

Reprint

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A Newsletter of Southwest Asian Lithics Research

Editorial

The contents of this issue of *Neo-Lithics* (as in past numbers) demonstrate how tentative older perceptions of human cultural development have been. Previous understandings, particularly in terms of „origins“ and diffusion, were often based on sketchy data and suffered from the consequences of inadequate sampling.

Some of the most impressive results of recent field campaigns all across the Near East involve an efflorescence of information concerning the strong role symbols played in the lives of late Mesolithic and early farming communities in the Levant. The imaginative display of religious expressions uncovered in the past few years causes us to step back and reconsider how heavily human society has relied on coping with uncertainty and manipulating the spirit world. Religion (as well as language) is probably the most sensitive indicator of cultural relationships, and as archaeological research continues to unearth concrete manifestations of such symbolic behavior, we can achieve a clearer understanding of how culturally similar or distinct contemporaneous Neolithic settlements were. However, research in these fields requires also to deal with our own dispositions for interpretations, as the recent symposium *Magic Practices in the Near Eastern Neolithic* in Copenhagen has shown.

But as exciting as such considerations are, we should recall that the principal purpose of *Neo-Lithics* is to facilitate exchanges of information concerning lithics analysis. We would like to encourage the readership (and unsubscribed colleagues) to use *Neo-Lithics* as a forum on issues of lithics analysis more intensively than has recently been the case.

Gary Rollefson & Hans Georg K. Gebel

New Discoveries in Architecture and Symbolism at Jerf el Ahmar (Syria), 1997-1999

Danielle Stordeur (I.P.O., CRNS, Lyon)

Three excavation campaigns have taken place since our last report in the pages of *Neo-Lithics* (Stordeur *et al.* 1996). The excavated area was enlarged by more than 1500 m² including exploratory trenches on the periphery. Thus the extension of the different levels of the villages could be evaluated, at least for one of the hills on the site. At the same time, the discovery of some sixty architectural units scattered through a dozen levels provided evidence for the evolution of construction techniques on the site. It became possible, at least for the latest levels, to reconstitute the organisation of the village area, a completely new undertaking in PPNA research and rich in sociological information. It has been confirmed that the site belongs entirely to the Mureybetian culture but it was discovered in 1999 (F. Abbès) that a PPNA-PPNB transition period characterised the site just before it was abandoned.

The site of Jerf el Ahmar has been covered by the waters of the lake created by the Tichrine Dam (middle Euphrates) since August 1999. But first it was possible to dismantle three of the most significant buildings on the site in order to rebuild them in a future museum¹.

Stratigraphy and Extent of the Construction Zone

The stratigraphy of each of the two knolls that make up the site is treated independently. An exploration of the median zone that separates them revealed a total absence of signs of occupation except for some refuse. The levels in the two hills can thus only be indirectly correlated, without certainty.

At present we know that the east knoll was occupied first and that nine levels are superimposed. The first four have only produced round constructions (VII/E to IV/E). The three following have constructions with rectilinear interior walls and fairly straight exterior walls, articulated by large curving angles (III/E to I/E). In level O/E the first strictly rectangular constructions appear. Finally, at the top and extending to the south a last occupation level may be attributed to a PPNA-PPNB transition².

According to the architectural forms, the occupation of the west knoll had probably not begun before the period corresponding to level II of the east knoll. Six architectural levels are superimposed, the last belonging to the PPNA-PPNB transition phase. We have seen that the absence of direct stratigraphic arguments renders the problem of the exact correspondence between the two hills difficult to resolve. In any case, Jerf el Ahmar was clearly a small village. Even in the hypothesis that the two hills were occupied simultaneously, its maximum size would have been less than a hectare.

The House of the Aurochs Skulls

A major discovery (1999) confirmed the role of aurochs in the human imagination of the period as discussed by J. Cauvin (1994). A small round house (level III/east), which had burned, concealed under its ruins evidence that was exceptionally well preserved. This consisted of three aurochs skulls including the horns and the upper part of the skull and a whole aurochs skull whose positions indicated that they had been hung on the walls (Fig. 1). A necklace of dried clay beads, strung to either side of an elongated limestone pendant was associated with one of the heads. A small hearth was encircled by numerous pounders, as well as a basalt axe with a polished cutting edge. This axe is at the present time the oldest known polished axe.

Organisation of Living Areas and Communal Buildings

The organisation of the constructions indicates a communal project which is very clearly discernible at least for the most recent levels of the site (Stordeur 1999). Three examples are described here which correspond to the latest levels of the site: level I/east in which the houses are not yet strictly rectangular, level II/west, where the rectangular houses are associated with oval ones, and finally level -1/east which illustrates the PPNA-PPNB transition. In every case the domestic units are associated with a special building which has a communal function

Village I/east

The Village (Fig. 2)

The village of this level is established on a series of terraces on the western slope of the hill to a height of about 5 m. On each one, several houses are built, sometimes linked by low walls that retain the terraces. The plans of the houses vary considerably. Composed of relatively small units near the top, the houses are much bigger and better constructed near the lower part of the site. In the upper part the constructions are mono-cellular and either round or rectangular with rounded corners. There are also pluricellular constructions composed of agglutinated entities: these were progressively enlarged by the addition of new constructed spaces. In the lower area, the constructions are pluricellular. A large quasi-rectangular house with two rooms has a particular feature: its side walls extend to the exterior and partly close off an area of courtyard, as demonstrated by a wall which could have played the role of a central post. This plan is present in the latest levels of the site in a resolutely rectangular form, and persists in the early PPNB at Dja'de el Mughara, for example (Coqueugniot 1998).

The Communal Building

At the lowest end of the village, a round building that is completely embedded in the ground marks the limit of the constructed zone. This building, subdivided into radiating cells and benches, is directly reminiscent of House 47 at Mureybet (Cauvin 1977, Aurenche 1980). Strong wooden pillars held up a flat earthen roof laid upon a wooden framework³. At the bottom of a hole into which one of these pillars was sunk, two human skulls were found. This foundation deposit already gives this building a particular character.

Level II/west

The Village (Fig. 3)

This level is composed of some ten houses built on a single artificial terrace and arranged in an arc around a large round imbedded building, the same model as that just described. The architectural variability of the habitation units is to be seen again in the contemporary construction of very different models:

oval houses with three rooms, rectangular houses with two, three or four rooms. A house with a courtyard was burnt and probably destroyed very quickly; discovered under the ruins of its roof was a complete set of domestic equipment: basins, grinding stones set on supports, plates in polished stone, food in the form of croquettes.

The Communal Building (Fig. 4)

The large rounded building imbedded at the centre of the habitations was completely preserved in its elevation. The ditch dug to contain it is 2.30 m deep, and is consolidated by a thick retaining wall covered by an earth render. The interior space is subdivided into six little surrounding cells,

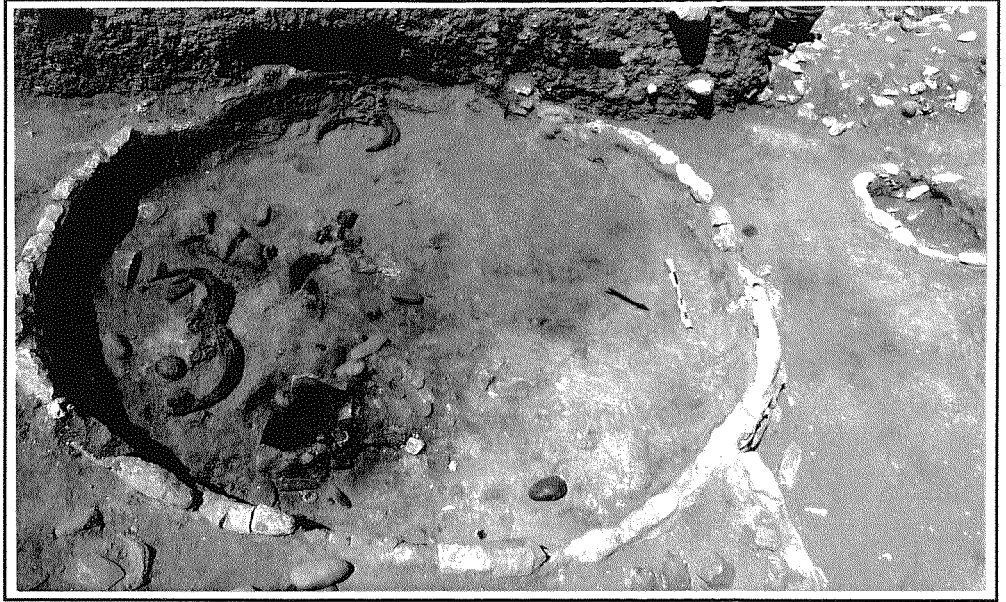


Fig. 1. The house of the skulls (level III/east).

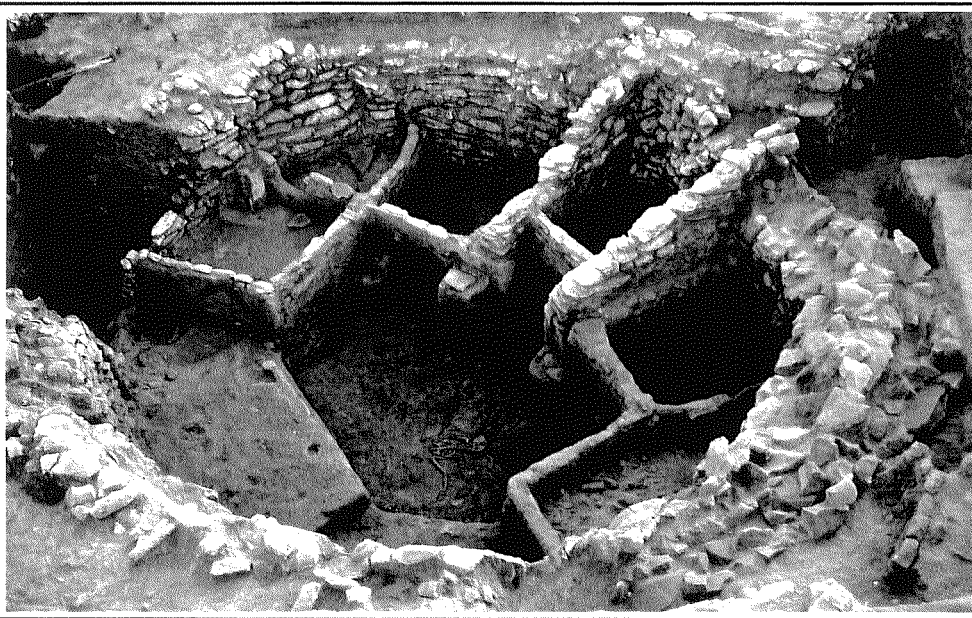


Fig. 4. The communal building of the II/west village.

in the small cells, meetings, and perhaps rituals, as the presence of the headless skeleton lying in the central room would seem to suggest.

Level -1/east and the "building with stone slabs" *The Village*

The last level of the site is distinguished by a very unusual feature: an embedded communal building of a new type, surrounded by its village. The associated material was quickly interpreted by F. Abbès, a specialist in lithic technology, as belonging to a transition phase of the PPNA-PPNB. This is the first time that this intermediary phase has been attested.

The hamlet of this level was excavated over an area of nearly 300

with two elevated benches. Two strong supporting walls face some ten posts embedded in the retaining wall. The building had burnt, and elements of the earthen roof bearing imprints of beams were found on the ground. The presence of a human skeleton, the skull and vertebrae of which were removed, poses problems of interpretation which only the anthropological study will clarify. It is still not known whether the skull deposited in an interior corner belongs to the skeleton or whether it was removed from another individual.

The position of this building, its form, its dimensions and the investment necessary for its construction all point to the probability of its function being a communal one. It was probably multi-functional: collective storage

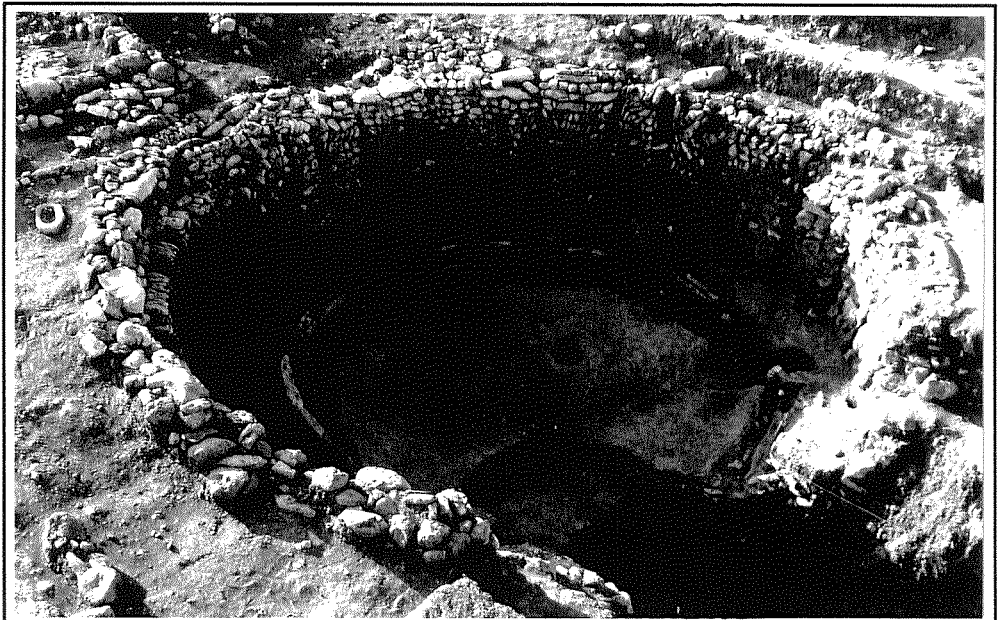


Fig. 5. The communal building of the I/east village: a meeting place with a bench, embellished by decorated stone slabs.

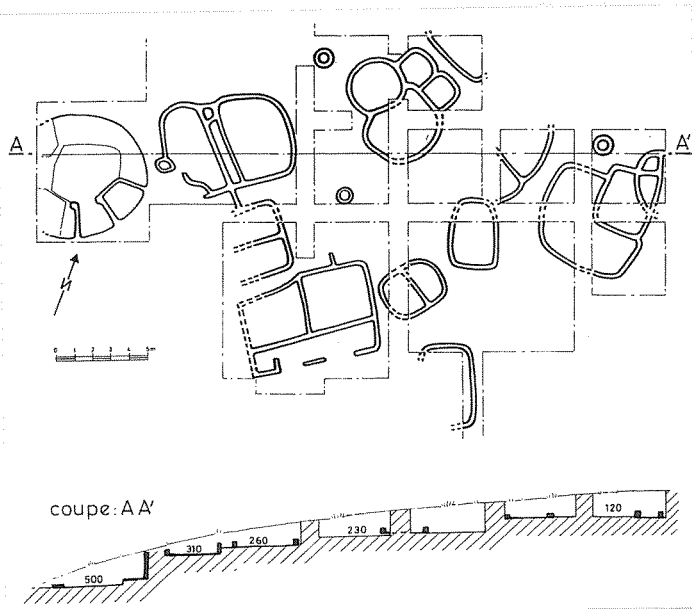


Fig. 2. The village I/east is established on a series of terraces.

m². It was possible to establish a connection with the zones that we had excavated in previous years. A firm and direct stratigraphic concordance between this level and the houses excavated by T. McClellan, which were then still visible on the site, was established. The evidence revealed by that archaeologist thus belonged to the PPNA-PPNB transition phase. The walls of the houses are conserved only to the level of the first courses. We can, however, surmise that the architecture exhibited less varied plans than in the earlier levels, and that the fabrication was less careful. The constructions are rectangular or oval and have one to three rooms.

The village structure of this level is different from that of level II/west. Common points persist: building of the houses on a terrace, position of the communal building at the epicentre of the village but also marking the southern limit. However the houses seem to surround their communal building to a lesser extent. They are organised rather by groups of four or five around communal areas. These areas are equipped with large ditch-hearths suggesting communal cooking activities.

The Communal Building: a Meeting Place (Fig. 5)

This building is completely preserved. It is a round building 8m in diameter, embedded 2 m deep. A stone retaining wall was constructed to hold the sides of the ditch. It is surmounted by construction which is open-air and which can be estimated to have been 50 cm high. This retaining wall held some thirty wooden posts inserted in it, and was covered by a thick coating of building earth. Traces of colour possibly indicate that this coating was painted.

This building was not subdivided. Its only embellishment is an interior bench, which backs onto the wall and continues around the entire interior. One metre wide, it forms a perfect equilateral hexagon that fits harmoniously into the circle of the building. At each angle of the hexagon, a thick wooden pillar⁴ covered with clay was set to hold up the roof. This bench is embellished on its front by heavy stone slabs of chalk that had been carefully cut and polished and set on edge. They are decorated with the clear intention of presenting a continuous décor, following the

entire length of the bench. This décor is hardly interrupted by the pillars because these are also decorated to preserve the continuity. The décor consists of a horizontal, regular frieze of triangles in relief, placed towards the upper part of the stone plaques. Several stones are also decorated with undulating or broken lines and graffiti, all engraved with a fine point on the upper edge. One of the pillars, preserved to a height taller than the top of the bench, demonstrates that the decoration continues above: wide multiple oblique striations form large chevrons and a long vertical undulating line evokes a serpent, a frequent symbol at Jerf el Ahmar.

The function of this building seems clear. It was a place for meeting and/or for ritual. This type of structure has never been recovered for this period. As a building intended for specific communal activities, it seems to have several points in common with structures found at Hallan Çemi (Rosenberg 1999), and it anticipates the early PPNB Anatolian "sanctuaries" of this period such as Nevali Çori and Göbekli, some 100 km from Jerf el Ahmar (Hauptmann 1999, Schmidt 1995).

Conclusion

This rapid presentation is only intended to inform the readers of *Neo-Lithics* of the most important final discoveries that were made before the disappearance of the site of Jerf el Ahmar. We cannot close it down, however, without adding its "swan song". During the dismantling of the three buildings to be saved and reconstructed in all their grandeur in a future Syrian museum, a

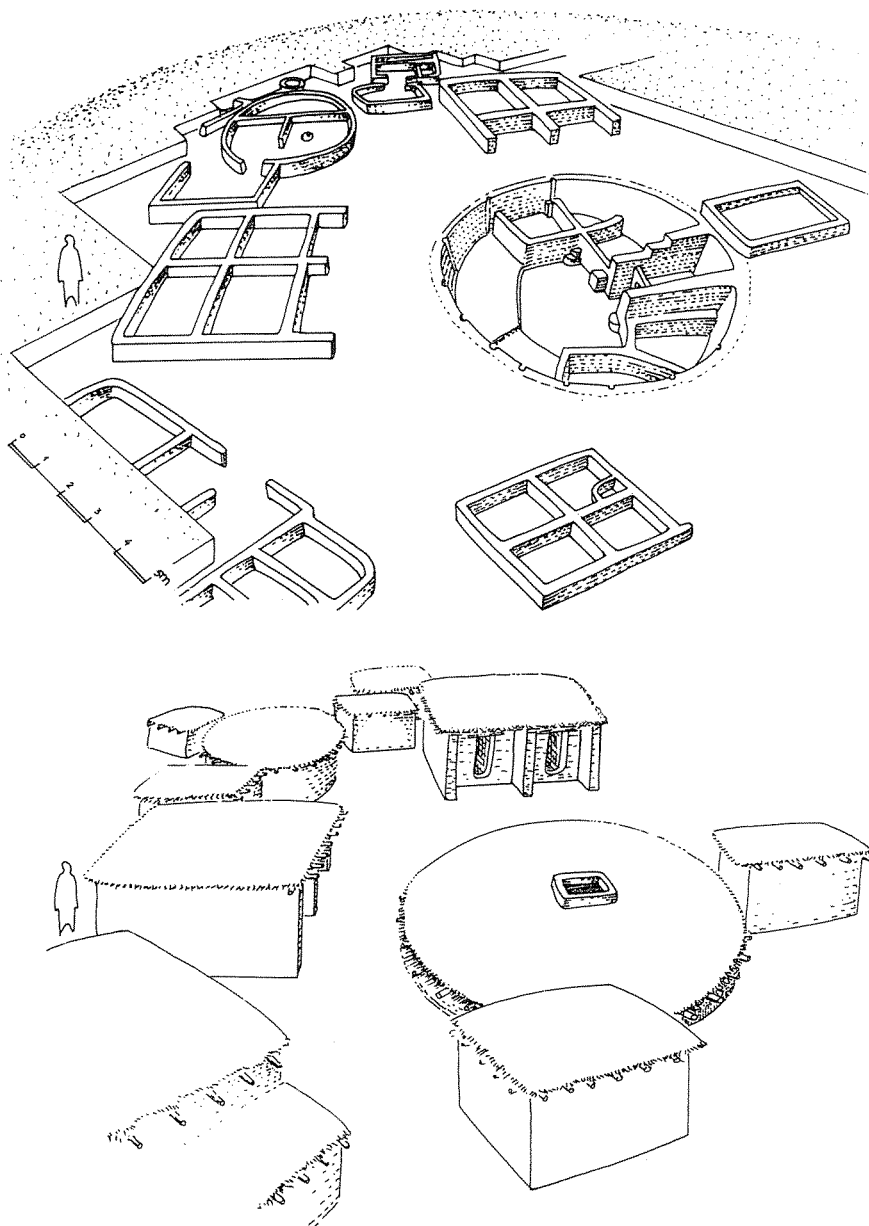


Fig. 3. The village II/west is arranged in an arc around a communal building.

fortuitous discovery was to further enrich our information. A communal building, of the same style as that which we have just described was accidentally revealed. It was not possible to correlate it stratigraphically. It seems, however, that it is another building that belongs to the transition phase with flat upright stones decorated with registers of triangles in relief. But other forms also occur: human figures engraved on certain stones and steles placed transversely to the flat stones, probably representing the heads of raptors, relating directly to Anatolian figures of the period. All this information will be published in full detail soon.

Notes

1. The full realisation of what the total loss of the site under the lake behind the dam would mean led the Minister of Culture to delay the damming of the river in order to dismantle three exceptional buildings and take them to safety. This operation (project chief: Michel Brenet) was carried out in August 1999 under the patronage of a Syrian institution, the Aidi Foundation.
2. This phase was identified by F. Abbès based on lithic technology. We will not discuss his arguments here.
3. According to the observations of S. Martinez, who studied the fragments of soil from the roof that revealed carpentry techniques.
4. Anatolian fir (*Abies* sp., charcoal identification by G. Willcox) was found in the destruction levels. It is therefore possible that these pillars were made from imported wood.

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Test Excavations at PPNB/PPNC Khirbet Hammam, Wadi el-Hasa, Jordan

Jane Peterson (Marquette University)

Introduction

The 1999 field season at Khirbet Hammam (WHS 149) was carried out between June 7 - 21. The primary goal of the project was to assess the site's potential for future, large-scale excavation. The specific tasks undertaken during the two week field season included: (1) producing a detailed topographic map of the site (in-progress); (2) delimiting the horizontal extent/size of the occupation; (3) excavating vertical section of the roadcut to

explore site stratigraphy and architecture; and, (4) obtaining organic and artifactual samples from excavated contexts.

Khirbet Hammam, situated on the southwestern slope of the Wadi Hasa, was first documented by Burton MacDonald as part of his three year Wadi Hasa Survey (MacDonald 1980) (Fig. 1). Gary Rollefson and Zeidan Kafafi confirmed an extensive Pre-Pottery Neolithic occupation with surface collecting and investigation of an exposed roadcut (Rollefson and Kafafi 1985). The renewed research effort of 1999 demonstrated that Khirbet Hammam has a great deal of potential to add to our knowledge of PPN adaptations in this region of the southern Levant.

Field Methods and Results

The horizontal extent of the site was determined during mapping by assessing to the distribution and relative densities of surface artifacts. The site covers approximately 3 hectares along a sloping terrace overlooking the Wadi Hasa. The site lies at 300 masl, 60 m or so above the present wadi course. While substantial portions of the site remain undisturbed, intensified agricultural production, grading for dirt tracks, and erosion from road construction continue to endanger cultural deposits.

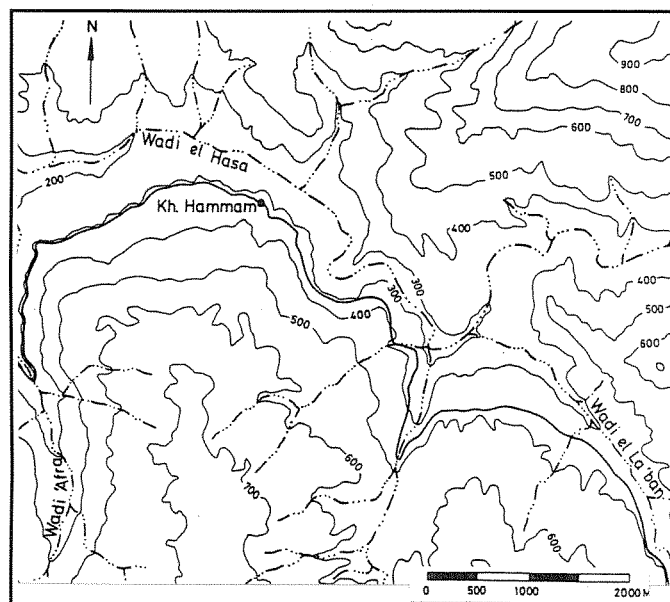
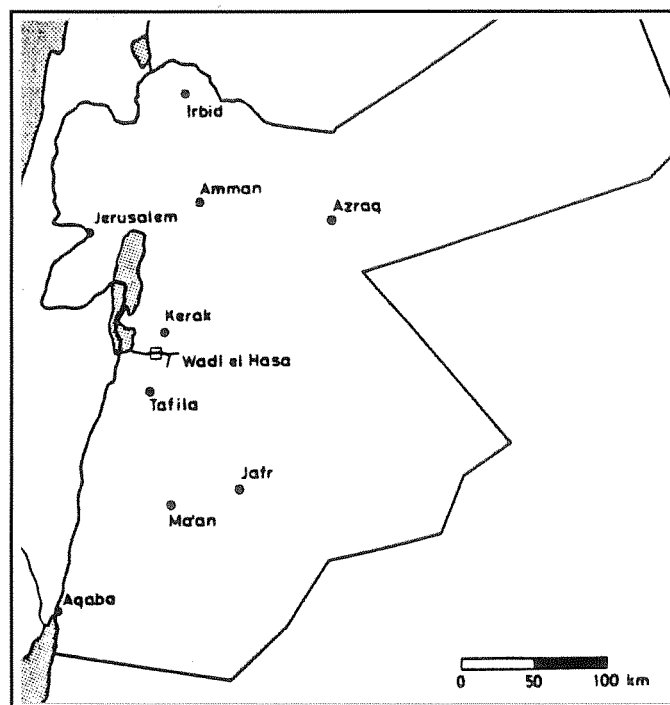


Fig. 1. (A) Location of Khirbet Hammam area in the Wadi el-Hasa, west central Jordan. (B) Khirbet Hammam in relation to the topography in its immediate vicinity (both drawings by J. Loynd Cowherd after Rollefson and Kafafi 1985).

As part of the 1999 fieldwork, a test excavation trench was opened to expose a 2 m section of the roadcut at the south end of the site. What began as a 2 x 0.5 m unit at the ground surface, expanded to a 2 x 1 m at the bottom due to the sloping face of the roadcut. All soil was sieved through 4 mm mesh. Excavation ended 2.3 m below the ground surface. We did not, however, reach sterile deposits. I suspect that the cultural deposits extend for at least another meter from the point at which we stopped excavating. It's warranted, I think, to suppose that earlier PPNB deposits may also be present.

In the 2.3 m of vertical excavation, multiple phases of interrelated architecture were exposed, including the exterior façade of a 1.8 m (thirteen course) wall made from shaped and faced stones. A small, exploratory trench failed to identify the basal course of the wall. The corner of a second, chronologically later stone feature abutted this wall. Because the unit exposed only a small portion of the feature, its function could not be determined. Its floor and wall surfaces were lined with lime plaster, preserved to a height of over 30 cm. in some areas. In cross-section, two plastering episodes could be identified. A layer of rounded wadi cobbles had been laid to provide a level foundation for construction for this second feature.

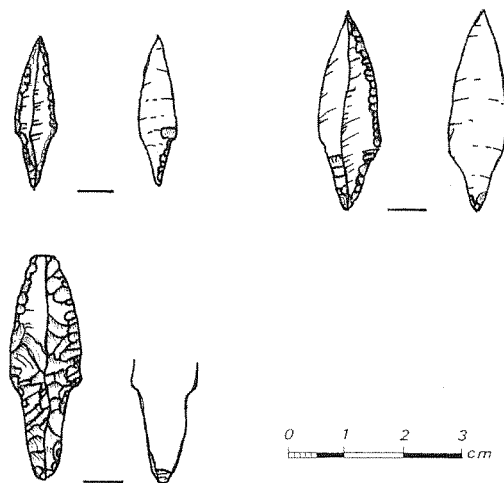


Fig. 2. Projectile points from Khirbet Hammam (after M. Neeley).

Artifact Descriptions

Excavated fill throughout the unit consisted of ashy, fine-grained silt. Chipped and ground stone artifacts, well-preserved faunal material, examples of bone tools, shell beads, and several stone bracelet fragments were retrieved. A limited number of temporally diagnostic projectile points suggested late PPNB and PPNC (Fig. 2) stratified deposits. Two uncalibrated AMS dates from GeoChron Laboratories confirm this typological assessment. Sample 1 provided a date of 8120 ± 60 BP (125 cm below datum - 10 cm above plaster floor) and Sample 2 provided a date of 8370 ± 40 (189 cmbd - cobble layer).

Preliminary analyses of chipped and ground stone assemblages were carried out in the field. An emphasis on blade production is evident from debitage and tool forms. Among the tools made on blades are projectile points, borers, sickles and burins. Several sickles had evidence of sheen. The projectile points were made on triangular or trapezoidal-sectioned blades. They are small, ranging from 2.6 - 4.5 cm in length. All have tangs and shoulders, but are noticeably asymmetrical. Retouch is typically unifacial, either fine or semi-invasive. Another distinctive component of the chipped stone assemblage consists of large, bifacially worked tools, presumably used for a variety of timbering and/or agricultural tasks. A number of informal tools are also present. No naviform cores were identified. A more detailed preliminary analysis is currently underway.

The majority of ground stone tools can be linked, by virtue of their morphology, to cereal processing. Slab querns, hand stones, pestles, and mortar fragments were made primarily from local sandstone, but porphyritic basalt was also used with some frequency. Other ground stone objects include ground 'doughnuts' (weights, perhaps), several bowl fragments, and a small stone palette stained with ochre residue.

Nearly every level and loci produced animal bone. Both wild and domestic species are represented. A portion of the assemblage shows burning, and butchery marks were also present on many specimens. Seven bone tool fragments were also recovered. Tool forms include awls and spatulates. Faunal analysis is currently being conducted by Dr. Jean Hudson and Matthew Warwick (University of Wisconsin-Milwaukee). The presence of well-preserved faunal material suggests that botanical preservation may also be good. Pat Crawford (SUNY-Stony Brook) is currently processing the flotation samples from the excavation.

Several ornaments were uncovered. Three of these are flat, circular beads with drilled central holes. They are quite small, measuring 5 mm in diameter. Dr. Gary Rollefson (personal communication) identified them as shell. A second type of bead, more obviously made from shell, consists of a small whitish-brown, conical shaped marine shell with a longitudinal hole drilled through it. And finally, two narrow (7-8 mm), convex pieces of ground stone were identified as bracelet fragments.

From the small 'window' opened at Khirbet Hammam we have identified many of the definitive criteria of the PPN cultural complex: substantial rectilinear stone architecture, cereal grinding tools, diagnostic projectile points, and sickle blades. In the more overtly aesthetic and ritual behavioral realms there are also important parallels between Khirbet Hammam and other PPN sites. For example, plaster debris decorated with red paint was found. Portions of a human radius and ulna were eroding from under a plaster surface in the roadcut, suggesting intramural burial practices. And perhaps most enticing of all is the anecdotal evidence, from a local Bedouin informant, for plaster statuary (estimated at 40 cm in length) uncovered during the excavation of one of the irrigation reservoirs.

Conclusions and Future Research Plans

The value of this summer's fieldwork lies in demonstrating the potential of Khirbet Hammam to yield substantial information about the PPN of this region. The results of this work will be instrumental in preparing grant applications requesting funding for a multi-season, large scale horizontal excavation of the site. An excavation of this magnitude is essential to define not only the regional character of the PPN in this part of Jordan, but also the cultural connections shared by diverse areas within the southern Levant. Since the Wadi Hasa region has yet to see any large-scale Neolithic excavation, the results of this work promise to make substantial contributions to our understanding of this period of prehistory.

Future research plans also include expanding the survey work on the north bank of the Wadi Hasa begun by Geoffrey Clark. In his two years of work, Clark recorded 531 sites and covered the eastern third of the Hasa drainage (Clark *et al.* 1994). The remaining two-thirds of the Wadi Hasa have yet to be systematically surveyed. And, if the south bank is any indication, this western portion of the wadi is where the PPN and PN sites are most likely to be found. For example, Department of Antiquities staff recently identified a PPNB/PPNC site while conducting survey upstream of dam construction in the Wadi Hasa (Rollefson 1999). Accurate and complete survey data is essential for understanding Neolithic settlement patterns in this region. For this reason, a survey component would be combined with the excavation at Khirbet Hammam.

Acknowledgments: This project was undertaken with the kind permission Dr. Ghazi Bisheh, Director-General of the Department of Antiquities of Jordan. Our field representative, Mr. A.Rahim Hazeem, was a tremendous help throughout the field season. Dr. Michael Neeley was an able collaborator on all aspects of the fieldwork. ACOR staff provided logistic support and facilities both before and after excavation. Field accommodations were graciously shared by Dr. Burton MacDonald.

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Preliminary Report of the 1999-2000 Excavation Season at the Pre-Pottery Neolithic Settlement of Ghwair I, Southern Jordan

Alan H. Simmons (University of Nevada, Las Vegas) and
Mohammad Najjar (Department of Antiquities of Jordan)

Introduction and Research Design

The fourth season of the joint University of Nevada-Las Vegas (UNLV) and Department of Antiquities interdisciplinary excavations at the Pre-Pottery Neolithic B (PPNB) settlement of Ghwair I was successfully completed in late January, 2000.

The settlement, first investigated by Najjar in 1993 (Najjar 1994), revealed a modestly sized PPNB village of under one hectare. Of particular interest were the spectacularly preserved architectural features, several of which had been exposed by a small wadi that has eroded the western portion of the site.

Renewed excavations were initiated in 1996 by Simmons and Najjar. The preliminary results of those investigations have been reported elsewhere (Simmons and Najjar 1996; 1998a, b; 1999). One of the goals of these new studies was to place Ghwair I within a wider context of early village life in Jordan. In particular, we were interested in examining the relationship of smaller "peripheral" sites such as Ghwair I with the larger core settlements, the so-called "mega-sites" such as 'Ain Ghazal, Wadi Shu'eib or Basta. Were smaller settlements linked to the large sites in some economic fashion or did they operate as independent entities? We also wished to better define the structure of a small Neolithic settlement, and Ghwair I offered an excellent test case, since it is small enough to be adequately sampled. Another project goal was to examine the paleo-economic structure of a small site located in what is today a very marginal, harsh environment. Finally, we wished to initiate paleoenvironmental and geomorphic research so that we could place the site within its proper ecological context.



Fig. 1. One of the excavated room blocks in Area IV, showing corridor stairways flanking the central room.

Excavation Strategy and Areas

The new excavations have defined six site areas. During the 1999/2000 season, we concentrated at three of these areas, designated as Areas I, IV, and VI. Six 5x5 m units were excavated; in addition, several balks were removed. Area I was initially investigated during the 1993 season and is located at the eroded western edge of the site. This portion of the site contains a series of deeply stratified architectural remains reflecting at least three occupational phases at the site. In Area I, we previously defined a large and elaborate, possibly ceremonial, structure with several niches and a ventilation system. During the most recent season we wished to expand excavations

around this structure, and continue investigation into a series of adjacent bins. Area IV also was first investigated during 1993 and contains a series of rectangular rooms. During the 1999/2000 season, we wished to see if we could define distinct room blocks here. Finally, Area VI is where ground penetrating radar (GPR) conducted during the summer of 1998 suggested considerable architectural complexity. We probed this area during the 1998/1999 season and wished to expand excavation in 1999/2000 to determine if the GPR assessments were correct.

Results

The following sections briefly summarize the results of the 1999/2000 season at Ghwair I. These should be considered as preliminary statements subject to modifications upon subsequent analyses.

Architectural Features

The excavations continued to reveal remarkable architectural variability. In particular, the architectural complexity of Ghwair I is now readily apparent, and the site's configuration has taken on a distinct "village layout." Several significant features were revealed this season. These have helped to better define the site's internal structure.

Of particular interest is the presence of two sets of internal stairs in Area IV, supporting the interpretation of at least two stories in some of the buildings (Fig. 1). These features are located in corridor-like features flanking a large room. In addition, excavation outside of the room block containing these stairs revealed a large set of step-like stones that appear to form either a major outdoor stairway or, perhaps, some sort of "theater" or public area. These stairs seem to lead down to a level open area of hardpacked earth. Additional excavation is required to clarify the function of this area, but it clearly was an elaborate feature. The presence of these stairway systems indicates the architectural complexity and sophistication of the builders of Ghwair I, and hints at a major degree of social complexity.

Other architectural highlights of the excavation were the exposure of complete rooms, including some that are quite large (c. 5 x 5 meters) in both Areas I and IV. Other internal rooms consisted of a series of small "bins" or storage rooms. We are now gaining a better understanding of the internal configuration of both residential and special-use portions of the site, although we have yet to expose an entire interconnected room block.

In Area VI, large walls that appear to be non-residential were encountered, verifying the GPR results. This portion of the site initially contained a series of presumably residential units, but after these were abandoned, Area VI appears to have been used as a massive trash dump, since it contains a substantial amount of burned cultural material, including a large number of animal remains.

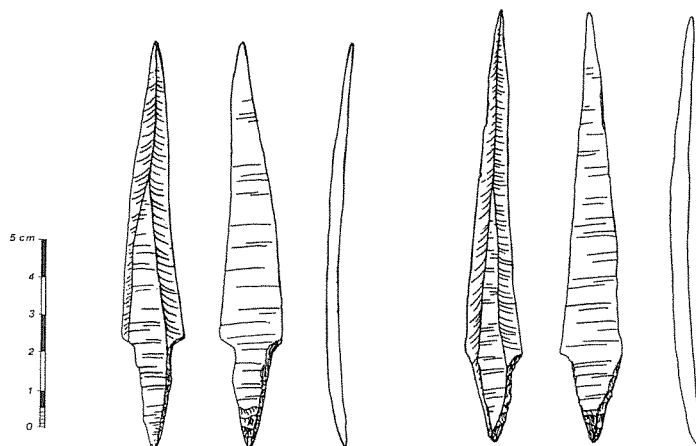


Fig. 2. Two of the projectile points from the cache in Area I.

Portable Artifacts

Chipped Stone

The chipped stone reflects a typical PPNB assemblage. There is a very large number of projectile points, primarily Byblos types. Although the analysis of the 1999/2000 materials is still in progress, we now have a systematically collected assemblage

of approximately 60,000 artifacts. Table 1 provides the breakdown of classes from the previous (1994 onward) seasons, which included nearly 50,000 artifacts. We expect that the new tallies from 1999/2000 will continue to reflect this structure within the assemblage.

The chipped stone is clearly dominated by blades. We also have recovered three floor caches of finely made blades, confirming the importance of these blanks. Also quite common is a large amount of bladelets, suggesting that these small blanks continued to be important into the Neolithic.

The variety of tools is also of interest. After removing the ubiquitous "retouched blades and flakes," projectile points are the dominant tools at c. 17% (Powell and Gervasoni 1999, Powell and Simmons 2000). This is unusual, given the sedentary nature of the site. Even odder is the high number of microliths (c. 8%--primarily simple retouched bladelets). This indicates that the production of bladelets was intentional, and not simply a by-product of naviform core reduction (*cf.* Quintero and Wilke 1994).

Table 1. Chipped stone classes for Ghwair I, 1996, 1997/98 and 1998/99 seasons.

Class	N	%
Tools	2,633	5.4
Debitage		
cortical flakes	909	1.8
secondary flakes	3,966	7.9
tertiary flakes	5,513	11.5
cortical blades	252	0.5
secondary blades	2,842	5.9
tertiary blades	7,615	15.8
bladelets	3,870	7.9
core trimming	348	0.7
core tablets	82	0.2
massive test flakes	203	0.4
massive test blades	71	0.2
Other waste		
burin spalls	204	0.4
microflakes	1,710	3.5
Debris-chunks	9,020	18.6
Debris-chips	8,605	17.8
Cores	567	1.3
Hammerstones	78	0.2
Total	48,388	100.0

Most points are of Byblos varieties, although Jericho and other types also are present. Of particular interest was the discovery of a cache on the floor of a bin adjacent to the previously mentioned "niche" room in Area I. This consisted of 23 finely worked and large points (Fig. 2). Most of these have the general morphology of Byblos points (although one is a Jericho point), but are larger and quite thin. Several may have been struck from the same core. Although we were tempted to term these "Ghwair Points," we now believe this is not at present a justifiable designation, given their localized provenience. Rather, we are currently more comfortable referring to them as specialized examples of pre-existing types. Additional analyses will, we hope, clarify their function and typology.

Ground Stone

The ground stone assemblage from Ghwair I is impressive. We are struck by the variety of both utilitarian and more specialized implements. Over 2,000 ground stone artifacts have been analyzed in detail.

In addition to the expected milling equipment, other more idiosyncratic artifacts indicate specialized functions. These include possible gaming tokens and boards, "pulley" weights and/or grinders, mauls, axes, and floor and wall plastering implements.

Small Finds

A large number of small finds were recovered this season. They include a variety of ornaments, such as finely produced mother-of-pearl pendants, stone and marine shell beads, and scant quantities of carnelian ornaments. Bone tools are relatively common.

Figurines

The 1999/2000 season added to the limited collection of figurines from Ghwair I. Of particular interest was the recovery of two female forms, both without their heads and one that is more enigmatic, possibly representing a stylized human or a phallus. Fragments of several other figurines also were recovered.

Burials

We also completed excavation of a room in which a sub-floor burial was encountered last year. This clearly was a special room, as it contained a "cache" of goat and cattle skulls laying nearly directly on a plastered floor, as well as two caches of finely produced blades, polishing stones, some with malachite imbedded into them, and several malachite pendant "blanks" (see Simmons and Najjar 1999).

The burial itself is a especially intriguing interment, since it consisted of an infant (9-12 months old) in a flexed position, with the skull intact. The infant was adorned with a mother of pearl ornament around its neck. A far more common PPNB interment type is of decapitated adults. Detailed study of this unique individual is being conducted by J. Thompson of UNLV.

After a paucity of burials from previous seasons, three other burials were encountered. These also are unusual in that they are adults buried in crude cobble-lined graves in structure tumble. They also have their craniums, but the sub-cranial materials are in fragile condition. One of these burials contained four individuals (three adults and one child), while the remainder were of single interments. There is the possibility that these could be later, intrusive burials. We had hoped to resolve this dilemma by radiocarbon dating, but unfortunately the two bone samples we submitted contained virtually no collagen, thereby rendering impossible even AMS determinations. Given the context of these burials, and the apparent pattern of several individuals buried in a similar manner, we believe them to be Neolithic.

Chronology

Over 20 radiocarbon determinations indicate an approximate occupation of the mid-9th millennium B.C. This suggests a somewhat early Middle PPNB occupation that lasted for perhaps only 300 to 400 years.

Paleoenvironment and Paleoeconomy

A major project goal is to document economic patterns of the occupants of Ghwair I and to initiate paleoenvironmental reconstructions. To achieve this, floatation was conducted, resulting in the recovery of plant remains, being studied by R. Neef (Deutsches Archaeologisches Institut). In addition, a large faunal assemblage is under analysis by P. Croft (Lemba Archaeological Centre) to determine which animals were within the larder of the residents of Ghwair I.

Paleoenvironmental and geomorphic investigations by R. Mandel (University of Kansas) are continuing. We anticipate that these will result in formulating the appropriate ecological context for evaluating the occupation of Ghwair I.

Ethnoarchaeology

We also conducted an initial ethnoarchaeological study of the local Bedouin of the region. This investigation by J. Swetnam (UNLV) is oriented towards examining elevational patterns of herd movements.

Summary and Conclusions

In summary, the results of the 1999/2000 season have demonstrated that Ghwair I was an exceedingly complex village. Certainly this settlement was far from a rural and marginal outlier. It now seems clear that the Neolithic occupation of southern Jordan was quite distinct from that of other adjacent areas, and this may reflect regional or "tribal" distinctions.

While funding is currently exhausted, we anticipate that continued investigations in the future will greatly expand our knowledge of Neolithic adaptations in this region. At present, three Master's theses from UNLV are being completed on the chipped stone, projectile points, and groundstone. These will provide much more detail on specific aspects of the material culture.

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The Colonization of Cyprus: Questions of Origins and Isolation

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E. Peltenburg (University of Edinburgh)

In a recent article, Guilaine *et al.* (2000: 81) propose an origin for the earliest Neolithic settlers of Cyprus in North Syria and southeastern Anatolia, making use of evidence from sites such as Mureybit, Halula and Jerf el Ahmar. We agree with their general assessment and have argued for such a derivation in the 10th millennium BP (Peltenburg *et al.* n.d.). In this paper, we demonstrate the need to evaluate emerging evidence from as many sites as possible in Cyprus when seeking to investigate the origins and evolution of the Cypro-PPNB and the Khirokitian. Our multi-site approach discloses a varied and complex set of relations between the mainland and Cyprus, raising questions about the nature and chronology of links between the Levantine Corridor and the island. The new evidence from Cyprus as a whole implies that colonizing populations followed more than one path, and we need to seriously assess the apparent gaps and inconsistencies in the patchy archaeological record. Questions about the origin of the migrants and the subsequent evolution of the PPNB culture within the island environment cause us

to re-evaluate concepts of diffusion events such as the initial spread of agro-pastoralism and the interpretation of material culture change. These have implications for our understanding of Neolithic cultures on the mainland.

Chronology

As previously published in *Neo-lithics*, the earliest Neolithic colonization of Cyprus is evident at three sites, all of which have produced dates assigned to the end of the 10th millennium BP (McCartney 1999: Table 1). The earliest dates from all three sites antedate or are equivalent to the very beginning of the MPPNB as illustrated at Mureybit. They suggest that transmaritime colonizing events were associated with the earliest wave of PPNB diffusion from its ultimate north Syrian point of origin (Cauvin and Cauvin 1993: 26). The initial colonization of the island implies that the spread of PPNB culture to the Mediterranean region occurred a millennium earlier than previously proposed. It demands that we question the apparent absence of early Neolithic sites on the Mediterranean coast where we would expect to find the parent populations who initially peopled Cyprus (Peltenburg *et al.* n.d.). In this context, it is important to note that since evidence for the Cypro-PPNB is only beginning to emerge, we need to keep an open mind about its origins. For example, some Cypro-PPNB culture traits, such as circular structures, indicate connections with the antecedent mainland PPNA. Other features appear more directly related to the fusion of local and southeastern Anatolia PPNB traits rather than an exclusive derivation from sites on the Syrian/Middle Euphrates (see below).

The distribution of the Cypriot sites, the accumulation of AMS dates from cereal and other taxa, and radiocarbon dates from wood charcoal (Fig. 1) makes it increasingly clear that colonists were settled widely on the island by the later 10th millennium BP. The AMS dates come from Kissonerga-Mylouthkia (hereafter, Mylouthkia) Period 1, a site on the west of the island, remote from the Levantine mainland (Peltenburg *et al.* n.d.). That some of the earliest colonization evidence comes from the most distant shores of Cyprus could mean several things, including targeted initial landfalls irrespective of distance, migrant boats blown off-course, or the existence of an undetec-

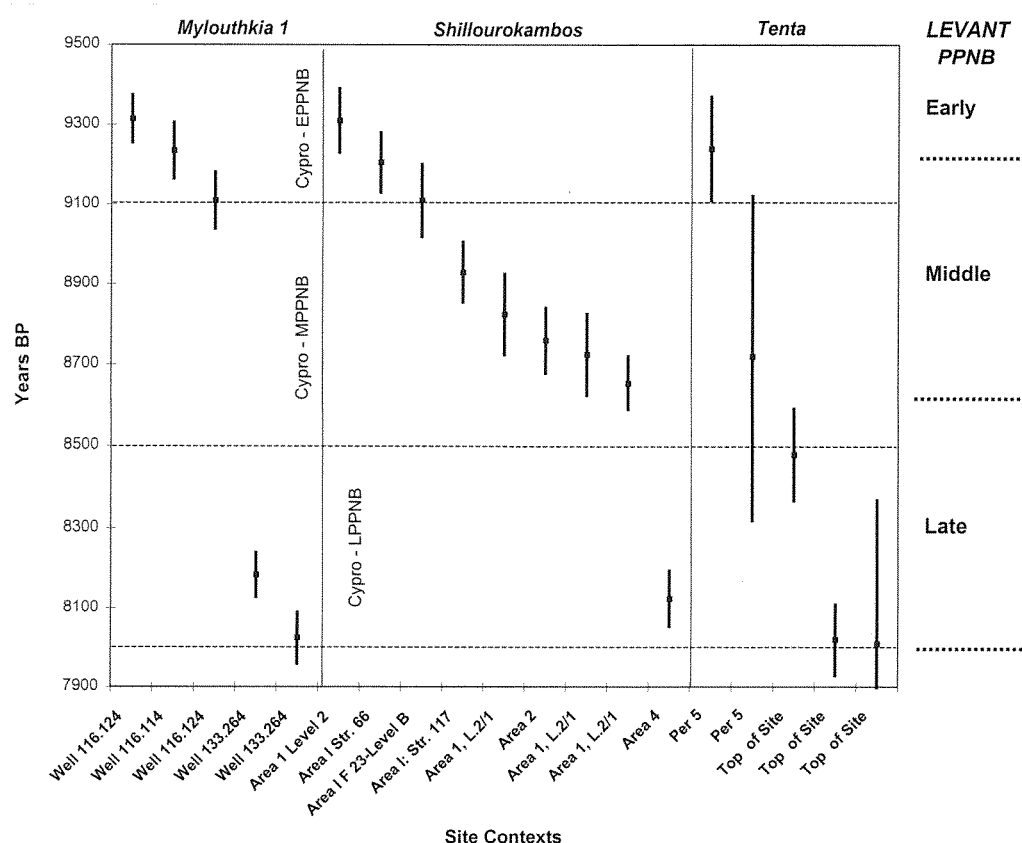


Fig. 1. Radiocarbon ^{14}C determinations (single s.d.) from sites of the Cypro-Pre-Pottery Neolithic B period, c. 9500 – 8000 BP. Dates from Peltenburg *et al.* n.d.; Guilaine *et al.* 2000; Todd 1987. Column on right shows conventional mainland PPNB phase divisions.

ted earlier history of colonization movements that followed a gradual path of expansion from the east. The Mylouthkia AMS dates also provide support for the argument of early settlement contemporary with the EPPNB rather than MPPNB, since the short-lived seed samples do not have the normal problems of "old wood" connected with the assays from Parekklisha-Shillourokambos (hereafter, Shillourokambos) and Kalavassos-Tenta (hereafter, Tenta).

Fig. 1 also implies that these were successful colonists. The range of dates indicates continuity of occupation from the late 10th millennium BP into the classic Khirekian. In our view, many of the salient characteristics of this pre-Khirekian archaeological record are so closely related to the PPNB that it is best treated as a facies of that system. Although there is no interaction with pre-existing indigenous communities, as in the Taurus facies proposed by Cauvin (Cauvin and Cauvin 1993: 26), the unique combination of North Levantine PPNB culture traits and adaptations to the local island environment created a particular regional entity from the outset. Thus, there are two primary components of the early Aceramic Neolithic culture of Cyprus, the insular and the PPN, a duality reflected in our use of the term Cypro-PPNB. During this period, there were specific island adaptations, including the rapid decline in the numbers of arrowheads and obsidian artifacts following the Cypro-MPPNB. Cattle disappeared soon afterwards. Coeval developments in the lithic industry permit the phasing of the Cypro-PPNB roughly in line with stages on the Levantine mainland. Modifications will no doubt be needed as more evidence comes to light.

Material Culture Links

While PPNB culture is not defined solely on the basis of the chipped stone industry, aspects of this technology, first identified at Mureybit, have long been recognized as hallmarks of this era of development. They include naviform cores, the production of blades for the manufacture of large tanged projectiles, sickles, burins and other retouched blades (Kozłowski 1999: 9, Cauvin and Cauvin 1993: 24). About 9,200 BP, this lithic package had appeared in southeastern Anatolia, the Southern Levant, and now Cyprus (Kozłowski 1999: 8-9, Gopher 1996: 152-3, Cauvin and Cauvin 1993: 24). By considering a variety of lithic assemblages from the island, it is possible to demonstrate how the Cypriot industry evolved out of this early wave of diffusion and how changes in the Cypriot industry through time parallel documented shifts in mainland assemblages, from the Early through the Final PPNB.

Arrowheads

Byblos, Oval and Amuq arrowheads in early Cypriot assemblages show variety, but they also provide highly diagnostic parallels to the mainland PPNB. Three point tangs belonging to the Cypro-EPPNB at Mylouthkia exhibit predominantly flat percussion retouch rather than pressure retouch, which is restricted to the tang or tip areas in the manner of EPPNB points described from sites like Mureybit IVa and Dja'de (see Peltenburg *et al.* n.d., with references). A number of arrowheads from Shillourokambos exhibit clear parallels to the tanged and foliate (Byblos and Amuq) point types from Early and Middle PPNB assemblages in North Syria and southeastern Anatolia at sites such as Cafer Höyük (Guilaine *et al.* 2000: 80-81, Cauvin and Aurenche 1982: Figs. 8-9). Two diminutive points made with abrupt retouch on bladelets from Tenta have wide-ranging mainland parallels from southeastern Anatolia through the Southern Levant (Peltenburg *et al.* n.d.). Arrowheads disappear at Shillourokambos after the Cypro-MPPNB in conjunction with other technological and subsistence changes at the site. These developments have been used to infer the subsequent isolation of Cyprus (Guilaine 2000: 80-82). Byblos and Amuq points, though rare, do persist elsewhere on the island. Importantly, later points from Kissonerga and Khirekitia, for example, clearly illustrate the shift to covering pressure retouch documented in Late and Final PPNB ("PPNC") assemblages on the mainland (Cauvin and Cauvin 1993: 25, Peltenburg *et al.* n.d.).

Glossed Tools

Parallel-sided glossed blades exhibiting fine denticulation from Mylouthkia Period 1A, though fragmentary, equate with the

use of finely denticulated glossed blade tools throughout the mainland during the Early and Middle PPNB (*cf.* Peltenburg *et al.* n.d.). At Shillourokambos, backed crescent-shaped glossed segments with oblique gloss represent one of the hallmarks of the Cypro-MPPNB industry at the site (Guilaine *et al.* 2000: 79). Interestingly, while naviform core reduction was linked specifically to projectile manufacture at the latter site, small blades and bladelets like those used for the glossed crescent segments were struck from the edges of flakes or small unidirectional cores. They resemble the variety of *chaînes opératoires* shown at MPPNB sites such as Cafer Höyük (Guilaine *et al.* 2000: 79-81, Cauvin and Aurenche 1982: 125, Fig. 7). Prepared single platform blade cores in the undated (probably M/LPPNB) assemblage from Ayia Varvara-Asprokremnos also resemble those from Cafer Höyük (see Peltenburg *et al.* n.d.). At Tenta, obliquely glossed backed crescents are present alongside diminutive unretouched glossed bladelets and larger, finely denticulated glossed blades. Both the naviform blade and unidirectional small blade/bladelet *chaînes opératoires*, which appear respectively at Mylouthkia and Shillourokambos for the manufacture of glossed tools, are united in the Tenta assemblage. A small number of other tools in the Tenta assemblage dating from Period 5 (Fig. 1) include other microlith forms such as backed bladelets and bitruncated rectilinear segments. Composite harvesting tools composed of lunate segments and curvilinear hafts have been illustrated during the Natufian, and micro-liths in the PPNB persist in Anatolia where they are derived from the local Mesolithic industries (e.g. Kozłowski 1999: 9, Cauvin and Aurenche 1982: 126-7). Crescent segments, however, disappear from other areas of the Levant after the PPNA. Larger glossed curvilinear backed and truncated and backed blade segments typically reappear from the LPPNB onwards. The evolution of the glossed tool class in Cyprus from the Cypro-LPPNB into the Khirekian similarly includes backed, truncated, backed and truncated, curvilinear backed and unretouched glossed element types (Peltenburg *et al.* n.d. with references).

Naviform Technology

A change in the core technology during the Cypro-LPPNB at Shillourokambos shows the shift from high quality translucent chert towards "opaque" (Lefkara basal) chert. This follows a decline in "preferential" blade production from naviform cores, associated with the disappearance of arrowheads at that site (Guilaine 2000: 79-80). Bidirectional core reduction, however, continued at the site for the production of broader and thicker blades during the Cypro-LPPNB. The change in preferred raw material to readily available but more moderate chert types and shift towards generalized bidirectional and more unidirectional core reduction are features echoed in the Mylouthkia Period 1B assemblage. Arrowheads are also missing from the Period 1B assemblage at Mylouthkia, which yields other tool types, notably backed blades, that represent one of the hallmarks of the subsequent Khirekian. Continuity in the use of bidirectional cores is clearly shown in the Tenta assemblage, where a shift in raw materials is both less dramatic and appears to occur early in the sequence. Point tangs, though rare, continue to occur after the Middle PPNB at the site. Core preparation and maintenance pieces diagnostic of naviform (*sensu lato*) core technology are relatively abundant in Cypro-LPPNB (and later?) contexts in the Tenta assemblage (McCartney 1999: 8).

Across Cyprus, the essential stages of naviform core shaping remained the same, but the practice of isolating the platform prior to blank removal was discontinued. Butt types, therefore, are dominated by relatively broad plain and faceted types and the resulting blades are broader and thicker. Long, flat, relatively parallel-sided blades, however, continued to be the desired blank type throughout the Cypro-PPNB and Khirekian for tool manufacture. Flakes became more prominent gradually, and they only replaced blades during the Chalcolithic period on the island.

This prolonged trend away from the use of bidirectional cores and long blade blanks fits well with interpretations of naviform core technology focused on the production of standardized blades made in order to meet a variety of blade tool requirements during the PPNB on the mainland (e.g., Quintero and Wilke 1995). Using this broader interpretation of naviform blade production,

the continuity in the Cypriot utilization of this complex *chaîne opératoire* more clearly parallels developments in the Levant. As industries in the Levant became increasingly regionalized, naviform core reduction began to decline gradually in the LPPNB, rapidly in the Final PPNB ("PPNC"), and flakes became increasingly prominent in a large number of lithic assemblages (e.g., Kozłowski 1999: 9). Naviform core technology similarly reached a peak during the Cypro-MPPNB. It declined from the Cypro-LPPNB onwards with the use of more generalized bidirectional cores, which were eventually replaced by a greater utilization of single platform core reduction. Blades remained the desired blank type throughout the Cypro-PPNB, particularly for glossed tools, burins, backed and truncated blades, marginally retouched blades and perforators. Flakes were typically prominent in the scraper, denticulate and notch tool classes from the beginning of the Cypro-PPNB, with tools made on flakes becoming more characteristic over time.

Other Indices

Beyond the chipped stone, diverse material culture parallels between Cyprus and the mainland exist in the symbolic, architectural and economic realms (references above).

There is evidence from Mylouthkia and perhaps Shillourokambos for reburial of bodies and, at least at Mylouthkia, the secondary deposition of human skulls in a water-well. A mace-head and decorated grooved stones and pebbles in Cypro-PPNB contexts belong to mainland genres that are well attested from at least the PPNA. An anthropomorphic figurine of plaster from Shillourokambos was executed in a medium typical of the PPN, one replaced by stone and sometimes clay in the Khirrokian. The Jerf el Ahmar parallel for the "cat" head at Shillourokambos is significant since the site is dated to the PPNA, precisely when microliths last occur in lithic assemblages in the Levant (Guilaine *et al.* 2000: 81, Gopher 1996: 153). Thus, distinctive PPNA features exist in the Cypro-PPNB. Although an ultimate PPNA (or earlier?) origin for the Cypriot Aceramic Neolithic is hardly a new suggestion (e.g. Todd 1987: 184), it is now supported by varied evidence. This does not necessarily mean we should simply shift the initial colonization back in time. We know nothing of the proximate mainland parent cultures, and they may well have retained traits long after other developments took place in the Levantine Corridor.

Previous suggestions for earlier links were largely based on the typical but anachronistic circular house plan of the Khirrokian. But the architectural relationship is much more profound than one of form. Cypriot buildings often have disproportionately large free-standing pillars. Such intramural pillars were a prominent feature of early buildings in Syro-Anatolia. But, as implied by the remarkable images of people and animals on their shafts and capitals, it is not so much the structural use that accounts for their longevity in Cyprus as their highly charged symbolic associations (*cf.* Schmidt 1998). This is borne out to some extent by the recurrence of painted images of people on one pillar from Tenta (Todd 1987: Fig. 39).

Tenta also provides a more compelling link with earlier mainland societies by virtue of its "top of site" settlement organization. According to Fig. 1, it probably belongs to the Cypro-LPPNB. It consists of a dominant, c. 12 m diameter circular structure with radial cells flanked by rows of relatively thin-walled, small curvilinear buildings (Todd 1987: Fig. 20). This spatial organization is strikingly similar to the hierarchical plan of PPNA Jerf el Ahmar (Stordeur 1999: 145). It too has an imposing core structure that is circular, disproportionately large with radial cells, and is similarly flanked by a variety of smaller buildings. Later settlement plans in both the Levant and Cyprus are different. The Tenta builders also employed mud bricks, an innovation following continental precedents, and one that argues for persistent contacts between the two regions throughout the PPNB.

The agro-pastoral package introduced to the island by the end of the 10th millennium BP also raises questions regarding the origins of the Cypro-PPNB. Mylouthkia Period 1A has yielded charred plant remains including domesticated glume wheats (*Triticum* spp. – grains and chaff), domesticated hulled barley (*Hordeum* spp. – grains and chaff), lentils (*Lens* sp.), large seeded legumes (*Lathyrus/Vicia* spp.), linseed/flax (*Linum* sp.),

pistachio (*Pistacia* sp.), roots/tubers, and many weed taxa. From the same context come the bones of pig and caprines, and from contemporary Shillourokambos, fallow deer and most surprising of all, cattle bones. It seems highly unlikely that these early domesticates all arrived by jump dispersal from the remote Middle Euphrates where so many parallels in material culture exist. Instead, the evidence suggests that we have a biased Syro-Anatolian distribution of sites from the Natufian to the MPPNB periods, that there are problems of archaeological visibility in western Syria and southern Anatolia, and that the proximate localities and dating of the sources of the Cypro-PPNB are unknown. It may also be added that the disappearance of cattle from Shillourokambos, used to infer insular isolation after the Cypro-MPPNB (see above), is contradicted by their recurrence at sites like Kritou Marottou-Ais Yiorkis (Simmons 1998).

Conclusions

In the current state of our knowledge, it is impossible to make a definitive statement concerning the precise origins of the agro-pastoral colonists that reached Cyprus and became established by c. 9,300-9,200 BP. Northern Syria no doubt provided an ultimate origin for the Cypriot PPNB, as it was "the cradle" of PPNB culture that spread both north and south from the Middle Euphrates. This broader PPNB origin, however, tells us little of developments on the unsystematically surveyed Mediterranean coast, those perhaps directly responsible for the early appearance of the Cypro-PPNB. Possible roots in Anatolia, from which obsidian was imported to Cyprus in considerable quantities and whence a short-lived microlith tradition may have originated, cannot be ruled out. The Cypriot parallels with PPNA, even Natufian, precedents are not accounted for by proposals for a unilinear colonization from the Syrian Levantine Corridor in the PPNB. In short, there is currently no exclusive match between diacritical markers of the Cypro-PPNB and a specific site or sites in Syro-Anatolia that would allow us to pinpoint the parent body of these precocious migrant farmers, even allowing for divergences due to insular adaptations.

Changes following the Cypro-MPPNB in the highly diagnostic chipped stone industry argue for continued contacts with the Levant. They demonstrate a shift away from standardized blade production perhaps earlier than on the mainland. They also demonstrate continuity in the gradual decline of opposed platform core technology and evolution of tool types that echo developments in the Levant.

We have highlighted the need for multi-site analysis of the Cypriot evidence, especially because of the extreme paucity of early Neolithic sites presently available for analysis and the differences exhibited between these sites. The chronological and spatial diversity of those localities on the mainland that provide parallels for the Cypriot evidence also show that we are only at the beginning of understanding the complexities of the colonization of Cyprus and the evolution of its own regional culture variant, the Khirrokian.

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A Brief Summary of the Chipped Stone Assemblage from Akrotiri Aetokremnos, Cyprus

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Research Context

For many years, the earliest prehistory of Cyprus, as with most of the Mediterranean islands, could only be confidently placed into the Aceramic Neolithic, despite some unsubstantiated claims for earlier occupations. It was the so-called "Khirokitia Culture" (cf. Knapp *et al.* 1994: 404) that represented the first convincing occupation of the island, and this aceramic manifestation differed substantially from mainland counterparts in many critical ways, such as technology/typology, architecture, and chronology (LeBrun *et al.* 1987). Radiocarbon determinations suggested that the Khirokitia Culture was, in fact, a relatively late Aceramic Neolithic manifestation, occurring essentially during the seventh and sixth millennium B.C. (Held 1989: 278, Knapp *et al.* 1994: 383).

Table 1. Summary of the chipped stone assemblage from Aetokremnos.

Class	N	%
Tools	128	12.5
Debitage:		
Core trimming elements	6	
Core tablets	1	
Primary flakes	13	
Secondary flakes	79	
Tertiary flakes	164	
Secondary blades	13	
Tertiary blades	65	
Bladelets	42	
Subtotal	383	37.5
Other Waste:		
Burin spalls	16	1.6
Microflakes (or "retouch flakes")	178	17.5
Cores	20	1.9
Debris (or "shatter")	296	29.0
Total	1,021	100.0

All of this changed with the excavation of Akrotiri Aetokremnos, a small rockshelter that demonstrated an occupation during the 10th millennium B.C. that we termed the Akrotiri Phase (Wigand and Simmons 1999). Aetokremnos is unique in many ways, not the least in that it is associated with a large assemblage of endemic pygmy hippopotami, making it one of the few convincing cases showing a relationship between humans and extinct Pleistocene fauna. Although the Akrotiri Phase is not "Neolithic" *sensu stricto*, it is roughly contemporary with mainland Late Natufian and early Neolithic (i.e., PPNA) manifestations (Simmons 1999).

Table 2. Debitage Length, Width, and Thickness. <L=length, W=width, T=thickness, S.D.=standard deviation; measurements are in mm. In some instances, length "N" may exceed the number of complete pieces since this variable could be only measured on nearly complete artifacts.>

Measurement	Blades			Bladelets			Flakes		
	L	W	T	L	W	T	L	W	T
N	26	73	76	20	41	41	138	188	253
Mean	44.2	16.2	4.4	23.1	9.0	2.9	28.9	23.2	5.7
S.D.	14.6	3.6	2.3	6.5	2.1	1.2	13.2	8.7	3.4
Minimum	22.0	7.9	1.2	13.3	4.7	0.9	8.4	8.5	1.4
Maximum	84.9	27.8	12.6	34.4	12.0	6.4	76.3	68.3	20.1

Since the documentation of Aetokremnos, new sites have shown that the traditional Aceramic Neolithic in Cyprus (that is, the Khirokitia Culture) must, in fact, be revised, both chronologically and typologically. Both Shillourokambos Parekklisha along the south-central coast (Guilaine *et al.* 1995) and a series of Neolithic wells at Kissonerga-Mylouthia near Paphos (Peltenburg *et al.* in press) have convincingly documented that the Aceramic Neolithic now extends back to at least the eighth millennium B.C. and that typical Levantine artifact forms, such as Byblos points, occur, at least at Shillourokambos. With these new discoveries, there has been a badly needed new interest in early Cypriot chipped stone assemblages (e.g., Kardulias 1993, McCartney 1999). In addition, at sites such as Shillourokambos and Ais Yiorkis (Simmons 1998), cattle have now been documented in Neolithic context. This is a new development and certainly has serious economic implications for the "Neolithic package" that arrived in Cyprus. A major question emerging now is what is the origin of this apparently early Neolithic colonization?

Table 3. Platform metrics. <S.D.=standard deviation. Measurements are in mm.>

	Blades	Bladelets	Flakes
Length			
N	19	8	69
Mean	7.3	4.4	11.2
S.D.	4.6	1.9	7.0
Minimum	1.6	2.2	2.7
Maximum	20.8	7.9	33.1
Width			
N	19	8	77
Mean	3.4	2.3	4.9
S.D.	2.4	0.5	3.1
Minimum	0.9	1.7	0.9
Maximum	11.2	2.9	15.5

Given this new evidence, scholars are now rightfully focusing on what appears to be a previously undefined early component to the Cypriot Neolithic (termed the "Cypro-PPNB"), one that is essentially contemporary to the mainland PPNB. Some of these researchers have suggested a northern Syrian "homeland" (see, for example, Peltenburg *et al.* in press; McCartney and Peltenburg this issue), although this remains unverified, especially in light of the fact that the PPNB was an extremely widespread Levantine and Anatolian occurrence. It is clear that all aspects of the Neolithic in Cyprus need to be revisited in light of this new evidence; this include a re-assessment of the chipped stone data.

It is critical that any evaluations of these new data include comparisons to Aetokremnos, since this site undoubtedly had its origins in either the Levantine or Anatolian mainlands, and may, in fact, be linked in some fashion to the newly discovered

early Cypriot Neolithic sites. The purpose of this brief communication is to summarize the chipped stone assemblage from *Aetokremnos* so that these data are readily available both to other scholars working in Cyprus and for mainland comparisons. Much more detail on the assemblage is provided in Simmons, Swiny, and Reese (1999).

Table 4. Length/Width Ratios.

Flakes	1.2
Blades	2.7
Bladelets	2.6

Summary of Various Attributes of the *Aetokremnos* Chipped Stone Assemblage

A total of 1,023 chipped stone artifacts were recovered from *Aetokremnos* (Table 1). A wide range of raw material was used by the inhabitants of the site. All was manufactured on locally available materials, and most was from Lefkara cherts. There is no obsidian (an imported material) in the assemblage. Overall, there is little patterning reflected in raw material selection. The most commonly available materials simply were those most frequently used in the manufacture of tools. The wide range of materials present in the assemblage suggests an expedient technology in which easily available materials, as long as they were of sufficient quality, were used.

By far the most common type of platform was the simple, single platform, accounting for nearly 50 % of both tools and debitage. Punctiform platforms also were common, attesting to the precise blade-like nature of some of the assemblage, and suggesting that percussion flaking was a common occurrence.

Although flakes outnumber blades and bladelets (2.1:1), there is no denying the blade-like character to this assemblage. That the distinction between blades and flakes is "real" is clearly born out by comparing metric observations on these artifacts (Table 2): the *Aetokremnos* blades are generally long and thin. Blade and bladelet platforms also are always shorter and thinner than are flake platforms (Table 3). These observations attest to a true blade technology rather than the fortuitous production of blades. The ratios of length to width amongst blades, bladelets, and flakes (Table 4) further confirm that blades were an intentional end product.

Table 5. Core Typology.

Type	N	%
single platform	1	5.0
globular	3	15.0
multi-directional	3	15.0
bladelet	5	25.0
subdiscoial	1	5.0
fragment/exhausted	4	20.0
material test	3	15.0
Total	20	100.0

The sample of cores from *Aetokremnos* is small (N=20; Table 5). Twenty-five % of the cores are bladelet forms; if one includes the fragmentary and exhausted specimens, this figure jumps to 45 %. Although bladelets are common in the assemblage (11% of the debitage), they are not as abundant as these figures would suggest. It may be that some of the cores classified as bladelet forms actually represent extremely reduced, or exhausted cores. This, however, does not appear to be the case, as the bladelet cores recorded exhibit clear bladelet scars. Of particular interest is the lack of naviform cores, which do occur (albeit in low numbers) in the newly discovered Cypro-PPNB sites (e.g., McCartney 1999).

Formal, retouched, tools comprise 12.5 % of the *Aetokremnos* assemblage (Table 6). By contemporary Levantine or Anatolian standards, there is little that this tool assemblage stands apart in; typologically it would fit comfortably within late Epipaleolithic or early Neolithic assemblages. However, when compared with Cypriot chipped stone tools, the *Aetokremnos* tools have few counterparts. Future comparisons with Cypro-PPNB assemblages, when they are published in detail, will be particularly interesting and may change this observation.

The *Aetokremnos* tools are dominated by distinctive "thumbnail scrapers", which form nearly 30 % of the tools. Burins also are common in the *Aetokremnos* assemblage, as are other scraper forms. Together, retouched blades and flakes comprise over 25 % of the tool assemblage. Perhaps most distinctive in this assemblage, apart from the thumbnail scrapers, is a low but consistent number of microlithic tools (nearly 5 % of tools). These suggest intriguing links to contemporary mainland cultures. Tools as a group were manufactured on a wide variety of debitage blanks, with 35.9% made on blades or bladelets, and 63.3% made on flakes.

Table 6. Tool Typology for *Aetokremnos*.

Class and Type	N	%
Scrapers:		
Thumbnail	36	28.1
Side	7	5.5
End	3	2.3
Side/end	4	3.1
Scraper/plane	1	0.8
Scraper/knife	1	0.8
Burins	15	11.7
Burins on truncation	4	3.1
Burin on scraper	1	0.8
Backed pieces	2	1.6
Truncations	3	2.3
Unifacial knives	2	1.6
Pièce esquillée	1	0.8
Notches	3	2.3
Retouched blades	16	12.5
Retouched flakes	22	17.2
Microliths:		
Trapezoid	1	0.8
Truncation	2	1.6
Lunate	1	0.8
Retouched bladelet	2	1.6
Total	128	100.1

Summary

The chipped stone assemblage from *Aetokremnos* is unlike any described for Cyprus. Perhaps the most distinctive element is the abundance of well-manufactured thumbnail scrapers. These certain are the most common tool type and may well represent a diagnostic element for the Akrotiri Phase. There is a strong blade component to the assemblage. Blades from *Aetokremnos* are well-manufactured true blades, often quite long and thin. The occupants of *Aetokremnos* clearly possessed an efficient and relatively sophisticated chipped stone technology.

Now that it is becoming clear that the early prehistory of Cyprus is far more complex than originally believed, it is critical that comprehensive and systematic analyses be conducted on chipped stone from a wide context of sites. Certainly the findings from *Aetokremnos*, coupled with new discoveries at *Shillourokambos* and *Mylothia* documenting an earlier, PPNB-like, Aceramic Neolithic occupation of the island, have changed the way that we regard the colonization of the Mediterranean islands.

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New Radiocarbon Dates for Ali Kosh, Iran

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Over the past several years, Melinda Zeder has been conducting further analysis of the animal bones from sites in Deh Luran and elsewhere in Iran and has secured new radiocarbon dates on charred bone (Zeder and Hesse 2000). These dates place the phases at Ali Kosh in new perspective and, by extension, the lithics associated with them. Readers are familiar with the previous dates and estimates of age (Hole 1977, 1987, 1994), all of which now require revision. The sources of error in the original determinations have yet to be determined, but the consistency of AMS results based on bone, as well as ages determined for related sites, leaves little room for doubt that the dating is now secure. The new dates by Beta Analytic are in Table 1.

Table 1. Beta dates reported by Zeder (2000); Oxford dates by Hedges (1990). MJ=Mohammed Jaffar Phase, AK=Ali Kosh Phase, BM=Bus Mordeh Phase.

Phase	Depth	Lab Number	Material	Uncal 14 C years b.p.	intercept dendrocal	Dendrocalibration 2 s age range B.P.
MJ	70-80	B-118719	carbon	8130 +/- 70	8995	9245-8940
MJ	130-40	B-118720	carbon	8140 +/- 70	9000	9360-8715
AK	210-30	B-118722	carbon	8110 +/- 80	8985	9245-8705
AK	280-300	B-118723	carbon	8490 +/- 90	9465	9565-9350
AK	380-400	B-118724	carbon	8340 +/- 100	9375	9485-9000
BM	540-560	B-108256	collagen	8000 +/- 50	9485	8985-8620
BM	630-50	B-122721	carbon	8540 +/- 90	9485	9650-9385
BM	570-600	OxA-1773	carbon	7830 +/- 90		8955-8405
BM	680-700	OxA-1774	carbon	7950 +/- 110		9012-8480
BM?	(100)	OxA-1775	carbon	7480 +/- 90		8406-8104

BM? (100), is a bone whose provenience label was partly effaced, but which had been sorted, perhaps incorrectly, into a BM context. This date falls within the range of the Oxford dates that inexplicably are younger than any of the Beta dates. The differences between the two laboratories are difficult to explain except as laboratory effects. If so, either the Oxford dates are about 500 years too young or the Beta dates correspondingly too old.

In a splendid reanalysis of the goat bones from Ali Kosh and Ganj Dareh that required precise chronological placement of the specimens, Zeder had a new series of radiocarbon dates run on charred goat bone from both sites (Zeder and Hesse 2000). These were relatively consistent and show that Ganj Dareh is as much as 500 years older than Ali Kosh. Moreover, Zeder reckons that Ganj Dareh may have been occupied for only 100-200 years, based on the calibration curve intercepts, and Ali Kosh for as little as 500 years. As Zeder is having more dates run on Ali Kosh and other related sites, we should soon have an even better chronological framework. To cap off the Deh Luran series it will be especially useful to run a series of goat bones from Chagha Sefid, to compare with Ali Kosh, and for Tepe Sabz and Farukhabad, to carry the sequence through the Chalcolithic. For the moment, however, Ali Kosh and Ganj Dareh can serve as benchmarks against which other sites can be compared chronologically and typologically.

The original series of 19 Ganj Dareh dates were scattered stratigraphically but all but three fell in the range 9000-8400 uncal bp (ca 8000-7300 cal BC). These compare with Zeder's 12 dates on collagen from goat bone that range from 8940-8720 uncal bp (ca 8000-7600 cal BC). There is little discrepancy between these two series of dates although one might infer, contra Zeder, that Ganj Dareh was occupied for as much as 400 years.

Although there has been little new archaeological work in Iran since the late 1970s, there continues to be an interest in the role played by the early sites in the development and spread of animal domestication and agriculture (Hole 1996, 1998). There is also renewed interest in the lithic industries of the Zagros, culminating in Stefan Kozłowski's comprehensive and much-needed review of the Neolithic of the entire Near East (Kozłowski 1998). In this carefully detailed reanalysis of the lithic industries, Kozłowski has also proposed a relative chronology. Although his interpretation is based more on comparisons of lithics than on radiocarbon (which he rightly questions) it is generally consistent with the new dates reported here. If Kozłowski errs, it is in assigning dates that are slightly older than those reported here. All in all it is a remarkably insightful work.

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Current Research in the Netherlands on the Near Eastern Neolithic

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Note: This short compilation is made on the basis of information provided by individual Dutch researchers. The many foreign scholars participating in the Dutch archaeological projects in the Near East are not included, although their contribution is vital and deeply acknowledged.

Field Projects

SYRIA

Balikh Valley Archaeological Project – Tell Sabi Abyad

Director: Peter M.M.G. Akkermans

Institutions: Netherlands National Museum of Antiquities, in collaboration with the Universities of Amsterdam (Institute of Prehistory), Leiden (Faculty of Archaeology and Institute of Pottery Technology), Groningen (Dept. of Archaeology), Lyon (Maison de l'Orient), and Chicago (Oriental Institute). The project is supported by Syria Shell Petroleum Development B.V. in Damascus.

Activities: survey and excavations in the Balikh valley, Raqqa province, northern Syria. Extensive field reconnaissance in the Balikh basin have been carried out since 1983, in collaboration with Tony Wilkinson (Oriental Institute). Large-scale excavations have been carried out or are currently taken place at four sites in the region: Tell Sabi Abyad I, Tell Sabi Abyad II, Tell Damishliyya and Khirbet esh-Shenef.

Periods: late PPNB (c. 7500-6800 BC; Tell Sabi Abyad II, Tell Damishliyya), Pottery Neolithic (c. 6800-5300 BC; Tell Sabi Abyad I, Tell Sabi Abyad II, Tell Damishliyya, Khirbet esh-Shenef).

Neolithic pottery: Olivier Nieuwenhuyse (Leiden).

Pottery technology: Bram van As (Leiden).

Lithics: Lorraine Copeland (Tocane St.-Apre, France).

Seals and sealings: Kim Duistermaat (Damascus).

Archaeobotany: René Cappers (Groningen), who is replacing Willem van Zeist (retired) as the project's botanist.

Archaeozoology: Louise van Wijngaarden-Bakker, Chiara Cavallo (Amsterdam).

Tell Sabi Abyad II: Marc Verhoeven (Leiden).

Homepage: forthcoming summer 2000.

Reports: (selected recent reports with references to earlier publications; short recent accounts also in *Annales Archéologiques Arabes Syriennes* and *Chronique Archéologique en Syrie*):

Akkermans P.M.M.G., Ed.

1996 *Tell Sabi Abyad - The Late Neolithic Settlement*, Leiden/Istanbul: Nederlands Historisch-Archaeologisch Instituut.

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1999 When the bullet hits the bone. *Neo-Lithics* 2: 10-11.

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1997 Of storage and nomads - the sealings from late Neo-lithic Sabi Abyad, Syria. *Paléorient* 22: 17-44.

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TURKEY

Ilıpınar

Director: J.J. Roodenberg

Institutions: Netherlands Institute for the Near East, in collaboration with the University of Groningen.

Activities: Survey and excavation in the Yenisehir region in northwestern Anatolia. Large-scale excavation at the mound of Ilıpınar since 1987.

Periods: Pottery Neolithic and Early Chalcolithic

Reports:

Roodenberg J. (ed.)

1995 *The Ilıpınar Excavations I. Five Seasons of Fieldwork in NW Anatolia, 1987-91*. Leiden/Istanbul, Nederlands Historisch-Archaeologisch Instituut.

Roodenberg J. and Gérard F.

1996 The southwest flank of Ilıpınar: the 1994 and 1995 seasons. *Anatolica* 22: 33-48.

Menteşe Höyük

Director: J.J. Roodenberg and Taylan Sevil.

Institutions: Netherlands Institute for the Near East, Izmir Museum.

Activities: excavation, initiated within the Ilıpınar project on early farming cultures in the Yenisehir region.

Periods: Pottery Neolithic (c. 5700-5400 BC)

Reports:

Roodenberg J.

1999 Investigations at Menteşe Höyük in the Yenisehir Basin (1996-97). *Anatolica* 25: 21-36.

Other Current Research

Neolithic Ritual: Marc Verhoeven (Leiden). Post-doctoral research project entitled *The Development and Meaning of Neolithic Rituals in the Levant and Anatolia*.

Lithics: Laurence Astruc (Leiden); selected studies based on materials from the Balikh valley.

Neolithic pottery: Olivier Nieuwenhuyse (Leiden); studies based on materials from Tell Baghouz; from Tell Boueid II (project directed by Antoine Suleiman); and from the Upper Khabur region survey (project directed by Bertille Lyonnet).

Prehistory of Anatolia: Laurens Thissen finished his Ph.D. thesis, entitled *Early Village Communities in Anatolia and the Balkans, 6500-5500 cal BC* (University of Leiden).

Prehistory and Archaeology of Syria: in collaboration with Glenn Schwartz (Baltimore), Peter Akkermans (Leiden) is working on a book entitled *The Archaeology of Syria* (Cambridge University Press, forthcoming 2001).

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7th Neolithic Seminar at the Department of Archaeology, University of Ljubljana "The Processes of Neolithisation in Eurasia", 22 - 27 May 2000 (Provisional Programme)

Mihael Budja (Dept. of Archaeology, University of Ljubljana)

Another Neolithic Seminar is planned for 22-27th of May, 2000 in the Department of Archaeology at Ljubljana University. The seminars are respected as meetings for the exchange on the transition to farming in Eurasia, where the regional mesolithic - neolithic palimpsests are discussed.

Contact: Dr. Mihael Budja, Department of Archaeology, University of Ljubljana at 86 1 2411558 and 386 1 2411570; e-mail: miha.budja@uni-lj.si

Programme

Monday 22nd May: Reception at the Department of Archaeology, University of Ljubljana

Tuesday 23rd May: Thema 1: The transition to farming in Eurasia
Introduction to the Seminar

Marek Zvelebil (Department of Archaeology & Prehistory, Sheffield University). Palaeogenetics and the agricultural transition in Europe - a review of recent evidence

Abraham Gopher (Department of Archaeology and Ancient Near Eastern Studies, University of Tel Aviv). The Neolithic revolution in the Levant: notes on some of the "Wh" questions

Laurens Thissen (Amsterdam). Proposal towards updating the beginning of early farming villages in Anatolia and the Balkans

Nina Kyriakou-Apostolika (Ephory of Palaeoanthropology & Speleology, Athens). The mesolithic-neolithic transition in Greece as evidenced by the data at Theopetra cave in Thessaly

Clive Bonsall, Gordon Cook & Rosemary Lennon (Department of Archaeology University of Edinburgh). Stable isotopes, radiocarbon and the mesolithic-neolithic transition in the Iron Age

Preston Miracle (Department of Archaeology, University of Cambridge). Feast or Famine? Epipalaeolithic Subsistence in the Northern Adriatic Basin.

Wednesday 24th May: Thema 2: The mesolithic and the neolithic studies in Eurasia - the regional approaches

Zhou Guoxing (Beijing Natural History Museum, Beijing). The Bailian-dong culture and the mesolithic culture in China

Zhang Feng (Department of Anthropology, Zhongshan University). The mesolithic culture in southern China

Jalal Rafifar (Department of Anthropology, University of Tehran). The anthropological approaches in neolithic studies in Iran

Ivana Radovanovic (Institute of Archaeology, Belgrade). Lepenski Vir - new data and old stories

Dusan Boric (Department of Archaeology, University of Cambridge). Earths, houses and floors of Lepenski vir: embodied meanings

Detlef Gronenborn (Seminar für Vor- und Frühgeschichte, Johann-Wolfgang-Goethe-Universität, Frankfurt). The beginning of complexity in Central European neolithic societies.

Konstantinos Kotsakis (Department of Archaeology Aristotelian University of Thessaloniki). The neolithic of Greece: new prospects

Milo Bilbija (Museum of Skopje). The neolithic of Skopje region: new prospects and new ideas

Bánffy Eszter (Archaeological Institute Hungarian Academy of Science, Budapest). The late Starčevo and the earliest Linear Pottery groups in western Transdanubia

Kornelija Minichreiter (Institute of Archaeology, University of Zagreb). The settlement patterns of the early Starčevo culture in Croatia

Thursday 25th May: Thema 3: The neolithic technologies, typologies and dating

Zhao Chaohong, Wu Xiaohong (Peking University, Beijing). The dating of Chinese early pottery and discussion on related problems

Hasan Talai (Institute of Archaeology, University of Tehran). New painted pottery assemblage at Ismailabad: a late neolithic site in the central plateau of Iran

Paraskevi Yiouni (Archaeological Museum of Kavala). Technological analysis of neolithic pottery from northern Greece: ceramic traditions in pottery decoration

Önur Özbek (Institut Français d'Etudes Anatoliennes, Istanbul). A typological investigations of stone axe factories in Turkish Thrace

Burcin Erdogu (Institute of Archaeology, University of Durham). Dating stone axe factories: the problems of neolithisation in Eastern Thrace

Thursday 25 - Friday 26 - Saturday 27: Field excursions

Notes and News

Information on the Symposium *Magic Practices and Ritual in the Near Eastern Neolithic*, held during the 2nd ICAANE in Copenhagen (23-24th of May, 2000), will be presented in the next issue of *Neo-Lithics*.

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Enquiries on / applications for an **Associated Membership** in *ex oriente* can be made to the address below.

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