of the late 7th and the beginning of the 6th millennia settlement in the southern Levant needs more discussion. Also, it must be stated that regional differences of Neolithic developments played a major role in continuity or discontinuity of the settlements. It may be suggested that the site of 'Ain Ghazal never attested a collapse during the above mentioned periods, and a tightly organized society consisting of several clans stayed at the site during the two thousand years of occupation.

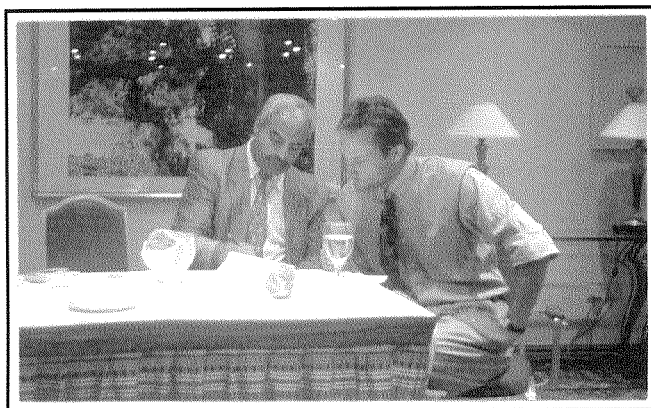


Fig. 5. The privacy of two colleagues: Ian Kuijt (right) and Hamzeh Mahasneh (left) discuss mutual issues.*

Section Discussion, "Spatial Organization" (Summarized by Gary O. Rollefson)

Most of the questions and discussion dealt with time-stratigraphic distinctions in site sequences, reasons for abandonment or decline, and terminology in association with social structures and physical buildings.

It was posited that the habitational sequence of several of the sites were parallel but not always identical to the succession witnessed at 'Ain Ghazal and Wadi Shu'eib. Hamzeh Mahasneh (Mu'tah University) claimed that Sifiya, for example, appeared to have spanned part of the MPPNB through the LPPNB and PPNC but with no evidence of a later Pottery Neolithic occupa-

tion; 'Ain Jammam included LPPNB, PPNC and probable PN layers as far as Nazeh Fino (*Dept. of Antiquities*) could determine; and the probes by Alan Simmons (*University of Nevada-Las Vegas*) and Mohammed en-Najjar (*Ministry of Tourism, Jordan*) at the smaller site of Ghwair showed neither PPNC nor PN, although there was some suggestion of either PPNA or EPPNB presence. H.G.K. Gebel (*Freie Universität Berlin*) raised the question of the stratigraphic distinctions at Sifiya and Jammam, which appeared to have relied principally on architectural and elevational differences. Gary Rollefson (*'Ain Ghazal Research Institute*) commented that although there were important architectural developments that set PPNC and PN apart from earlier LPPNB patterns, the most reliable means of defining cultural stratigraphy was based on a multi-factor appraisal, especially taking into consideration changes in lithic technology and typology.

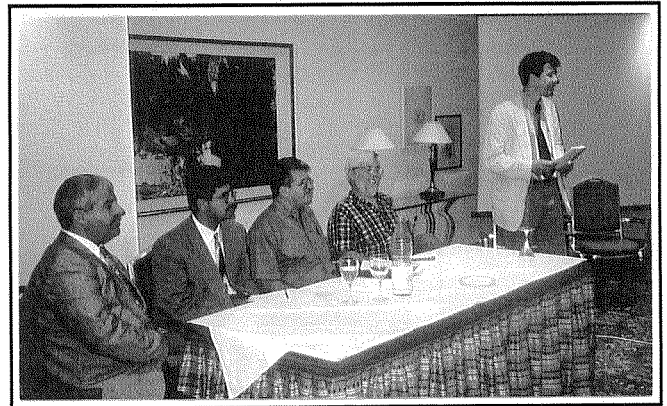


Fig. 6. Good spirit among the discussants of the "Spatial Organization"-section (from left to right: Ricardo Eichmann as chairman, Alan Simmons, Zeidan Kafafi, Nazeh Fino, and Hamzeh Mahasneh)*

Aspects of the rise of the megasite/town phenomenon and the differences in site longevity in Jordan itself were also addressed. In addition to the possible causal factors such as environmental degradation and climatic deterioration, Issa Sarie' (*Palestine Department of Antiquities*) and Salah-ed-Din el-Abassi (*Arizona State University*) called for closer scrutiny to the possible contributing effects of social health problems. A suggestion that an earthquake may have caused damage at Sifiya brought the question by Phil Wilke (*University of California-Riverside*) of how the earthquake could be dated to the Neolithic period.

Delivery of papers for this session and discussions immediately afterward occasionally invoked terms relating to ostensible ritual buildings as well as interpretations of social organization. Much of this exchange dealt with the material recently exposed at 'Ain Ghazal, although the implications apply throughout the region. Peder Mortensen (Cultural Attaché, *Royal Danish Embassy, Damascus*) and Ricardo Eichmann (*German Archaeological Institute, Berlin*) questioned the use of "loaded" terms such as "tribes vs. clans" and "shrines vs. temples" in their interpretation of Neolithic social settings. Ian Kuijt (Harvard University) proposed that less antagonistic terms be used, and Leslie Quintero (*University of California-Riverside*) suggested that "public buildings" might help to resolve the ritual terminology. Rollefson responded by saying that the "baggage" that some terms carried, such as temple, shrine, clan, unfairly restricted the use of terms that should be free of automatic implications. Ethnographic evidence from modern subsistence agriculture societies permits the anthropological interpretation of social units such as lineages, clans and tribes. He added that although there may have been public buildings in the Neolithic, some of them had definite ritual functions, and that if the buildings could be distinguished by specific architectural features, the problems invoked by special usage in such disciplines as art history – or the emotional attachments reflected by specific religions – could be avoided. In his view, the differences in the floor plans and internal "furniture" seen at 'Ain Ghazal, Beidha, and Jericho were sufficient to indicate not only "special" use, but also a ritual function, and that the scales of size and internal variation were enough to distinguish a hierarchy of "shrine" versus "temple".

Social Organization
Chair: Gary O. Rollefson
22 July 1997 (afternoon)

Gary O. Rollefson: Proto-Urbanism: A New Look at Social Organization in Neolithic Jordan

The recognition of Neolithic settlements that sprawl over more than ten hectares first resulted from Moore's excavations at Abu Hureyra, but the realization that such megasites were typical of the Late PPNB in Jordan did not arise until the concerted campaigns of excavations in the 1980s and 1990s. Considerations of the kind of social organization that would have characterized such large population centers suggest that some degree of complexity was probably necessary to deal with both internal and external conflicts of interest. The term "Proto-Urban", first used by Kenyon for a later developmental stage at Jericho, is useful to reflect differences in the LPPNB social order from the kind of social organization in much smaller settlements prior to the mid-7th millennium. These variations are shown in the size and arrangement of architectural units, in ritual behavior, and in socioeconomic specialization.

Hans-Dieter Bienert: Where Are the Dead ?

Archaeological excavations in Jordan during the last decade have revealed a number of large settlements dating to the Pre-Pottery Neolithic B (PPNB). Until the beginning of field work at 'Ain Ghazal, not much was known about this period in Jordan. Only Beidha, situated some 5km north of Petra, offered some insights into this culture and its burial practices. In recent years additional sites of the PPNB have been discovered in Jordan, most of which are currently under excavation. The sites reach up to 14 hectares in size and must have had a population often exceeding 1,000 people. However, it is astonishing that up to now no cemetery related to any of the settlements has been discovered. It may have been a common practice to bury the dead under the floor of houses or courtyards; nevertheless, only a minority of the population was buried in that manner. The majority of the people must have been buried somewhere else. The paper discusses the archaeological evidence and pursues the question: Where are the dead of the PPNB settlements?

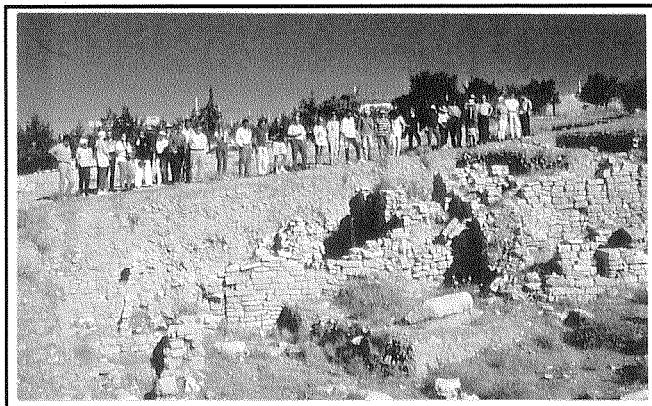


Fig. 7. Symposium participants lining up on the major baulk in Basta Area B.**

Bo Dahl Hermansen: Patterns of Symbolism in the Neolithic, Seen from Basta

Two deposits have been recovered from the bottom of masonry-robbing pits at Basta. They both include art objects, some of which feature a complex and imaginative visual imagery. It is suggested that the objects were deposited as reciprocal offerings, or "gifts to the gods", and that the complex images may have represented the particular gods or spirits to whom the gifts were addressed. These images seem to combine male and female attributes into an androgynous symbolism that is also known from other Neolithic sites in the Near East.

The two robbing pits post-date the latest substantial PPNB architecture at Basta. Thus, it may be that Post-PPNB settlers in the region interpreted the ruined PPNB village as a liminal sphere where beings on "the other side" could be engaged in a

reciprocal relation in which humans acquired resources from the ruined village believed to be provided by otherworldly beings, the latter receiving offerings in return.

A completely different symbolism seems to be associated with another kind of object found at Basta. These are grooved pebbles that were earlier identified as shaft straighteners or the like. More recently H.G.K. Gebel and I have suggested that they might have been associated with hunting rites. However, in the light of recent work by other scholars it is suggested here that they may represent a symbolism associated with the female reproductive cycle.

Ian Kuijt: When the Walls Came Down: Social Organization, Ideology and the "Collapse" of the Aceramic Neolithic

Archaeological research over the last 15 years has provided important new insights into the transition from the Aceramic to Ceramic Neolithic in south-central Levant. On the basis of recent field studies it is becoming increasingly clear that at the end of the Aceramic Neolithic period, Neolithic peoples abandoned large farming communities situated along the Jordanian highlands and established smaller communities in new locations, possibly employing different economic systems. This paper reviews existing models for this paradoxical "collapse" of LPPNB lifeways and explores how the abandonment of these large settlements appears to have been preceded or accompanied by important changes in social organization and mortuary and ritual practices. This study integrates previous models of environmental and resource degradation into a multiscale approach that explores the processes of and reasons behind the abandonment of LPPNB lifeways at around 8,000 bp; it also considers the social and economic mechanisms by which Aceramic Neolithic period communities were maintained and expanded. Investigation of these issues suggests that increased levels of social differentiation in LPPNB communities, the number and density of people living in these large communities, and the cessation of LPPNB mortuary and ritual practices that maintained community identity may have been important elements in the abandonment of Aceramic Neolithic lifeways.

Leslie Quintero: Stratification of Labor and Economic Organization of Lithic Industries in Neolithic Central Settlements¹

While the "Neolithization" process has been well-studied for many decades, particularly in terms of the development of sedentism and agriculture, cultural evolution, and ecological adaptations, Neolithic technological and economic adaptations and the role that the production of stone tools played in the structure of these ancient economies is not well known. This research considers the lithic economy that supported the initial, agrarian-based towns of the PPNB as they flourished (some developing into regional population centers) and stabilized with food-producing economies. Of particular interest here is the process of flaked-stone tool production as a dynamic technological activity, one that was an integral part of the socio-economic structure of these communities. As such, manufacturing of ordinary subsistence tools and the organization of stone-tool production sets forth a foundation of information that can be used to understand the character of the economy of these first townspeople. Naviform core technology was the basis of the lithic economy of the earlier portion of the Neolithic. Analyses of this industry, as seen in data from 'Ain Ghazal, give strong evidence for the presence of stone workers who were craft specialists and for the development of an early form of craft specialization at central settlements like 'Ain Ghazal during the PPNB.

¹ The table distributed with this abstract was already published in another context, cf. *Neo-Lithics* 1/97:12.

Section Discussion, "Social Organization" (Summarized from Minutes of Philip J. Wilke)

The discussion opened with a question by Hamdan Taha whether it was a characteristic of the Epipaleolithic and Neolithic periods that non-habitational cemeteries existed; he noted that isolated, formal cemeteries probably came into existence only later in the Chalcolithic period to express a special "ownership" or other aspect of relationship to land. Bienert

replied that formal cemeteries are only one of a number of possible options. Rollefson added that no Neolithic formal cemetery had ever been found in the Levant. This factor, in Kuijt's opinion, might simply be a sampling problem; he cited the case of the "Skull Building" at Çayönü, and that similar concentrations of human remains might eventually be found in other sites in the Levant.

Someone asked about the continuity of habitation and social organization from the PPN to the PN: was there a break or did local populations maintain a presence, albeit in a modified social setting? Kuijt claimed that the PN populations in the southern Levant were derivatives of local populations and not immigrants from outside the area. Rollefson remarked that, in view of population decreases at 'Ain Ghazal, some people left the immediate vicinity, but that some certainly stayed on well into the PN period. Referring to Kuijt's views on ritual as being a mechanism that held social groups together, the environmental degradation around the PPN settlements made such integrative factors too costly, resulting in a fission of societies so that parts of the group left to establish new, smaller settlements, probably not very far from the original settlements.

Mortensen, mentioning his long experience in lithics analysis throughout the regions of the Near East, remarked on the important implications of Quintero's paper. Gebel commented that such craft (lithics) specialization was reflected at Basta in view of the rare but huge accumulations of naviform debitage (and cores). For Gebel, this implied that only 4-5 workshops existed in the excavated areas, probably associated with only a few households. At contemporary Ba'ja the situation was less clear: naviform products were very rare there; although there were bidirectional blades, true naviform cores and their typical preparation elements were absent. Instead, cores were often unidirectional or non-naviform bidirectional. At Ba'ja, there was no indication of lithics craft specialization, no lithics workshops were encountered yet.

Quintero stressed that the identification of primary reduction areas was based on the consistent presence of *all* kinds of debitage. There also existed tool production workshops, where the range of debitage types is limited and non-standardized. All households could produce their own *ad hoc* tools (flake tools from flake cores, some blade tools from unidirectional blade cores), but specialized craft production was restricted to people who could control naviform blade production for specialized tool needs.

Kuijt wondered about the nature of the continuity of naviform technology from the MPPNB to the LPPNB. Quintero replied that regularization became less intense in the LPPNB period, and by the PPNC the use of naviform technique simply died out altogether.

Concerning the ritual aspects raised by Hermansen, the use of masks was brought up by one person. Hermansen suggested that masks, such as the ones found at Basta and at Nahal Hemar, could have been used in rituals involving dances, and that the holes on the sides of the masks may have been for fastening the masks to the head.

**Excursions to 'Ain Jammam, Basta, Ba'ja, and Beidha
23 July 1997**

**Human Ecology
Chair: Cornelia Becker
24 July 1997**

**Margit Berner and Michael Schultz: The Physical
Anthropology of the Late PPNB Population of
Basta**

Skeletal remains from the late PPNB site of Basta, Area A, were described and analysed. The bones were found in different types of burials (single burial, multiple burial, bone deposits, skull deposits). Isolated bones were also found scattered over the area. The minimum number of individuals was determined. More than the half of the skeletons came from subadults, whereby 15

% were fetal or neonates. Overall, the age structure is comparable to that of 'Ain Ghazal and Jericho. There was an apparent lack of adult male skeletons in Basta. Morphologically, the population appears to be similar to other Levantine Neolithic populations although some of the metric parameters indicate a more pronounced degree of sexual dimorphism. High percentages of agenesis of the second upper incisors (25%) hint at the possibility of the skeletons being derived from a closely related group of individuals.

Michael Schultz, Margit Berner, and Tyede H. Schmidt-Schultz: Preliminary Results on Morbidity and Mortality in the Late PPNB Population from Basta (Jordan)

The nature, cause, spread and frequency of inflammatory and deficiency diseases, as well as physical strain in the Late PPNB population from Basta were studied to enlarge our knowledge of the morbidity and the mortality of early Neolithic populations. Furthermore, an attempt was made to reconstruct the life conditions of this population, including nutrition, housing and working conditions, geographic and climatic features, and sanitary and hygienic factors. Up to now, not all investigations have been finished (e.g. microscopic research); therefore, the presented results are only preliminary. For this study, 39 more or less well preserved skeletons were examined by macroscopic, radiological, endoscopic, normal and scanning-electron microscopic techniques. The results provide insights into early Neolithic life.



Fig. 8. The symposium on the way to Basta with the excursion bus provided by Mu'tah University.**

There is no evidence of intra vitam skull deformation (n = 27). In 2 of 29 individuals, cut marks could be observed in the skull. This could be interpreted as ritual or special mortuary practices. There is strong evidence of skull trauma. Of 29 individuals, five show healed fractures of the skull vault. Osteoarthritis is present, but relatively mild. The intensity of osteoarthritic changes increases with age. There are no significant gender differences. So-called stress markers, such as Cribra orbitalia (n = 5/22), transverse linear enamel hypoplasia (n = 19/24), Harris lines (n = 7/7) and periosteal reactions (n = 11/24) demonstrate that life was relatively hard.

There is only little evidence of malnutrition. Possible anemia was found in 9 out of 30 cases, scurvy in 2 out of 24 cases. Alterations due to inflammations are relatively frequent, but, as a rule, lower than in Bronze Age populations: meningitis (n = 14/30), mastoiditis (n = 2/22), sinusitis frontalis (n = 8/13) and sinusitis maxillaris (n = 14/20). The frequency of diseases of the teeth and jaws demonstrate poor hygiene: stomatitis (n = 5/20), dental calculus (n = 19/24), parodontopathy (18/24), dental abscesses (n = 6/23) and intra vital tooth loss (n = 7/23). Dental caries were extraordinarily rare (n = 2/22).

Alan H. Simmons: Regionalism During the Neolithic: The Case of Diversity in Jordan.

Since the 1980s there has been a tremendous acceleration of research on Neolithic settlements in Jordan. Many of these sites are huge, such as 'Ain Ghazal, Wadi Shu'eib, and Basta, while others, such as Ghwair I, are more modest in extent. Coupled with research west of the Jordan River, it seems apparent that an

incredible amount of settlement diversity characterized the Neolithic, especially in the aceramic phases. Most recent studies have been site-specific. Enough data have now been accumulated, however, to examine this diversity from a regional perspective. One topic of interest at this symposium is examining the possibility of near-urban status for some of the Jordanian sites. While it may be premature to use terms such as "urban" when dealing with the Neolithic, such an approach nonetheless offers potential in explaining Neolithic phenomena. In particular, it can be instructive to examine probable relationships between large "core" centers and more peripheral settlements. This paper represents one such initial foray.

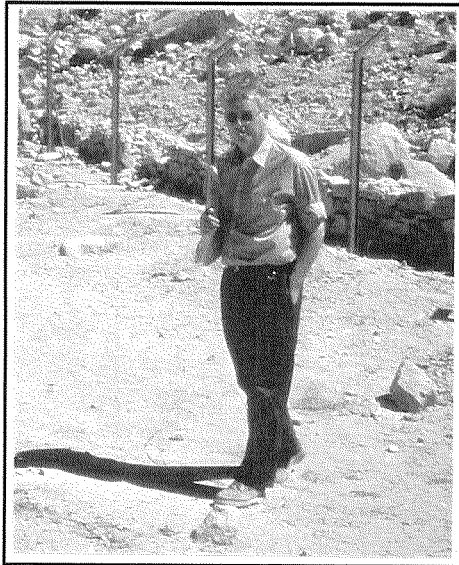


Fig. 9. Peder Mortsensen, aside with his cigar in 'Ain Jammam.**

Cornelia Becker: Hunting in PPNB Pastoralism and Its Ecological Implications

The settlement of Late PPNB Basta, located in the Greater Petra region, is one of the largest sites excavated in Neolithic Jordan. Four seasons of excavation yielded more than 100,000 animal bones from different excavation areas. The present study focuses on those finds unearthed in area A (n = 38,433). Although the large amount of material opens many analytical pathways for archaeozoological research, final conclusions are impeded by a variety of factors. These are the still controversial distinction between goat and sheep elements and their particular allocation to domestic or wild animals, the identification of gazelle species, the quantification of equid remains, sample bias through anthropogenic factors, and the patchy faunal record in this period of the Levantine prehistory. Nevertheless, some conclusions may be drawn. Herding of domestic goats and sheep was the main element of economy in Basta, covering the largest part of the meat requirement. In addition to pastoral activities, hunting played a crucial role in everyday life. Presumably all year round, the inhabitants of Basta practiced a non-specialized, encounter-orientated hunt and butchered most of the game within the boundaries of their settlement. Among the wild ungulates, gazelles, wild goat, aurochs and equids dominated, whereas wild sheep, wild boar and cervids supplemented the spectrum. The Basta faunal material testifies to the exploitation of three ecozones: the steppe environment to the east with onagers, goitered gazelles and a few wild sheep; the mountainous and hilly regions to the south and west with wild goat, mountain gazelle and African wild ass, and finally the open forest/steppe and gallery forest areas along the wadis with cervids, wild boar and aurochs. The osteological results indicate that the inhabitants of Basta profited from the location of the site at the interface of different altitudes and vegetational zones, thus establishing a diversified system of food procuring strategies. Any ecological implications of these broadly oriented hunting activities in the sense of an impoverishment of the local wildlife cannot be evidenced from the Basta faunal record at all.

Hans Georg K. Gebel: Core and Corridor Areas of the Spread of Large Complex Settlement Organization in Jordan

From arguments based on progressive population dynamics developing in the limited E/MPPNB Mediterranean ecozones of Palestine, a scenario of rapid but locally affected and transferred adaptation pressure appears to have penetrated across the Jordan Valley into central Jordan. Here the existing MPPNB villages rapidly grew into mega-settlements wherever steppe hinterlands allowed growth by almost unlimited grazing lands as well as hunting grounds with their migration routes of gazelles, onagers, and possibly wild ass. New megasites were founded farther south (or developed from existing MPPNB villages in favoured settings) along the semiarid fringes of the Arabian Plateau, down to the Ras an-Naqb area. From this corridor ecologically favoured "chambers" in (or passages through) the western mountainous zones along the Wadi Araba developed or were influenced by the of socioeconomic regime established in these LPPNB megasites. Along the eastern Wadi Araba, with its supposed ungulate migration, a similar formation process for larger complex villages is expected, for which it served as another major LPPNB corridor of exchange. Production and exchange of prestige goods played a major role in the flourishing of the major sites.

This megasite phenomenon is considered as an episodic event for possibly not more than half a millennium in the far southern area; it may have caused some social features similar to those at the beginning of the much later Near Eastern proto-urban communities. The issue of formal and indirect comparison with pueblo societies in the American Southwest is raised.

However, the large complex core settlements of the LPPNB broke down rapidly when the sensitive surrounding habitats supporting sedentary life were destroyed, and inhabitants were forced to adapt to mobile modes of subsistence. Similar mechanisms must have worked in central and northern Jordan, but here they appear less pronounced since local habitats had better chances to recover ecologically.

The presented model is explained on the basis of the communication networks in south-central Jordan as the different environmental potentials of the regions involved. It uses the concept of polycentric/multifactor trends in the formation of an interregional phenomenon limited to semiarid/arid border zones of the eastern Rift Valley.

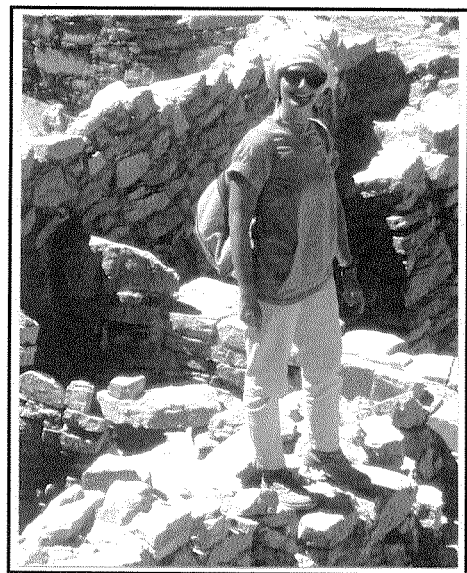


Fig. 10. Happy Cornelia Becker on the walls of 'Ain Jammam.**

Reinder Neef: Palaeoenvironment During the PPNB and Its Exploitation

In semi-arid and arid zones vegetational balances are easily upset. Under the pressure of civilisation, ecological degradation caused by herding, ploughing and wood-cutting has been in progress for thousands of years. As a result of this process the natural vegetation has been greatly reduced or even destroyed. It is hard to imagine what kind of vegetation would grow in areas

like Jordan without the influence of man. Palynological results in these environments bear the problem of selective pollen preservation.

In this study the results on the analysis of botanical macro-remains from five sites of the PPNB are presented: four in southern Jordan and one in central Jordan. The site of Basta is located in the lower foothills east of the southern highlands mountain ridge. The sites of Ba'ja, adh-Dhaman and Sabra lie west of the southern highlands in the Petra sandstone area. Around Basta the present vegetation is dominated by an *Artemisia* steppe. In the dissected sandstone plateau of Petra a dwarf shrub vegetation alternates with remnants of juniper-steppe forest with isolated pistachio and oak trees.

The analysis of the botanical macro-remains from the sites, especially the charcoal analysis, shows an evident difference with contemporary vegetation. More than 95% of the charcoal belonged either to juniper (*Juniperus* sp.) or pistachio (*Pistacia atlantica/khinjuk*). Many fragments of pistachio nuts were found. These results indicate that these Neolithic settlements were founded in a juniper/pistachio forest. At that time these rather open forest-steppes or steppe-forests seem to have been much more widely distributed than today. Most of the charcoal remains recovered at 'Ain Ghazal in central Jordan belonged to deciduous oak. Although the immediate vicinity of 'Ain Ghazal consists of cultivated land, remnants of deciduous oak forests (*Quercus ithaburensis* s.l.) can still be found north of the site.

A direct comparison between the sites regarding all the archaeobotanical evidence shows that not only at present, but also during the PPNB the climatic conditions at 'Ain Ghazal were more favourable to those in the south. In contrast to 'Ain Ghazal, the southern Jordanian sites lie at the margins of dry farming. This is reflected in the difference in the amount of cultivated plants recovered from the sites in these regions. At 'Ain Ghazal we find a rich assortment of cultivated plants in large quantities: einkorn (*Triticum monococcum*), emmer wheat (*T. dicoccum*), two-rowed barley (*Hordeum distichum*), flax (*Linum usitatissimum*) and many leguminous crops: lentil (*Lens culinaris*), pea (*Pisum sativum*), chickpea (*Cicer arietinum*), bitter vetch (*Vicia ervilia*) and broad bean (*Vicia faba*). For the economic basis of the settlements in the south the growing of crops was of less importance; only samples from Basta had remains of crop plants. Definitely cultivated in Basta were einkorn, emmer and a free-threshing wheat (*T. aestivum/durum*); the growing of barley, pea, lentil and bitter vetch is less secure because of the preservation situation.

The impact of a drier climatic phase during the end of the PPNB and the PPNC would have had a much graver effect on the way of life in southern settlements compared to those located in central or northern Jordan. In the ecologically marginal south there were no possibilities to withdraw to adjacent areas with better ecological conditions.

Leslie A. Quintero, Philip J. Wilke, and J. Giles Wainwright: The Emergence of Domestic Cereals in PPN Economies as Seen from Sickle Blade Data and Replicative Studies

The timing and circumstances accompanying the emergence of agrarian economies is one of the major themes of research in the Neolithic. Central to this theme is the study of sickle blades. Unlike most Neolithic stone tool categories, which are recognized and characterized on the basis of many formal attributes, sickle blades have long been recognized largely on the basis of use-wear, particularly the presence of gloss (or "sheen"). High-magnification studies have attempted to relate the character of gloss to the specific tasks sickle blades performed in prehistory, yet these approaches have led to little understanding of either sickle blades as tools or of their role in the evolution of Neolithic agrarian economies. While it is accepted that cereal agriculture developed in the Neolithic, it is ironic that later phases of classic Neolithic towns such as LPPNB Basta and 'Ain Ghazal, when agriculture should have been fully developed, yield fewer glossed blades than earlier phases when agrarian economies were only emerging. An experimental program to address these problems involved the reaping of large plots of wheat, barley, and oats with replicated sickles patterned after Neolithic finds. The studies revealed broad patterns of gloss

formation on sickle blades; clarified relationships between stone type, edge treatments, and plant moisture variables; and developed criteria for objectively characterizing sickle blades, including those of obsidian, on the basis of formal attribute categories and macroscopic, easily observable, use-wear patterns. The study led to the conclusion that domestication of cereal grasses occurred in the late PPNB, a finding in agreement with interpretations based on Neolithic plant remains.

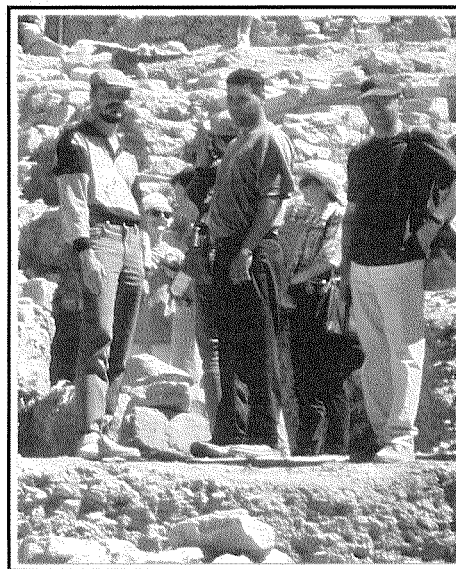


Fig. 11. Hamdan Taha, Issa Sarie' and Bo Dahl Hermansen (from right to left) at the excavations in 'Ain Jammam.**

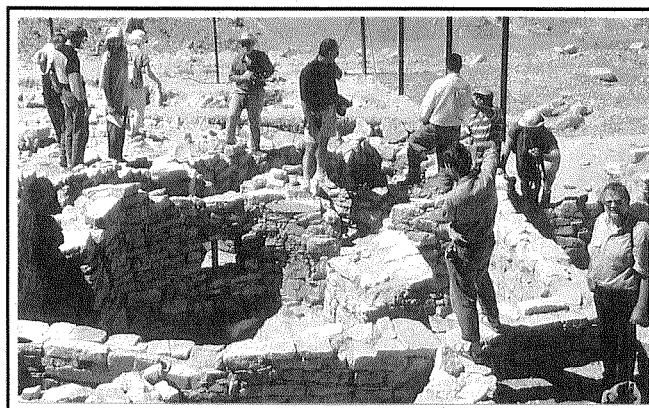


Fig. 12. Participants of the symposium on 'Ain Jammam wall-tops.*

Section Discussion, "Human Ecology" (summarized by Ian Kuijt and Gary O. Rollefson)

Michael Schultz responded to several questions (Issa Sarie', Salah El-Din Al-Abbasi, G. Rollefson) on the correlations of Harris lines, enamel hypoplasia and diseases. Harris lines and enamel hypoplasia may be related some way, but the evidence is not clear and the samples are too small to look for answers. Schultz maintained that anemia is not a causative factor associated with either Harris lines or enamel hypoplasia, since infants and children do not suffer from the disease; instead, there may be other factors involved, including malnutrition, possible genetic relationships, and other aspects. Schultz emphasized that enamel hypoplasia was not evident on any deciduous teeth at Basta, and that Harris lines likely were associated with something other than malnutrition alone, since the population at Basta was generally in good health.

In reply to questions by G. Rollefson, Becker noted that her interpretation of the Basta faunal remains relied in part on Stein's models of animal exploitation in the Early Bronze Age, and these were ultimately based on ethnographic studies. She remarked that the direct relevance to Neolithic data remained unclear, although Stein's models were useful. In her view secondary products from animal husbandry should have appeared relatively early, although no evidence for this has emerged so far.

L. Quintero and P. Wilke responded to questions concerning their replication experiments with sickles. They noted that they had not used the same blades to harvest both wild and domesticated grains, although French researchers were involved in such studies. Phytolith analysis was not part of the California research project. Mortensen wondered if there was any evidence for the hafting of sickle blades in Anatolia. Wilke mentioned that he was not aware of any evidence. Quintero added that among the Khabor assemblages she noted bitumen on the edges of flint sickle blades, but not on obsidian pieces; Wilke commented that in prehistoric contexts obsidian tools were often abraded to facilitate adhesion.

Symposium General Discussion
Chairs: Hans-Dieter Bienert and
Hans Georg K. Gebel
24 July 1997

(Summarized by Ricardo Eichmann,
Hans Georg K. Gebel, and Alan Simmons)

Discussion began when Bienert returned to the question: What does a Central Settlement in the early Neolithic of Jordan really mean, to what is such a settlement central? Gebel referred to the various primary aspects a settlement might serve functionally (social/ habitation center, market place, regional center), but he acknowledged that so far no archaeological evidence reflects the centrality of such early Neolithic megasites in the sense of the Central Place Theories; this would imply a network of supporting smaller hamlets and stations, which are missing in the survey evidence around Basta, Ba'ja, and 'Ain Jammam, in any event. Instead there are environmental units, and by their exploitation a settlement gained a central function for this area and a vast size. But for such a feature, the term "central" might be misleading, and a better one should be found.

Here, Gary Rollefson suggested to use the term "town". What lies in the socio-political spectrum between hamlet/ villages to city? It should be the town, which suggests populations of more than a thousand people. Peder Mortensen joined the criticism on the use of the term "central" ("Central settlements are central because they are important."), thus he suggested they should be called "major" or "important".

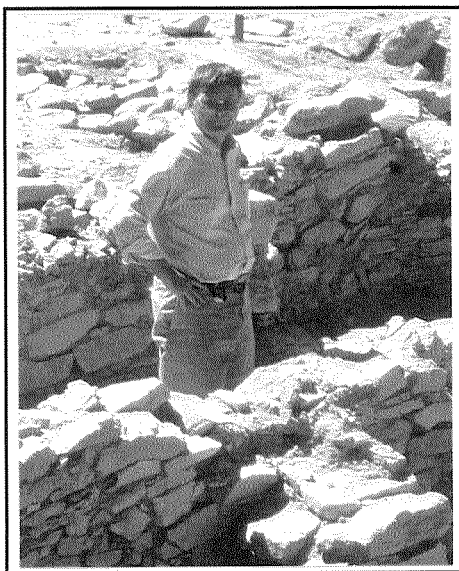


Fig. 13. Gary Rollefson checking the comfort of LPPNB tiny rooms (in 'Ain Jammam).**

Ian Kuijt asked the question "Why did they emerge in these areas, and not, for example, in the Ajloun area?" In reply, Alan Simmons remarked that there were no other places available since the traditionally settled areas either were already taken (Ajloun) or ecologically destroyed. To this Gebel added that expansion into larger permanent agglomerations was only possible in those areas that provided vast grazing and hunting grounds in adjacent semi-arid or arid areas.

Reinder Neef then raised the issue of an alleged massive environmental destruction, and expressed caution against this concept of catastrophic human-induced impacts on nature in the LPPNB: "The destruction was not so grave." Gebel and Rollefson both supported this, at least for the early megasite territories: The large hinterlands were able to absorb destructive processes (e.g. those of monocultures) so that the subsistence of growing sites was not really endangered, and thus did not show up as a massive destruction in the archaeological record. If habitats immediately surrounding settlements were destroyed (which cannot be understood as massive environmental destruction in the LPPNB), the basis of permanent village life at this specific spot – tethered to permanent water supplies as villages and towns were – was eliminated. Such a collapse of settlements did not reflect regional environmental degradation in general.

Kuijt then expressed problems with the concept of core area degradation, and Simmons claimed that in addition to the culturally induced degradation, those of climatic origins should not be neglected. Bienert here suggested -with reference to the geographical distribution of the central settlements- that a small number of pastoral groups might have played a role in the spread of information on subsistence techniques. Moreover, was there evidence of malnutrition to reflect changes? There is a psychological dimension: "If you have a good life, don't you want to maintain it?" At this point the discussion on the central settlement question reached an end, with Gebel uttering resignedly, "too much speculation."

Neef asked the audience whether it could agree to understand the LPPNB as an "accumulation of environmental know-how". Cornelia Becker reacted by asking whether the wild species in the LPPNB records did not rather show a "return to traditional patterns". Gebel was not satisfied with that: it was not a "return", but hunting was simply maintained in the LPPNB as an element of subsistence that was always there.

Somewhat later (in connection with the health discussion) Mortensen referred to Becker's question. He stated that it is speculation that people still wanted to be hunters, even if they were living in villages. Many PPNB people were hunters, but they had a village to return to. These villages were founded after game was reduced, but hunters themselves did not necessarily stay permanently (or even at all) in villages they founded. He has trouble with folks living (healthy!) in tiny rooms like those attested in LPPNB buildings ("unhappy hunters"). For example, in Tepe Guran over 90% of the faunal remains come from wild animals!

After this short exchange the discussion turned to a matter with rather lively discussion: diseases as one of the causes for the LPPNB collapse. In the opinion of Michael Schultz, all these characteristic changes in the LPPNB should result in increased disease, but this is not seen in Basta; instead, this population was rather healthy, although he admitted that we need a better basis for our interpretations (more skeletons). Rollefson underlined also that the Basta sample is very small, and that it should not be used to exclude diseases as a reason for the collapse of large LPPNB settlements. Could tuberculosis -as attested in 'Ain Ghazal- have been brought in by the pastoralists to become a serious problem for the settlers health? Additionally, would epidemics be archaeologically visible? Bienert saw favoured conditions for epidemics in settlements with up to 2000 inhabitants. Schultz was skeptical of cases of tuberculosis at 'Ain Ghazal, noting that while the human immune system changes, how long does it need to develop? It cannot be proved that diseases are responsible for the end of the central settlements. "We must start with hard evidence, and DNA research might help in this question."

Issa Sarie' disagreed with Schultz: infectious diseases could be spread easily, and no immune system works against this, as is shown by present-day examples from Palestine. Very infectious tuberculosis at 'Ain Ghazal is in evidence, it takes a long time to get to bones, and most would die before bones were affected. Gebel here commented that the central settlements could not have existed without most of the inhabitants exposed to outside mobile activities and groups, and thus they must have had a broad contact to disease sources.

Kuijt then introduced a new topic that raised considerable debate as well. He saw no physical evidence for conflicts (e.g., raiding, war) in the archaeological record. Bienert responded that

such conflicts would not necessarily be attested in the excavation (settlement) areas; they might have been going on outside the villages. Kuijt thought in relative terms: There are many reasons for conflicts, including what we know from ethnographic evidence: raiding parties to other villages.

Rollefson pointed to differences he sees in architectural construction of towns in the central area of Jordan versus those in the south. The latter, for him, take on aspects of a "medieval" siege mentality. Simmons asked if settlement patterns could have promoted conflict avoidance. Leslie Quintero objected that we were discussing conflict with no archaeological evidence. Mortensen reminded all that we have no indications of destruction layers in the settlements, a feature well-known from later settlements. Rollefson emphasized that we should be careful to distinguish between raids for immediate economic benefit and conquest or punitive warfare.

Salahedin al-Abassi pointed out that Ba'ja itself is evidence for conflict: its location was chosen for its protective setting. Referring to burial populations and what one might expect from conflict, Bo Dahl Hermansen asked pointedly, "Who can tell me where the young men in Basta are? Where are the warriors?" Issa Sari' claimed in response that young men are healthiest, so one should not expect to find their bodies.

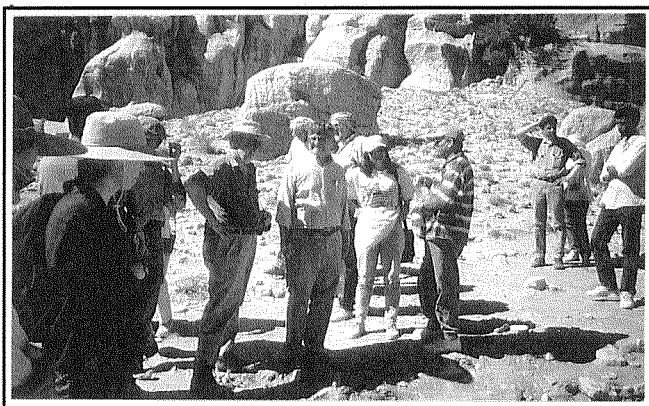


Fig. 14. Symposium participants discuss the fresh excavations at Ba'ja, after a difficult but exciting ascent to the site.*

Hermansen noted that Ba'ja rested in a "protected" setting, but it also would have been difficult to defend: once attacked, it will be a trap for the inhabitants.

Near the end of the "conflict" discussion, Kuijt questioned ideas about conflict for the LPPNB in general: in human conflicts, usually the parties have distinguishing cultural material, but this doesn't seem to be reflected in the homogeneous LPPNB material culture. Rollefson did not see this as a strong argument; non-archaeological features such as tattoos, hairstyle, body painting, etc. may have functioned to differentiate.

Sarie' noted that the percentage of enamel hypoplasia is much higher in the south (80%) vs. 40% in central Jordan. Becker replied that the samples are too small for valid interpretation.

Rollefson expressed his puzzlement with the apparent absence of small sites in the LPPNB, for these were characteristic for the MPPNB, despite the limited surveys. Gebel suggested that "Central settlements were the normal settlements". Simmons pointed to the small village of Beidha, but Rollefson answered, "Yes, but there is no clear LPPNB evidence at Beidha." Gebel interjected that in his view Beidha did indeed extend into the LPPNB. Furthermore, Gebel remarked that the size of a "central settlement" is subject to the extent and qualities of the range of adjacent habitats, and should not be based solely on visibly enormous size.

At the very end of the symposium's general discussion, Gebel felt that conclusions should be drawn on the symposiums results. Gebel and Rollefson had prepared "four statements on minimum agreement", which were kept general and non-controversial in order to seek the acceptance of the audience:

1. There was a development of large population concentrations in the LPPNB.
2. These large settlements were evidentially located as regional centers in favored ecological settings.

3. These large communities entailed major alternations in social structure, territory, and socio-economic behavior.
4. Such centers, falling in the spectrum between villages and cities, should be called towns in order to avoid inappropriate implications of the term "proto-urban" center.

Various participants disagreed that these statements need to be accepted as points of "minimum agreement", especially Point 4. Rather, they should be viewed as "topics of further discussion". Mortensen and Simmons suggested that the symposium inspired much more debate than consensus, but that the lack of consensus, together with its thought-provoking questions, was perhaps the most interesting aspect of the meeting and that there was no need to draw conclusions now.

The Post-Excavation-Fate: Brainstorming Session on Restoration Measures

Chair: Suleiman Farajat on behalf of H.E. Ghazi Bisheh

Invited for statements: Hans-Dieter Bienert, Ricardo Eichmann, May Shaer for Helge Fischer, Hans Georg K. Gebel, Alison McQuitty, Gary O. Rollefson, and Hamdan Taha

24 July 1997

(Minutes by Aysar Akrawi)

Suleiman Farajat on behalf of H.E. Dr. Ghazi Bisheh: The Current Situation of Conservation Measures, with Special Reference to Neolithic Sites

After this opening lecture, the following topics were covered by short 10' - statements of invited contributors:

Alison McQuitty and Hans-Dieter Bienert: The Beidha Site Presentation Project

Gary O. Rollefson: Preservation Needs as Seen from 'Ain Ghazal

Taha Hamdan: Protection, Conservation, and Preservation in the Work of the Palestinian Department of Antiquities

Hans Georg K. Gebel: Insolation and Erosion at Exposed Neolithic Basta: Possible Conservation Measures, Costs, and Responsibilities

Ricardo Eichmann: General Aspects of Responsibilities and Ethics in Conservation

May Shaer (CARCIP, Amman, Jordan /Petra Stone Preservation Project): The Jordanian-German Project for the Establishment of a Conservation and Restoration Center in Petra

(Abstract May Shaer) The main goal of the Petra Stone Preservation project is to help the Jordanian government in the establishment of a Conservation and Restoration Center in Petra (CARCIP). In addition to working to secure the necessary structure and infrastructure of the intended center, it was found imperative to prepare the necessary methodology for the conservation of the Petra facades. This begins with the documentation and study of the monument in terms of its architecture and condition. Along with this study, the scientific analysis is undertaken, where the original as well as the new materials to be used are tested for factors such as mineralogical components, strength, salts, and porosity. Finally, a plan of execution is established and actual treatment of the monument can begin.

Minutes by Aysar Akrawi:

S. Farajat welcomed the attendants on behalf of Dr. Bisheh, the Director-General of Antiquities (DOA). He gave a brief description of the quality of building in Neolithic times and the

fragility of the structures. He thereafter put forward the following points to the audience:

- What are the standards to be followed in restoration, and whether these standards can be applied to all sites falling in the same period.
- What materials should be used and what factors need to be taken into consideration?
- What percentage of the site should be restored?
- At what time should restoration become a part of excavation process?
- Who will perform restoration?

Mr. Farajat stated that DOA lacks both skilled labour and funds to perform restoration works, keeping in mind the number of sites requiring restoration. He quoted the Jordanian Law of Antiquities of 1988 and stated that the law does not discourage local or visiting missions from undertaking restoration works.

Mr. Farajat referred to K. Mahadine's (Director-General, PRC) speech on the four priorities presented hereunder:

- The need to give priority to surveying and documentation of all aspects related to the Neolithic period and the fencing of these sites.
- The priority that needs to be awarded to sites exposed to the threat of destruction.
- Priority for work related to consolidation and restoration that should proceed in parallel to excavation activities in view of their fragility.
- Priority for a strategy for already excavated sites, giving Beidha, Basta and 'Ain Ghazal as examples.

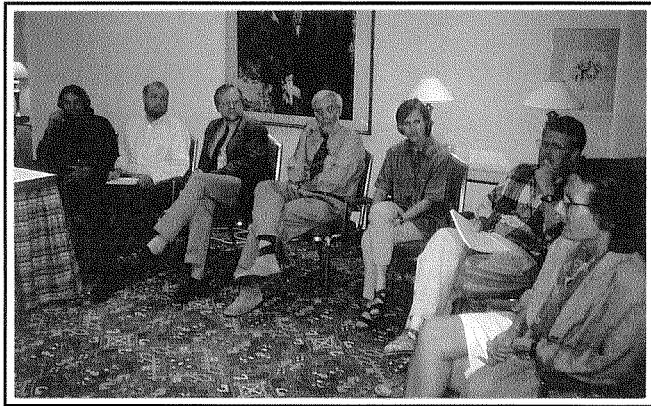


Fig. 15. Slightly exhausted discussants of the "Human Ecology"- section (from right to left: C. Becker, Phil Wilke, Margit Berner, A. Simmons, Michael Schultz, H.G.K. Gebel, and Reinder Neef)*

Mr. Farajat expressed the readiness of PRC to cooperate with all archaeological teams on this subject. He ended his presentation with the announcement that the Government had agreed to return 25% of the revenue from entrance fees to the PRC to cover among other activities the cost of restoration.

Alison McQuitty addressed the subject of site presentation of "exciting" Neolithic sites to the world. She stated the protection of sites can be achieved by both technical means (i.e. conservation) or by involving the potential damagers of the sites in the interpretation of "their site" so that they engage in protecting rather than destroying their site. She probed issues concerning the potential agents of damage, the type of audiences visiting these sites, the stake holders, the vocabulary to be used to persuade potential funders, and the sustainability of solutions chosen. She stressed two needs in heritage management, and used Beidha as a case example:

- i. protection
- ii interpretation

Under the topic of protection she emphasized:

- Cleaning of sites and the recording of before/after situations
- Consolidation of walls
- Excavation where necessary, such as removing baulks
- Fencing
- Management/control of visitors (e.g., laying trails for self-guided tours)

Under interpretation she highlighted:

- Arabic/English signage, including input from the local community
- Laying of trails
- Replicas of Neolithic houses, some of which would also act as site-centers

Gary Rollefson used 'Ain Ghazal as his example and stressed that site protection should be in the fore-front. He emphasized DOA's central and major role in the preservation of sites. Recognizing the limitations of the DOA, he added that DOA need not tackle it alone; restoration, preservation and consolidation should become the shared responsibility of archaeologists, DOA, Ministry of Tourism (MoTA), municipalities, international donors and NGOs.

He expressed grievances regarding the lack of any conservation activities for the preservation of the 'Ain Ghazal site after 10 years of excavations and his hesitation, as a result, to continue with excavations in future. He said that the plan in place since 1988 to restore the site never came to fruition, likewise the plan for a museum. Dr. Rollefson went on to add that there was not adequate sincerity to the subject of preservation nor a concept of prehistory by people. He recommended that a moderate entrance fee be introduced and for the income generated to be used to preserve the site and its maintenance for future research. Local contributions should be encouraged to ensure site sustainability. The local level of interest should be raised through education, promotional literature by the MoTA, and means proposed by A. McQuitty.

Hamdan Taha stated that in the Territories the *Palestine Department of Antiquities* was established in Jericho in 1994. After many decades of occupation, the Department inherited abandoned, robbed and totally unprotected sites. Such being the case, they concentrated on protection, conservation and preservation. Priority was given to salvage excavations and the preservation of already excavated sites. He gave the example of Tel El-Sultan, a 10,000 BC site, described it and recounted its status and the Department's efforts towards its preservation in view of drastic deterioration resulting from uncontrolled growth in building and increased tourism. Dr. Taha went on to make several recommendations on the necessity of preservation as an integral part of archaeological research, and he added that a portion of the budget be allocated to conservation. He suggested that this portion could be 25% of the total cost of the excavation. He stressed that the responsibility of the excavator did not end prior to preservation. He concluded with the recommendation that a portion of these funds be used for training local archaeologists in conservation procedures.

Hans Georg K. Gebel used the site of Basta as his example; he highlighted the touristic importance and potential of this site in view of its location on the Aqaba-Petra road. On the other hand the site has remained without conservation for the past 6 years and more. It is suffering from ongoing destruction due to an increase of private construction that is. The site is located in a contemporary village and is afflicted by human destruction with essentially no protection of the excavated area.

As measures against natural destruction in 1988 DOA delegated two specialists from Jerash to undertake consolidation. Three areas were restored using cement which resulted in criticism. Restoration was halted and it remains so to date. Gebel described in detail the impacts of insolation and frost fracturing, and the various types of erosional and vegetational destruction of the walls. It was suggested that the site should be sheltered by using firm tent-like constructions similar to those used in the Gulf, e.g. at camel racing places. The alternative Gebel suggested could be backfilling part and sheltering the central part, alongside undertaking restoration measures. He stressed the need to remain pragmatic, keeping costs in mind. This includes applying a combination of various measures while concentrating on examples only. As for wall consolidation some comments followed on mortar mixtures; the problems of clueing fractured stones with polyester resin were explained, etc.

In cooperation with the Departments, expeditions should conduct consolidation during the field work themselves, and a specialist should become an imparative member for each larger mission. He also commented on the 25% allocation for site preservation made by H. Taha and said that he would rather not specify percentages at this point but would prefer to emphasize the importance and responsibility of preservation through

restoration, or backfill and other means. He concluded by stating that "we excavators have a moral responsibility and cannot create an increasing burden for small countries like Jordan". But that this needs true approaches from all the sides involved.



Fig. 16. The discussion panel at the brainstorming session on restoration measures (from right to left: H.-D. Bienert, H.G.K. Gebel, Alison McQuitty, May Shaer, H. Taha, Suleiman Farajat, G. Rollefson, and R. Eichmann)*

Mr. Farajat interjected that a decision had been taken by the Department of Antiquities to purchase the excavated site in Basta, which is privately owned land.

May Shaer gave a presentation on the *Petra Stone Conservation Project*. She described the goals to be (a) to implement and institutionalize internationally accepted conservation and restoration practices, primarily for the preservation of the monuments in Petra, and (b) to create an appropriate Jordanian institution (CARCIP) to independently plan, supervise and undertake the conservation and restoration works in Petra.

The aims, she recounted, are to achieve (a) a sufficient number of qualified staff, (b) to provide the technical equipment required (c) to conduct research/test programs, (d) to provide up-to-standard work, (e) to establish a documentation, archive, and information system, (f) to achieve an adequate structural set-up, (g) to provide an adequate infrastructure for CARCIP, (h) to ensure effective management and public awareness of conservation efforts for Petra, and (i) to conserve and restore the monuments with the main principle of minimum intervention, and restoration only to avoid serious deterioration. She went on to describe the composition of the mortar being used, the extent of its reversibility, its strength in relation to the stone itself, and gave assurances that all the needed tests were conducted.

Dr. Ricardo Eichmann briefly touched on the subject of the responsibility for restoration and conservation; the shared responsibilities between excavators and the local authorities; the cooperation required between foreign excavation teams and DOA to restore the damage of the "cultural soil" and the post-operational activities that need to be undertaken. Regarding the issue of the budget percentage to be allotted for restoration activities, R. Eichmann stated that it needs to be discussed and mutually agreed to between the parties concerned.

Discussion

The main points of the discussion concentrated on the following:

- The attention being given to the main touristic sites with very low priority given to prehistoric sites.
- Site selection for preservation for tourism purposes is being restricted to a chosen number of persons with virtually no consultations with the specialists in the field. It was expressed that the specialists, being the advocates of these sites, should be engaged in the dialogue. It was also found unclear who is the authority that needs to be addressed in this respect.
- The parameters used for the selection of sites for preservation need to be made known.
- The wealth of results of research is not being communicated to the public for whom this collective effort is being done.

- The requirement for raising the level of interest in Neolithic sites and including them among the national priorities.
- Prioritizing Neolithic sites to be preserved, keeping in mind site accessibility and the number of tourists likely to visit. It was also suggested by some that a single site from each of the northern, central, and southern parts of Jordan be selected for conservation.
- A pragmatic, cost-effective approach to site preservation was emphasized. Adopting the proposal put forward by Alison McQuitty was seen as imperative by some; alternatively, it was suggested it would be better if sites were back-filled.
- The DOA as a source of fund raising for site conservation activities was suggested. S. Farajat said that 25% of the fees charged for entry to Petra has now been allocated to the PRC for this and other activities. The multi-disciplinary management skills required for fund raising activities was pointed out, and constitutes a project in itself.
- The simplicity of restoring Neolithic sites renders it possible to complete the activity in a single season.
- Colonial practices in archaeology versus modern practices in this field were elaborated upon. Emphasis was put on the need for foreign groups to adapt to national needs if the opportunity to continue research in the area is to be continued. Inclusion of conservation in the excavation project was seen as a definite positive step in this direction.
- Finally it was put forward that there should be a national policy regarding the sites that are to be excavated; archaeologist should not be left to make their own decisions on site selection.

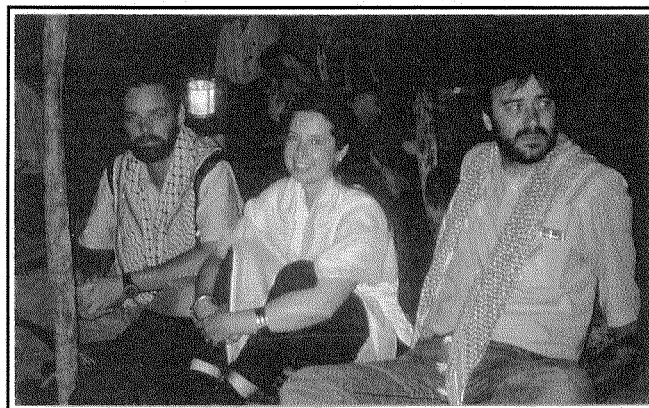


Fig. 17. Roland Lamprichs and his wife Katrin Bastert with Bernd Müller-Neuhof (from right to left) at the *Zarb* near Beidha.*

Traditional Bedu Meal (*Zarb*) and Dances in the Siq al-Barid, near Beidha 24 July 1997 (night)

Excursion to as-Sifiya /Wadi Mujib), Wadi Shu'eib and 'Ain Ghazal (near Amman) 25 July 1997

Farewell Reception at the German Protestant Institute for Archaeology, Amman 25 July 1997 (evening)

To this issue of *Neo-Lithics* are attached:

- 1) Format Needs for *SENEPSE & Neo-Lithics*
- 2) The *Blue List of Scholars Involved in the Prehistoric (Pre-Bronze-Age) Research of Jordan (Dec. 1997)*

The *ex oriente* BLUE LIST OF

SCHOLARS INVOLVED IN THE PRE-BRONZE-AGE PREHISTORIC RESEARCH OF JORDAN (Dec. 1997)

The list might be incomplete or contains errors. Additions / corrections can be reported to *ex oriente*, Bitterstr. 8-12, D- 14195 Berlin, Fax 0049 30 8314252, Email: hggebel@zedat.fu-berlin.de

| Name | Field of Specialization | Institution | Address | Country/ City | Tel. | Fax | E-mail |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|--------------------------------------|------------------------------------------|-----------------------------------------------------------------------------|
| Abdel-Halim al-Shiyab | 'Ain Rahub, Dauqara-Formation; Archaeozoology | Institute of Archaeology and Anthropology | Yarmouk University | Irbid / Jordan | 00962 2 271100-15 x (off.) | 00962 2 274725 | yu@amra.nic.gov.jo, abujaber@yucc.yu.edu.jo (refer to: 'attn. of...') |
| Nizar Abu Jabet | Geology | Dept. of Earth and Environmental Sciences, Yarmouk University | | Jordan- 21163 Irbid | | | abujaber@yucc.yu.edu.jo |
| ACOR | | ACOR | P.O. Box 2470 | Jordan- Amman 11181 | 00962 6 846-117 | 00962 6 844-181 | ACOR@go.com.jo |
| Russell B. Adams | Wadi Fidan-Project | Research School for Archaeology and Arch. Science, University of Sheffield | 2 Mappin St. | GB- Sheffield S1 4DT | 114 282 5109 | 114 255 4626 | R.B.ADAMS@SHEFFIELD.AC.UK |
| Maria Thais Crepaldi Affonso | Archaeometry | | Rua Jambo, 341 | Brazilia- CEP 06700-000, Cotia, SP | 0055-11-492.5009 | 0055-11-492.5221 | |
| Nabil Ali | Textile Tools | c/o Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | | |
| Douglas Baird | Tall ash- Shuna-N- Project; Burqu-, Azrak-, Wadi Jilat- Areas; Flint Industries | University of Liverpool, School of Archaeology, Classics and Oriental Studies (SACOS) | 14, Abercromby Sq., POB 147 | GB- Liverpool L69 3BX | 0044 151 7942467 | 0044 151 7942442 | dbaird@liverpool.ac.uk |
| Ted Banning | Wadi Ziqlab- Project | Department of Anthropology University of Toronto | 100 St. George St. | Canada- Toronto, Ontario M5S 1A1 | 416 9783028 416 9783217 | | banning@chass.utoronto.ca |
| Sana' Bataineh | Geology | Dept. of Earth and Environmental Sciences, Yarmouk University | | Jordan- 21163 Irbid | | | abujaber@yucc.yu.edu.jo |
| Cornelia Becker | Basta, Archaeozoology | Institut für Ur- und Frühgeschichte | Altensteinstr. 15 | D- 14195 Berlin | 0049 30 8384014 | 0049 30 8385873 | free@zedat.fu-berlin.de |
| | | University of Tulsa, Henry Kendall College- Anthropology | 600 South College Ave. | USA- Tulsa, Oklahoma 74104-3189 | 001 918 631 2000 | 001 918 631 2540 | bentonjw@centum.UtTulsa.edu |
| Margit Berner | Basta, Physical Anthropology | Naturhistorisches Museum, Anthropolog. Abt. | Burgring 7 | A- 1014 Wien | 52177/241 | | |
| Reinhard Bernbeck | Abu Sneshle-Project | Dept. of Classical and Near Eastern Archaeology, Bryn Mawr College | 101 Merion Ave. | USA- Bryn Mawr PA 19010-2899 | 001 607 777 2744 (priv. 772 0416) | 001 607 777 2477 | |
| Jacques Besançon | Azraq- Zarka, (Geomorphology) | | Les Tilleuls, Noizay | F- 37210 Vouvray | 0033 47 52 11 73 | | |
| Alison V.G. Betts | Basalt Desert- Project, Burqu- Project; Flint Industries | School of Archaeology, Classics and Ancient History (A14), University of Sydney | New South Wales | Australia- Sydney N.S.W. 2006 | 0061 2 692 2759/ 692 2090 | 0061 2 692 4889 | ALISON.BETTS@ANTIQUITY.SU.EDU.AU |
| BIAAH | | British Institute at Amman for Archaeology and History | POB 519 | Jordan- Amman-Jubaiha 11941 | 00962 6 84317 | 00962 6 837197 | |
| Hans Dieter Bienert | Ba'ja-Project; Neolithic Burial Customs | German Protestant Institute | POB 183 Justinus-Kerner-Str. 37 | Jordan- Amman 11118 D-71540 Murrhardt | 00962 6 842924 0049 7192 7566 | 0962 6 836924 | gpia@go.com.jo |
| Ghazi Bisheh | | Director-General of the Department of Antiquities | POB 88 | Jordan- Amman | Amman 644336 | 644320 | |
| Mark Blackham | Wadi Ziqlab-Project; Neolithic-Chalcolithic | Department of Anthropology | University of Toronto | Canada- Toronto, Ontario M5S 1A1 | 416-961-9387 | 416 961 0366 | blackham@chass.utoronto.ca |
| Stephen Bourke | Jordan Valley Urbanism Project | Dept. of Archaeology (A14), Sydney University | MacCullum Building A 17 | Australia- Sydney NSW 2006 | 61.2 5521412 | 61.2 3514889 | stephen.bourke@antiquity.su.edu.au |
| Brian Byrd | Beidha-Project, Epipalaeolithic-Neolithic | c/o ASM Affiliates, Inc. | 543 Encinitas Blvd., Suite 114 1735 Edgefield Lane | USA- Encinitas, CA 92024 USA- Encinitas, CA 92024 | 001 619 632-1094 | 001 619 632-0913 | bbyrd@weber.ucsd.edu |
| Meredith Chresson | Chalcolithic | Dept. of Anthropology | University of California | | 001 510 763 5008 | | |
| Geoffrey A. Clark | Wadi al-Hasa- Project | Dept. of Anthropology Arizona State University | | USA- Tempe AZ 85287-2402 | 001 965-6213, 7596 | 001 602 9657671 | atgac@asuvm.inre.asu.edu |
| Nancy Coinman | Wadi al-Hasa-Project | Department of Anthropology Tulsa University | | USA- Tulsa, Oklahoma 74104 | | | s1.nrc@isumvs.iastate.edu |
| Susan M. Colledge | Palaeobotany | Dept. of Archaeology and Prehistory University of Sheffield | | GB- Sheffield S10 2TN | 0742 768555 ext. 6070 | 0742 797158 | |
| Lorraine Copeland | Azraq- Zarka- Project, Lower and Middle Palaeolithic Industries | Chateau de Marouatte | Grand Brassac | F-24350 Tocan St. Apre | 0033 5 53 54 55 31 | 0033 5 53 074 717 | |
| Eric Coqueugnot | Abu Hamid, Lithic Industry | Maison de l'Orient Méditerranéen, UPR 7537, Equipe No 17 du C.R.A. | 7, rue Haulin | F- 69007 Lyon Cedex 07 | 0033 4 72 71 58 76 or 72 71 58 00 | 0033 4 78 58 12 57 0033 4 72 72 08 65 | Eric.Coqueugnot@mom.fr |
| Joy McCorriston | Wadi Ziqlab, Paleoethnobotany | Department of Anthropology | 215 Ford Hall, 224 Church St SE | USA- Minneapolis, Minnesota 55455 | 612-625-4092 | | mccor015@gold.tc.umn.edu |
| Jean Desse | Abu Hamid, Archaeozoology | Centre de Recherches Archéologique Campus Sophia Antipolis | | F- 06 Valbonne | | | |
| Geneviève Dollfus | Tall Abu Hamid- Project, Neolithic-Chalcolithic | Paléorient (C.N.R.S.) | 27, rue Damesme | F- 75013 Paris | | 0033 1 45 88 47 43 | dollfus@isis.mae.u-paris10.fr |
| | | | 17 rue de l'échiquier | F- 75010 Paris | 00 331 47 70 14 49 | 00 33 1 47 70 14 88 | |
| Marci Donaldson | Wadi al- Hasa, Lithic Industries | Department of Anthropology | | USA- Tempe, Arizona 85287 | | 001 602 965 7671 | |
| Angela von den Driesch | 'Ain Ghazal, Archaeozoology | Institut für Paläoanatomie, Domestikationsforschung | Feldmochinger Str. 7 | D- 80992 München | 0049 89 14980137- 8 | 0049 89 149801378 | |
| Phillip Edwards | Wadi Hammeh- Project, Masharfa-Project | School of Archaeology La Trobe University | Bundoora Campus | Australia- Victoria 3083 | 03 94791978 | 03 94791881 | P.Edwards@latrobe.edu.au |
| Ricardo Eichmann | Maqass-Project | Deutsches Archäologisches Institut, Orient- Abteilung | Podbielskiallee 33 | D- 14195 Berlin | 0049 30 83008172 | 0049 30 83008189 | |
| James D. Eighmey | 'Ain Ghazal, Lithic Industry; Wadi al-Hasa, Chalcolithic | Department of Anthropology | Arizona State University POB 872402 | USA- Tempe, Arizona 85287-2402 | | 001 602 965 7671 | agjde@asuvm.inre.asu.edu |
| Aline Emery-Barbier | Palynology | Laboratoire de Palynologie UA 275 C.N.R.S | Musée de l'Homme | F- 75116 Paris | | | |
| John Field | | | 2112 White Oak Dr. | USA- Alexandria VA 22306 | | | |
| John Field | Wadi Ziqlab, geoarchaeology | Department of Geology | Western Washington University | USA- Bellingham, Washington | 001 360 758 7362. | | |
| Nazeh Fino | 'Ain Jammam-Project, Baseet-Project; PPNB | | POB 3508 | Jordan- Zarqa | 09 988395 | | |
| Suzanne Fish | Wadi al- Hasa, Palynology | Arizona State Museum University of Arizona | | USA- Tucson, Arizona 85721 | | | |
| | | Friends of Archaeology | POBox 2440 | Jordan- Amman 11181 | 696682 | 696682 | FOA@NETS.COM.JO |
| Wolfgang Frey | Wadi Feinan, Palaeoethnobotany | Institut für Systematische Botanik und Pflanzengeographie | Altensteinstraße | D- 14195 Berlin (Dahlem) | | | |
| Andrew Garrard | Wadi Jilat- Project, Azraq- Area-Project; Archaeozoology | Institute of Archaeology, Univ. College London | 31-34 Gordon Sq. | GB- London WC1H 0PY | 0044 171 3877050x4764 | 0044 171 3872572 | a.garrard@ucl.ac.uk |
| Hans Georg K. Gebel | 'Ain Rahub- Project, Petra- Area-Project, Basta Project, Ba'ja Project; PPNB; Neolithic Flint Industries, Palaeoenvironments | Free University of Berlin, Seminar für Vorderasiatische Altertumskunde | Bitterstr. 8-12 | D- 14195 Berlin | 0049 30 838 6747 | 0049 30 831 4252 | hggebel@zedat.fu-berlin.de |
| | | | Altmarktstr. 26 | D-12169 Berlin | 0049 30 795 9937 | 0049 30 795 99 37 | |
| Herrmann Genz | Wadi Feinan, Chalcolithic | Institut für Biblische Archäologie | Liebermeisterstr. 14 | D- 72076 Tübingen | 0049 7071 29-5028 | 0049 7071 29-2878 | herrmann.genz@student.uni-tuebingen.de |
| Chaiona Gibson | Tall ash-Shuna-N | | | | | | |
| Jesús Gil Fuensanta | Chalcolithic | | C/ Santa Teresa 36 | SP- 03560 Campello (Alicante) | | | |

THE BLUE LIST OF SCHOLARS INVOLVED IN THE PREHISTORIC (PRE-BRONZE-AGE) RESEARCH OF JORDAN (Dec. 1997)

The list might be incomplete or contains errors. Additions / corrections can be reported to *ex oriente*, Bitterstr. 8-12, D- 14195 Berlin, Fax 0049 30 8314252, Email: hggebel@zedat.fu-berlin.de

| Name | Field of Specialization | Institution | Address | Country/ City | Tel. | Fax | E-mail |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|--------------------------------------|-------------------------------------------|------------------------------------------------------------------------------|
| Abdel-Halim al-Shiyab | 'Ain Rahub, Dauqara-Formation; Archaeozoology | Institute of Archaeology and Anthropology | Yarmouk University | Irbid / Jordan | 00962 2 271100-15 x (off.) | 00962 2 274725 | yu@amra.nic.gov.jo, abujaber@yucc.yu.edu.jo (refer to: "attn. of ...") |
| Nizar Abu Jabet | Geology | Dept. of Earth and Environmental Sciences, Yarmouk University | | Jordan- 21163 Irbid | | | abujaber@yucc.yu.edu.jo |
| ACOR | | ACOR | P.O. Box 2470 | Jordan- Amman 11181 | 00962 6 846-117 | 00962 6 844-181 | ACOR@go.com.jo |
| Russell B. Adams | Wadi Fidan-Project | Research School for Archaeology and Arch. Science, University of Sheffield | 2 Mappin St. | GB- Sheffield S1 4DT | 114 282 5109 | 114 255 4626 | R.B.ADAMS@SHEFFIELD.AC.UK |
| Maria Thais Crepaldi Afonso | Archaeometry | | Rua Jambo, 341 | Brazilia- CEP 06700-000, Cotia, SP | 0055-11-492.5009 | 0055-11-492.5221 | |
| Nabil Ali | Textile Tools | c/o Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | | |
| Douglas Baird | Tall ash- Shuna-N- Project; Burqu-, Azrak-, Wadi Jilat- Areas; Flint Industries | University of Liverpool, School of Archaeology, Classics and Oriental Studies (SACOS) | 14, Abercromby Sq., POB 147 | GB- Liverpool L69 3BX | 0044 151 7942467 | 0044 151 7942442 | dbaird@liverpool.ac.uk |
| Ted Banning | Wadi Ziqlab- Project | Department of Anthropology University of Toronto | 100 St. George St. | Canada- Toronto, Ontario M5S 1A1 | 416 9783028 416 9783217 | | banning@chass.utoronto.ca |
| Sana' Bataineh | Geology | Dept. of Earth and Environmental Sciences, Yarmouk University | | Jordan- 21163 Irbid | | | abujaber@yucc.yu.edu.jo |
| Cornelia Becker | Basta, Archaeozoology | Institut für Ur- und Frühgeschichte University of Tulsa, Henry Kendall College- Anthropology | Altensteinstr. 15 600 South College Ave. | D- 14195 Berlin USA- Tulsa, Oklahoma 74104-3189 | 0049 30 8384014 001 918 631 2000 | 0049 30 8385873 001 918 631 2540 | free@zedat.fu-berlin.de bentonjw@centum.Utuls.a.edu |
| Margit Berner | Basta, Physical Anthropology | Naturhistorisches Museum, Anthropolog. Abt. | Burgring 7 | A- 1014 Wien | 52177/241 | | |
| Reinhard Bernbeck | Abu Sneseleh-Project | Dept. of Classical and Near Eastern Archaeology, Bryn Mawr College | 101 Merion Ave. | USA- Bryn Mawr PA 19010-2899 | 001 607 777 2744 (priv. 772 0416) | 001 607 777 2477 | |
| Jacques Besançon | Azraq- Zarka, (Geomorphology) | | Les Tilleuls, Noizay | F- 37210 Vouvray | 0033 47 52 11 73 | | |
| Alison V.G. Betts | Basalt Desert- Project, Burqu- Project; Flint Industries | School of Archaeology, Classics and Ancient History (A14), University of Sydney | New South Wales | Australia- Sydney N.S.W. 2006 | 0061 2 692 2759/ 692 2090 | 0061 2 692 4889 | ALISON.BETTS@ANTIQUITY.SU.EDU.AU |
| BIAAH | | British Institute at Amman for Archaeology and History | POB 519 | Jordan- Amman-Jubaiha 11941 | 00962 6 84317 | 00962 6 837197 | |
| Hans Dieter Bienert | Ba'ja-Project; Neolithic Burial Customs | German Protestant Institute | POB 183 Justinius-Kerner-Str. 37 | Jordan- Amman 11118 D-71540 Murrhardt | 00962 6 842924 0049 7192 7566 | 0962 6 836924 | gpia@go.com.jo |
| Ghazi Bishah | | Director-General of the Department of Antiquities | POB 88 | Jordan- Amman | Amman 644336 | 644320 | |
| Mark Blackham | Wadi Ziqlab-Project; Neolithic-Chalcolithic | Department of Anthropology | University of Toronto | Canada- Toronto, Ontario M5S 1A1 | 416-961-9387 | 416 961 0366 | blackham@chass.utoronto.ca |
| Stephen Bourke | Jordan Valley Urbanism Project | Dept. of Archaeology (A14), Sydney University | MacCullum Building A 17 | Australia- Sydney NSW 2006 | 61.2 5521412 | 61.2 3514889 | stephen.bourke@antiquity.su.edu.au |
| Brian Byrd | Beidha-Project, Epipalaeolithic-Neolithic | c/o ASM Affiliates, Inc. | 543 Encinitas Blvd., Suite 114 1735 Edgefield Lane | USA- Encinitas, CA 92024 USA- Encinitas, CA 92024 | 001 619 632-1094 | 001 619 632-0913 | bbyrd@weber.ucsd.edu |
| Meredith Chresson | Chalcolithic | Dept. of Anthropology | University of California | | 001 510 763 5008 | | |
| Geoffrey A. Clark | Wadi al-Hasa- Project | Dept. of Anthropology Arizona State University | | USA- Tempe AZ 85287-2402 | 001 965-6213, 7596 | 001 602 9657671 | atgac@asuvm.inre.asu.edu |
| Nancy Coinman | Wadi al-Hasa-Project | Department of Anthropology Tulsa University | | USA- Tulsa, Oklahoma 74104 | | | s1.nrc@isumvs.iastate.edu |
| Susan M. Colledge | Palaeobotany | Dept. of Archaeology and Prehistory University of Sheffield | | GB- Sheffield S10 2TN | 0742 768555 ext. 6070 | 0742 797158 | |
| Lorraine Copeland | Azraq- Zarka- Project, Lower and Middle Palaeolithic Industries | Chateau de Marouatte | Grand Brassac | F-24350 Tocan St. Apre | 0033 5 53 54 55 31 | 0033 5 53 074 717 | |
| Eric Coqueugnot | Abu Hamid, Lithic Industry | Maison de l'Orient Méditerranéen, UPR 7537, Equipe No 17 du C.R.A. | 7, rue Haulin | F- 69007 Lyon Cedex 07 | 0033 4 72 71 58 76 or 72 71 58 00 | 0033 4 78 58 12 57 | Eric.Coqueugnot@mom.fr |
| Joy McCarriston | Wadi Ziqlab, Paleoethnobotany | Department of Anthropology | 215 Ford Hall, 224 Church St SE | USA- Minneapolis, Minnesota 55455 | 612-625-4092 | | mccor015@gold.tu.umn.edu |
| Jean Desse | Abu Hamid, Archaeozoology | Centre de Recherches Archéologique Campus Sophia Antipolis | | F- 06 Valbonne | | | |
| Geneviève Dollfus | Tall Abu Hamid- Project, Neolithic-Chalcolithic | Paléorient (C.N.R.S.) | 27, rue Damesme 17 rue de l'échiquier | F- 75013 Paris F- 75010 Paris | | 0033 1 45 88 47 43 00 33 1 47 70 14 88 | dollfus@isis.mae.u-paris10.fr |
| Marci Donaldson | Wadi al- Hasa, Lithic Industries | Department of Anthropology | Arizona State University | USA- Tempe, Arizona 85287 | | 001 602 965 7671 | |
| Angela von den Driesch | 'Ain Ghazal, Archaeozoology | Institut für Paläoanatomie, Domestikationsforschung | Feldmochinger Str. 7 | D- 80992 München | 0049 89 14980137-8 | 0049 89 149801378 | |
| Phillip Edwards | Wadi Hammeh- Project, Masharifa-Project | School of Archaeology La Trobe University | Bundoora Campus | Australia- Victoria 3083 | 03 94791978 | 03 94791881 | P.Edwards@latrobe.edu.au |
| Ricardo Eichmann | Maqass-Project | Deutsches Archäologisches Institut, Orient- Abteilung | Podbielskiallee 33 | D- 14195 Berlin | 0049 30 83008172 | 0049 30 83008189 | |
| James D. Eighmey | 'Ain Ghazal, Lithic Industry; Wadi al-Hasa, Chalcolithic | Department of Anthropology | Arizona State University POB 872402 | USA- Tempe, Arizona 85287-2402 | | 001 602 965 7671 | agjde@asuvm.inre.asu.edu |
| Aline Emery-Barbier | Palynology | Laboratoire de Palynologie UA 275 C.N.R.S | Musée de l'Homme | F- 75116 Paris | | | |
| John Field | | | 2112 White Oak Dr. | USA- Alexandria VA 22306 | | | |
| John Field | Wadi Ziqlab, geoarchaeology | Department of Geology | Western Washington University | USA- Bellingham, Washington | 001 360 758 7362. | | |
| Nazeh Fino | 'Ain Jammam-Project, Baseet-Project; PPNB | | POB 3508 | Jordan- Zarqa | 09 988395 | | |
| Suzanne Fish | Wadi al- Hasa, Palynology | Arizona State Museum University of Arizona | | USA- Tucson, Arizona 85721 | | | |
| Wolfgang Frey | Wadi Feinan, Palaeoethnobotany | Friends of Archaeology Institut für Systematische Botanik und Pflanzengeographie | POBox 2440 Altensteinstraße | Jordan- Amman 11181 D- 14195 Berlin (Dahlem) | 696682 | 696682 | FOA@NETS.COM.JO |
| Andrew Garrard | Wadi Jilat- Project, Azraq- Area-Project; Archaeozoology | Institute of Archaeology, Univ. College London | 31-34 Gordon Sq. | GB- London WC1H 0PY | 0044 171 3877050x4764 | 0044 171 3872572 | a.garrard@ucl.ac.uk |
| Hans Georg K. Gebel | 'Ain Rahub- Project, Petra- Area-Project, Basta Project, Ba'ja Project; PPNB; Neolithic Flint Industries, Palaeoenvironments | Free University of Berlin, Seminar für Vorderasiatische Altertumskunde | Bitterstr. 8-12 | D- 14195 Berlin | 0049 30 838 6747 | 0049 30 831 4252 | hggebel@zedat.fu-berlin.de |
| Herrmann Genz | Wadi Feinan, Chalcolithic | Institut für Biblische Archäologie | Altmarktstr. 26 Liebermeisterstr. 14 | D-12169 Berlin D- 72076 Tübingen | 0049 30 795 9937 | 0049 30 795 99 37 0049 7071 29-5028 | 0049 7071 29-2878 herrmann.genz@student.uni-tuebingen.de |
| Chaiona Gibson | Tall ash-Shuna-N | | | | | | |
| Jesús Gil Fuensanta | Chalcolithic | | C/ Santa Teresa 36 | SP- 03560 Campello (Alicante) | | | |

| | | | | | | | | |
|----------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------|-------------------------------------|-------------------|------------------|-----------------------------------------------|
| Hans Joachim Pachur | Basta / Petra-Area, Geomorphology | Geomorphologisches Laboratorium | Altensteinstr. 19 | D- 14195 Berlin- Dahlem | 030 8384888 | | | |
| home | | | | | 030 8178312 | | | |
| Gaetano Palumbo | Dauqara- Project | Missione archeologica italo-giordana, Dipartimento di Scienze StoricheArcheologiche e Antropologiche dell'Antichità Università degli Studi di Roma "LaSapienza" Sez. Vicino Oriente | Via Palestro 63 | Italy- 00185- Roma | | | | G.Palumbo@getty.edu |
| Chris Papalas | Wadi al-Hasa, Chalcolithic | Department of Anthropology | Arizona State University POB 872402 | USA- Tempe, Arizona 85287 | | 001 602 965 7671 | | |
| Fabio Parenti | Dauqara-Project | Missione archeologica italo-giordana, Dipartimento di Scienze StoricheArcheologiche e Antropologiche dell'Antichità Università degli Studi di Roma "LaSapienza" Sez. Vicino Oriente | Via Palestro 63 | Italy- 00185- Roma | | | | |
| Charlott Hoffmann Pedersen | Petra-Area, Sunkh Flint Industry | Carsten-Niebuhr-Institute of Ancient Near Eastern Studies | Snorresgade 17-19 | DK- 2300 Copenhagen-S | | | | |
| Ernst Pernicka | Archaeometry | Max-Planck-Institut für Kernphysik | Postfach 103980 | D- 69029 Heidelberg | 0049 6221 516494 | 0049 6221 516324 | | |
| Jane Peterson | Wadi al-Hasa, Bioarchaeology | Dept. of Social and Cultural Sciences | Marquette University | USA- Milwaukee, WI 53233 | 001 414 5435340 | 001 414 288 3755 | | petersonja@vms.csd.mu.edu |
| Graham Philip | Chalcolithic | Dept. of Archaeology, University of Durham | 45, Saddler St. | GB- Durham DJ1 3NU | | | | |
| Nabil Qadi | Basta/other sites, Ground Stone Industries | Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | 00962 2 271100 x 3741 | 00962 2 274725 | | yu@amra.nic.gov.jo (refer to: "attn. of ...") |
| Leslie Quintero | 'Ain Ghazal, Flint Industry, Archaeozoology | Dept. of Anthropology, University of California | | USA- Riverside, CA 92521-0418 | 001 909 7875524 | 001 909 7875409 | | QUINTERO@CITRUS.UCR.EDU |
| Dan Rahimi | Wadi Ziq'lab, Abu Hamid, pottery | Royal Ontario Museum | 100 , Queens Park Crescent | Canada- Toronto, Ontario | 416-586-8010 | | | danr@rom.on.ca |
| David S. Reese | Various sites; Marine Molluscs, Archaeozoology | Field Museum of Natural History, Dept. of Anthropology | Roosevelt Rd. / Lake Shore Drive 868, South Park Terrace | USA- Chicago, Ill. 60605 | USA- Chicago, Ill. 60605 | 312 427-2153 | | |
| home | | | | | | | | |
| Thilo Rehren | Archaeometallurgy | Deutsches Bergbau- Museum, Institut für Archäometallurgie | Herner Str. 45 | D- 44787 Bochum | 0049 234 9684031 or 9684043 | 0049 234 9684040 | | rehren@dmt-lb.cubis.de |
| Jacques Rewerski | Abu Hamid, Geomorphology | | Les Ayraults | F-4990 Moze sur Louet | | | | |
| Jane E. Richardson | Wadi Fidan, Faunal Remains | Archaeology Research School | 2 Mappin St. | GB- Sheffield S14DT | 0011442825109 | 0011442825109 | | J.E.Richardson@sheffield.ac.uk |
| Kevin Rielly | Archaeozoology | | 26a Richbourne Terrace | GB- London SW8 IAU | 071 735-7223 | | | |
| William J. Rink | Wadi al- Hasa, Geology | Department of Geology, McMaster University | | Canada- Hamilton, Ontario L8S 4M1 | | | | |
| Gary O. Rollefson | 'Ain Soda- Project, 'Ain Ghazal- Project | 'Ain Ghazal Research Institute | Pragelatostr. 20 | D- 64372 Ober-Hamstadt (Wernbach) | 0049 6154 53642 | 0049 6154 53642 | | gorlkr@t-online.de |
| Kathy Roler | Palaeolithic, Trace Wear | Dept. of Anthropology, Eastern New Mexico University | Station 3 | USA- Portales, NM 88130 | | | | ROLERK@ZIAMVS.ENMU.EDU |
| Wilfried Rosendahl | Quaternary Palaeontology, Speleology | Paläontologisches Institut, Universität Bonn | Nussallee 8 | D- 53115 Bonn | 0049 228 732950 | 0049 228 733509 | | pal-inst@uni-bonn.de |
| home | | | | | | | | |
| Paul Sanlaville | Azrak- Zarka, Geomorphology | Maison de L'Orient, University of Lyon | 1 rue Raulin | D- 53639 Königswinter F- 69007 Lyon | 0049 2223 28728 | 78 72 02 53 | 78 58 12 57 | |
| ErnestoSantucci | Dauqara- Project | Missione archeologica italo-giordana, Dipartimento di Scienze StoricheArcheologiche e Antropologiche dell'Antichità Università degli Studi di Roma "LaSapienza" Sez. Vicino Oriente | Via Palestro 63 | Italy- 00185- Roma | | | | |
| Issa Sarie' | 'Ain Ghazal, Physical Anthropology | Palestinian Dept. of Antiquities | POB 870 | Palestine- Ramalah via Israel | Telex 00972 29956969 | | | sayej@birzeit.edu |
| James A. Sauer | ACOR | Harvard Semitic Museum | 6 Divinity Ave. | USA- Cambridge, MA. 02138 | 617 496-5132 | 617 496-6904 | | |
| Tyede Schmidt-Schultz | Basta, Physical Anthropology | Centre of Biochemistry, University of Göttingen | | D- 37075 Göttingen | | | | |
| Michael Schmitz | Pleistocene Mammals | Niedersächsisches Landesmuseum Hannover | Am Maschpark 5 | D-30169 Hannover | 0049 511 9807661 | 0049 511 9807-680 | | |
| Wolfgang Schneider | Petra- Area, Sub-fossil Insect Remains | Hessisches Landesmuseum Zoologische Abteilung | Friedensplatz 1 | D- 64283 Darmstadt | 0049 6151 165707 | 0049 6151 165765 | | |
| Douglas Schnurrenberger | 'Ain Soda-Project, Geomorphology | Dept. of Physical Sciences, San Juan College | | USA- Farmington, NM 87401 | | | | |
| Joseph Schuldenrein | Wadi al- Hasa, Geomorphology | Geoarchaeology Research Associates | 5912 Spencer Ave. | USA- Riverdale NY 18471 | 001 718 6813861 | 001 718 6013864 | | |
| Michael Schultz | Basta, Physical Anthropology | Zentrum Anatomie, Universität Göttingen | Kreuzberggring 36 | D- 37075 Göttingen | 0551 397028 or 397000 | | | |
| Henry P. Schwarz | Wadi al- Hasa, Geology | Department of Geology, McMaster University | | Canada- Hamilton, Ontario L8S 4M1 | | | | |
| Daniel Schyle | Petra- Area, Upper Palaeolithic-Epipalaeolithic Flint Industries | | Wilhelmstr. 44 | D- 48149 Münster | 0049 251 298477 | 0049 251 298478 | | |
| Julian Siggers | | Department of Anthropology, University of Toronto | 100 St. George St. | Canada- Toronto, Ontario M5S 1A1 | 416 538 0343, 416 9783217 | 0033 93 01 98 83 | 0033 93 01 98 89 | |
| temporary at | | Université Canadienne en France | Domaine du Mont Leuze | F- 06230 Villefrance-sur-Mer | | | | |
| Alan Simmons | 'Ain Ghazal / Wadi Shu aib- Project, Ghwair-Project | Dept. of Anthropology, University of Nevada- Las Vegas | POB 455012, 4505 Maryland Parkway | USA- Las Vegas, Nevada 89154-5012 | 001 702 8953354 or 001 702 8954357 | 8953590 | | SIMMONSA@NEVADA.EDU |
| Walter Söffner | ASabra, Ba'ja; archaeozoology, | | Lauchstr. 14 | D- 71032 Böblingen | 0049 7031 229911 | | | wso@softpro.de |
| Gerhard Storch | Petra- Area, Basta; Microfauna | Forschungsinstitut Senkenberg | Senkenberganlage 25 | D- 60325 Frankfurt/ M | 069 7542-1 | | | |
| Ingolf Thueson | | Carsten- Niebuhr- Institute | Njalsgade 78 | DK- 2300 Copenhagen | | | | |
| Ingolf Thueson | Madaba-Project | Carsten- Niebuhr- Institute, University of Copenhagen | Snorresgade 17-19 | DK- 2300 Copenhagen-S | | | | |
| Nicholas Toth | Gharandal / Al-Umari, Hyaena Bone Accumulations | Institute of Human Origins | 2453 Ridge Rd. | USA- Berkeley, CA 94709 | | | | |
| M. Kathryn Tubb | 'Ain Ghazal, Restoration Statues | Institute of Archaeology, University of London | 30-33 Gordon Square | GB- London WCH1 OPY | | | | tcf292@ucl.ac.uk |
| Hisaiko Wada | Kharaneh 4/ Abu Thuwwab/ Abu Hamid, Flint Industries | via Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | | | |
| Muhammad Waheeb | 'Ain Jammam-Project | Dept. of Antiquities -CRM- | POB 88 | Jordan- Amman | 644921 (Nymphem), 644336/482 (off.) | | | |
| Alex Wasse | 'Ain Ghazal, Fauna | Institute of Archaeology | 31-34 Gordon Square Northhill Grange, Northhill Biggeswade | GB- London WC1H OPY GB- Beds SG18 9AQ | 07167 627331 | | | tcnamw@ucl.ac.uk |
| Home | | | | | | | | |
| Phil Wilke | 'Ain Soda-Project; 'Ain Ghazal, Flint Industry | Dept. of Anthropology, University of California- Riverside | | USA- Riverside, CA 92521- 0418 | 001 909 787-7317 /-001 909 7875409 | 3117 | | WILKE@UCRAC1.UCR.EDU |
| John Williams | Wadi Hisma, Palaeolithic Industries | Southern Methodist University, Dept. of Anthropology | 3225 Daniel | USA- Dallas, TX 75205 | | | | jowillia@post.cis.smu.edu |
| Katherine Wright | Various Sites, Ground Stone Industries | Institute of Archaeology | 31-34 Gordon Square | GB- London WC1H OPY | 071 387-7050 | 71 383-2572 | | k.wright@ucl.ac.uk |
| Khair Yassin | | Dept. of Archaeology | University of Jordan | Jordan- Amman | | | | |
| Ziad M. al-Sa'ad | Archaeometry | Institute of Archaeology and Anthropology, Yarmouk University | | Jordan- 21163 Irbid | 276277 x 4258 | 274725 | | yu@amra.nic.gov.jo (refer to: "attn. of ...") |
| home | | | | | 241835 | | | |
| Ibrahim Zubi | Sahab, Pottery | Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | | | yu@amra.nic.gov.jo (refer to: "attn. of ...") |

| | | | | | | | |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|-------------------|-------------------------------------------------------------------------------|
| David Gilbertson | Palaeoenvironments | University of Wales Llandinam Bldg. | Aberystwyth Dyfed SY23 3DB | GB- Wales | 0044 970 622631 | 0044 970 622659 | |
| William Gillespie | 'Ain Ghazal, Microfauna | | 3335 Teal Pl. | USA- Sierra Vista, AZ 85635 | 001 520 459 8586 | | |
| J. Thomas Golden | Wadi Hisma, Palaeolithic Industries | University of Tulsa, Henry Kendall College- Anthropology | 600 South College Ave. | USA- Tulsa, Oklahoma 74104-3189 | 001 918 587 7354 | 001 918 631 3459 | GoldenJT@centum.UTul sa.edu |
| Christian Hanns | 'Ain Rahub, Geomorphology | Institut für Geographie | Hölderlinstr. | D-72074 Tübingen | 0049 7071 295316 | | |
| Jukie Hansen | Palaeobotany | Dept. of Anthropology, Boston University | 675, Commonwealth Ave. | USA- Boston / Mass. 02215 | 001 617 353415 | 001 617 3536800 | jmh@crsa.bu.edu (or: cisa?) |
| Andreas Hauptmann | Feinan- Project; Early Copper Trade/ Metallurgy | Deutsches Bergbau- Museum, Institut für Archäometallurgie | Herner Str. 45 | D-44787 Bochum | 0049 234 9684031 or 9684043 | 0049 234 9684040 | Hauptmann@dmf- lb.cubis.de |
| Howard Hecker | Beidha, Fauna | | 12 Bay Rd., New Market | USA- New Hampshire 03857 | | | |
| Donald O. Henry | Hisma- Project | Henry Kendall College of Arts and Sciences (Anthropology), University of Tulsa | 600 South College Ave. Tulsa | USA- Tulsa, Oklahoma 74104-3189 | 918 631 2889 (off.) 918 272 7033 (priv.) | 001 918 631 2540 | ANTH_DOH@CENTUM. UTULSA.EDU |
| Bo Dahl Hermansen | Basta etc. ; Small Find Industries | Carsten-Niebuhr-Institutet | Snorresgade 17-19 Raadmand Steins Alle 16B, 102 | DK- 2300 Copenhagen- S DK- 2000 Copenhagen- F | 0045 353 28924 , 0045 353 28923 0045 38799818 | 0045 353 28926 | bodahl@coco.ihl.ku.dk |
| Main A. Hiyari | Geology | Natural Resources Authority | | Jordan- Amman | | | |
| Charlott Hoffmann Pedersen | Sunakh Flint Industries (Late Epipal.) | | Carl-Johansgade 15 | DK- 2300 Copenhagen- S DK-2100 Copenhagen- O | 0045 35328908 | 0045 35328926 | chp@coco.ihl.ku.dk |
| Fouad Hourani | Chalcolithic, Palaeoenvironments | Laboratoire de Sciences des Bois et d'Hydrologie | INAPG | F- 78850 Thiveral Grignon | | | |
| Christopher Hunt | Azraq; Geomorphology- Palynology | Department of Geographical Sciences Politechnic of Huddersfield | Queensgate | GB- Huddersfield HD1 3DH | 0484 422288 | | |
| Moawiyah Ibrahim | Sahab- Project | Department of Anthropology | Sultan Qaboos University, POB 42 | Sultanate of Oman- al- Khod 123 | 00968 515665 (off.) 00968 514225 (res.) | 00968 513212 | |
| Zeidan Kafafi | 'Ain Ghazal- Project, J. Abu Thuwwab- Project, Abu Hamid- Project, Wadi Shu'aib- Project, Dauqara- Project; Neolithic- EB | Dean of Postgraduate Studies and Research | Yarmouk University | Jordan-Irbid | 00962 2 271100-15 x (off.) | 00962 2 274725 | yu@amra.nic.gov.jo, abujaber@yucc.yu.edu.j o (refer to: 'attn. of ...') |
| Lea Fehhoff Kaliszan | 'Ain Ghazal- Basta , Plaster | Carsten-Niebuhr-Institutet | Snorresgade 17-19 | DK- 2300 Copenhagen- S | 0045 353 28924 | 0045 353 28926 | lea@coco.ihl.ku.dk |
| Ulrich Kamp | Basta, Geomorphology | Geographisches Institut, Technische Universität Berlin | Budapester Str. 44/46 Pallasstr. 10-11 | D- 10787 Berlin D- 10781 Berlin | 0049 30 31425721 0049 30 2157596 | | kampnieg@mailszrz.zr. TU-Berlin.de |
| Wajeeh Karasneh | Basta, Ain Ghazal; Worked Bone Industries | Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | 00962 2 274725 | |
| Susanne Kerner | Abu Snesleh- Project, Chalcolithic | Seminar für Vorderasiatische Altertumskunde | Bitterstr. 8-12 Marienstr. 32 | D- 14195 Berlin D-10117 Berlin | 0049 30 8332106 0049 117 2895231 | 0049 30 8314252 | mbonifac@zedat.fu- berlin.de |
| Kristopher W. Kerry | | Department of Anthropology University of Arizona | Emil W. Haury Building | USA- Tucson, AZ 85721 | | | kwkerry@u.arizona.edu |
| Rami G. Khouri | | Al Khutba, Publishers | POBox 9446 | Amman 11191 Jordan | 00962-6-686753 | 00962-6-686751 | HamiKhouri@nets.com.j o or: KUTBA@NETS.COM.J O |
| Richard Klein | Tor Hamar, Archaeozoology | Dept. of Anthropology, University of Chicago | 1126 East 59th St. | USA- Chicago, Ill 60637 | | | |
| Ilse Köhler- Rollefson | 'Neolithic Archaeozoology, Palaeoenvironments | Liga für Hirtenvölker | Pragelatostr. 20 | D- 64372 Ober-Ram- stadt (Wembach) | 0049 6154 53642 | 0049 6154 53642 | gorikr@t-online.de |
| Friedhelm Krupp | Patra- Area, Sub-fossil Insect Remains | Forschungsinstitut Senkenberg | Senkenberganlage 25 | D- 60325 Frankfurt 1 | 060 754-2255 (off.) 060 587749 (res.) | | |
| Ian Kuijt | Iraq ad-Dubb Project, Flint Industries | Dept. of Anthropology, Harvard University | 11 Divinity ave, 41 May street, Apt. # | USA- Cambridge MA 02138 USA- Cambridge, MA 02138 | | 001 617 496-8041 | kuijt@fas.harvard.edu |
| Harald Kürschner | Wadi Feinan, Palaeoenvironment | Institut für Systematische Botanik und Pflanzengeographie | Alteneinsteirstraße | D- 14195 Berlin | | | |
| Roland Lamprichs | Abu Snesleh-Project | Orientalisches Seminar, KGIII | Werthmannplatz 3 | D- 79085 Freiburg | 0049 761 203-3202 | 0049 761 203-3152 | LAMPRI@RUF.UNI- FREIBURG.DE |
| David Lasby | Chipped Flint Industries Ziqlab | Dept. of Anthropology, University of Toronto | | Canada- Toronto, Ontario M5S 1A1 | 416 978 2315 | | dlasby@chass.utoronto. ca |
| John M. Lindly | | Department of Anthropology | Arizona Sate University 1312 W. Libby St. | USA- Tempe AZ 85287 USA-Phoenix AZ 85023 | | 001 602 965 7671 | |
| Jaimie L. Lovell | Tellalait Ghasul, Neol.-Chalco. Pottery | Dept. of Near Eastern Archaeology School of Archaeology, Classics and Ancient History, A14 | University of Sydney | Australia- 2006 Sydney N.S.W | (61-2) 351 7295 | (61-2) 351 4889 | jaimie.lovell@pgrad.arts. su.edu.au |
| Phillip Macumber | Mashari'a, Wadi Hamme/ Jordan Valley, Geomorphology | Dept. of Water Resources | POB 5575 POB 213, Code 112 | Oman- Ruwi/ Muscat Oman- Ruwi/ Muscat | 703552/3 694009 | 701515 | |
| Hamzeh Mahasneh | es-Sefiya-Project | Department of Anthropology, Mu'tah University | POB 7 | Jordan-Kerak | 00962 6 351284-6, 371472-3 | 00962-6- 654061 | hamzeh@mutah.edu.jo |
| Rolfe Mandel | 'Ain Ghazal, Geomorphology | University of Kansas | 1730 SW High St. | USA- Topeka, Kansas 66604 | 913 2351647 | | |
| Louise Martin | Azraq-Basin- Iraq ed-Dubb, Archaeozoology | Institute of Archaeology | 31-34 Gordon Square | GB- London WC1H OPY | 071 387-7050 | 071 383-2572 | louise.martin@ucl.ac.uk |
| Carole McCartney | various Sites, Neolithic Industries | Dept. of Archaeology University of Edinburgh | 19, George Square | GB- Edinburgh EH8 9JZ | | | |
| Siegfried Mittmann | Chalcolithic | Institut für Biblische Archäologie | Liebermeisterstr. 14 | D- 72076 Tübingen | | | |
| Peder Mortensen | Madaba-Project, Beidha-Project, Epipalaeolithic-Neolithic | Cultural Counsellor, Royal Danish Embassy | Chekhik Arslan St. Abou Roumaneh POB 2244 | Syria- Damascus | 00963 11 333 1008 | 00963 11 3337928 | |
| Kathy Moyer | Wadi Shu'aib, Physical Anthropology | Dept. of Anthropology | Arizona State University | USA- Tempe, AZ 85287 | | | |
| Mujahed Muheisen | Kharaneh 4- Project, 'Ain Rahub- Project, Basta- Project, N. Jordan Valley- Project; Epipalaeolithic- Neolithic Flint Industries | Institute of Archaeology and Anthropology, Yarmouk University | Yarmouk University | Jordan- Irbid | 00962 2 276277 x | 00962 2 274725 | yu@amra.nic.gov.jo (refer to: 'attn. of ...') |
| Bernd Müller- Neuhof | Abu Snesleh, Flint Industries | Free University of Berlin, Seminar für Vorderasiatische Altertumskunde | Bitterstr. 8-12 Goßlerstr. 17 | D- 14195 Berlin D- 12161 Berlin | 0049 30 838 6747 0049 30 8516259 | 0049 30 831 4252 | bemuneu@zedat.fu- berlin.de |
| Muhammad Najjar | physical anthropologist | Institute of Archaeology and Anthropology | Yarmouk University | Jordan- Irbid | | | |
| Muhammad Najjar | Wadi Feinan, Ghwair; PPNB | Dept. of Antiquities -Registration Center- | POB 88 | Jordan- Amman | 644320 | | |
| Carles Navarro Barberan | Abu Hamid, Flint Industry | Laboratori d'Arqueologia Prehistorica Facultat de Lletres | Universitat Aunonoma de Barcelona | SP- 08193 Bellaterra- Barcelona | | | |
| Reinder Neef | Various sites, Palaeoethnobotany | Deutsches Archäologisches Institut | Im Dol 2-6 Fehrbelliner Str. 50 | D- 14195 Berlin D- 10119 Berlin | 0049 83008-344 0049 30 4487433 | 0049 30 83008-313 | eurasiens@zedat.fu- berlin.de |
| M.P. Neeley | Wadi al-Hasa, Flint Industries | Dept. of Anthropology | Arizona State University | USA- Tempe, Arizona 85287-2402 | | 001 602 965 7671 | |
| Hans J. Nissen | Basta- Project; Architecture | Free University of Berlin, Seminar für Vorderasiatische Altertumskunde | Bitterstr. 8-12 | D- 14195 Berlin | 0049 30 838 5033 | 0049 30 831 4252 | Nissen@zedat.fu- berlin.de |
| Daifallah Oberdat | Abu Thuwwab, Pottery | | | | | | |
| Deborah Olszewski | Wadi al-Hasa, Epipalaeolithic Flint Industries | Bishop Museum- Anthropology | 1525 Bernice St., Box 19000-A | USA- Honolulu, HI 96817 | 001 808 8473511 | 001 808 8418968 | deboraho@bishop.bisho p.hawaii.org |
| Aian P. Olson | Wadi Hisma; Geomorphology, Palaeolithic Industries | Southern Methodist Uiversity, Dept. of Anthropology | 3225 Daniel | USA- Dallas, TX 75205 | | | aolson@mail.smu.edu |



Format Needs for Contributions in the

***Studies in Early Near Eastern Production, Subsistence,
and Environment (SENEPSE)
&
Neo-Lithics***

December 1997

We kindly ask for your attention to the following points:

1. We only accept contributions edited by a native speaker. Each contribution has to be accompanied by an abstract in English, and -if possible- in another language.
2. The hierarchy of subtitles should consider only three stages.
3. Footnotes should be at the end of each page, numbered separately on each page. In addition, all the footnotes should be listed in a separate text file at the end of the text.
4. Photos should not receive serial numbers within the figures list. They should be listed separately as plates and grouped for full-page plates.
5. Manuscripts should be delivered as hard copies and on a Mac- or DOS- disk; the program used should be WORD, and the file should be saved as a MacWord - file or an RTF-file if you work with a PC.
6. Please, also consult an available SENEPSE- volume for further information. *From SENEPSE 5 and Neo-Lithics 1/98 onwards authors names will not be written anymore in capital letters (now, e.g.: Macumber 1997).*

Examples of references in SENEPSE-bibliographies

(Please, do not format the arrangement of bibliography beyond the stage shown below!)

Example of articles in a series :

Crowfoot Payne J.

1983 The flint industries of Jericho. In: K.M. Kenyon and T.A. Holland (eds.), *Excavations at Jericho 5* : 622-757. London, British School of Archaeology in Jerusalem, The British Academy.

Cauvin M.C.

1991 Cafer Höyük (Turquie): l'outillage lithique des niveaux anciens et son évolution dans le Secteur Est. *Cahiers de l'Euphrate 5-6* : 115-126.

Example of articles in a journal :

Baird D., Garrard A.N., Martin L., and Wright K.

1992 Prehistoric environment and settlement in the Azraq Basin: an interim report on the 1989 excavation season. *Levant* 24: 1-31.

Betts A.

1989 1986 excavations at Dhuweila, eastern Jordan. A preliminary report. *Annual of the Department of Antiquities of Jordan* 33: 121-128.

Example of a monograph in a series :

Gopher A.

1989 *The Flint Assemblages of Munhata (Israel)*. Les Cahiers du Centre de Recherche Français de Jérusalem 4. Paris, Association Paléorient.

Example of an unpublished PhD dissertation :

Gopher A.

1981 *The Stratigraphy and Lithic Industry of Wadi Tbeik. A Pre-Pottery Neolithic Site in Southern Sinai*. Jerusalem, Hebrew University: Unpublished M.A. Thesis (in Hebrew).

Example of an article in an edited monograph which appeared in a series

Mortensen P.

1988 A note on a small box with flint blades and arrowheads from Beidha, and its implications. In: A.N. Garrard and H.G. Gebel (eds.), *The Prehistory of Jordan. The State of Research in 1986*. British Archaeological Reports - Intern. Series 396.1: 199-207. Oxford, B.A.R.

Example of a monograph (always the place and publishing house to be mentioned) :

Stekelis M.

1972 *The Yarmukian Culture*. Jerusalem, Carta.