

# WĀDĪ ABŪ ṬULAYḤA: A PRELIMINARY REPORT OF THE 2005 SPRING AND SUMMER EXCAVATION SEASONS OF THE AL-JAFR BASIN PREHISTORIC PROJECT, PHASE 2

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## Introduction

The 2005 spring and summer excavation seasons of JBPP-2 (the Al-Jafr Basin Prehistoric Project, Phase 2) were conducted from March 17 through April 4 and from August 1 through September 30 respectively; with the cooperation of the Department of Antiquities of Jordan. The primary goal of these two seasons was to explore the specific process of the pastoral nomadization in the Al-Jafr basin, tracing that process back to its very beginning. Wādī Abū Ṭulayḥa (JF-0155) was chosen for this project, a small composite site in the northwestern part of the basin. The excavations have revealed that this site included a small settlement dated, on the basis of lithic evidence, to the Late Pre-Pottery Neolithic B (henceforth PPNB) period. Available evidence suggests that this settlement served as a seasonal agro-pastoral outpost connected to a parent settlement probably to the west. It was quite unexpected that such a sizable outpost should have been founded under the harsh environmental condition of *al-Ḥamād* (i.e. flint pavement desert). Interestingly, a few striking similarities — including the settlement form, structure typology, and burial custom — have been noticed between this outpost and Late Neolithic pseudo-settlements. This suggests that the short-range transhumance between the Late PPNB agro-pastoral outpost at Wādī Abū Ṭulayḥa and a parent sedentary settlement, probably to the west, paved the way for the pastoral nomadization that took place in the subsequent period.

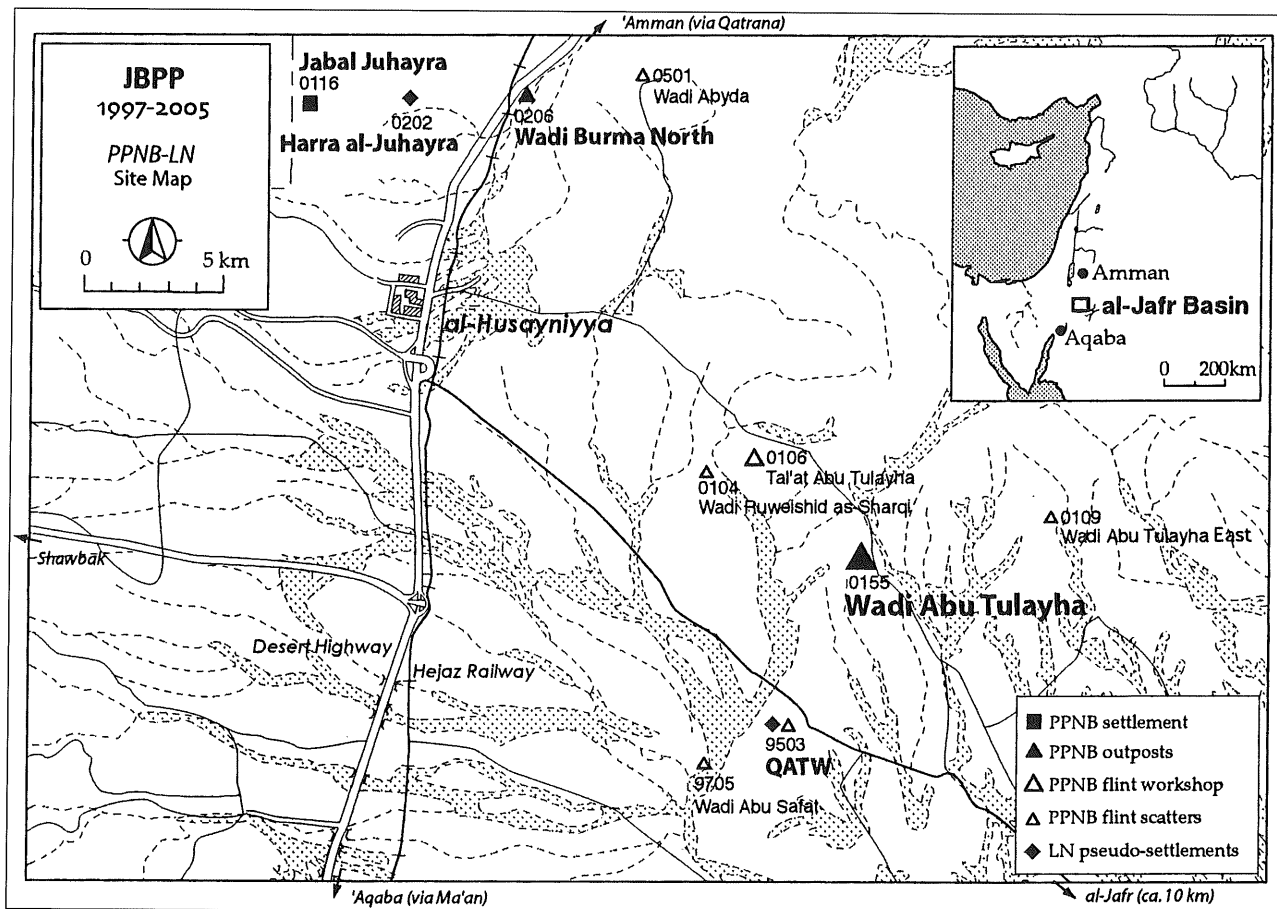
The site also included a pair of Early Bronze Age cist enclosures and a barrage system, that have yet to be dated for certain, both of which were briefly examined in connection with the excavation of the neighboring PPNB outpost. This paper summarizes the excavation results

of these three components which constitute the composite site of Wādī Abū Ṭulayḥa.

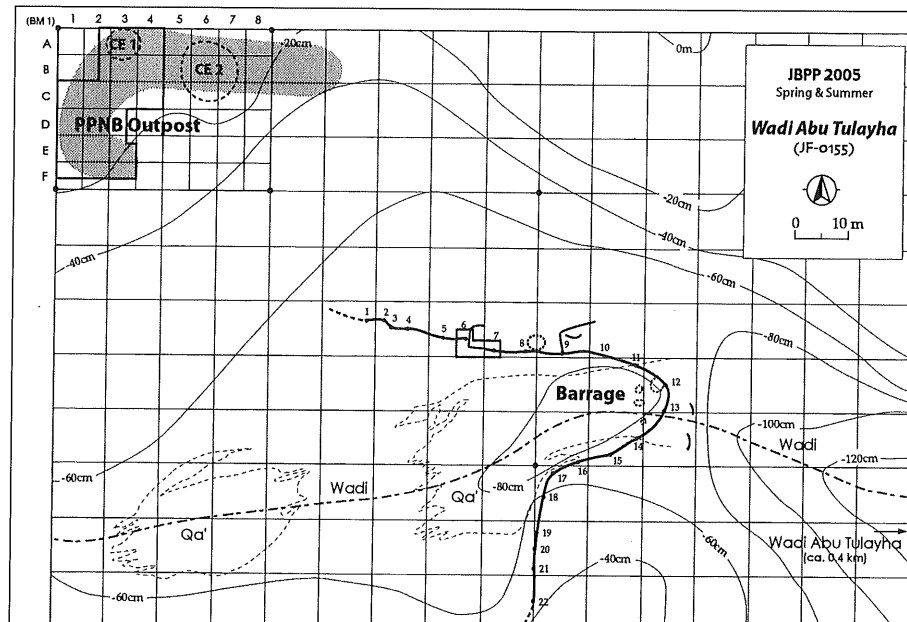
## The Site and Site-Setting

The site of Wādī Abū Ṭulayḥa, JF-0155 according to the registration code system of JBPP, was found initially during the 2001-2002 winter season survey and has briefly been referred to elsewhere (Fujii 2002b; Fujii and Abe 2006). This site lies in the middle of *al-Ḥamād* that extends between the two major drainage systems in the northwestern part of the Al-Jafr basin: Wādī Abū Ṭulayḥa to the east and Wādī ar-Ruwayshid ash-Sharqī to the west (**Fig. 1**). Hydrologically, it belongs to the former drainage system through a small tributary flowing eastwards across the southern half of the site. The surrounding natural environment is (and probably was) very harsh and the average annual precipitation is less than 50mm (Jordan National Geographic Center 1984: fig. 114). Thus, no natural perennial water source is available within a radius of a few dozen kilometers around the site. Accordingly the vegetation is very poor, being limited exclusively to wadi beds. No settlements currently exist and even local pastoral nomads are rarely encountered.

To date, two investigations have been conducted, in the spring and summer seasons of 2005. The general land survey conducted in the spring season has proved that this site, covering an area of ca. 1.5 ha, consists of the following three distinct components: 1). a sizable PPNB outpost occupying the northwestern corner of the site; 2). a pair of Early Bronze Age cist enclosures overlying the PPNB outpost; 3). a long, roughly V-shaped freestanding wall (yet to be dated for certain) extending to the southeast of the PPNB outpost (**Fig. 2**). Among the multiple



1. The al-Jafr basin: site map of the PPNB-LN sites.



2. Wādī Abū Ṭulayḥa: site map.

minor elements that constitute each component, Structure H of the first component, Cist Enclosure 2 of the second component, and a short wall segment of the third component were either excavated or sounded respectively. The summer

excavation season of 2005 focused on the PPNB outpost, the western half of which was fully excavated. In addition, Cist Enclosure 1 was examined and then removed advance of the excavation of the underlying PPNB outpost.

## PPNB Outpost

The excavation was conducted based on a 5m by 5m grid and locus system. The excavated area totals ca. 400 square meters and the volume ca. 200 cubic meters. Although excavated soil from fill layers was discarded without any special treatment that from floor deposit, including hearth contents, was put through a sieve with 3mm mesh nets in order to maximize the precision of the recovery of artifacts and faunal/floral remains.

Since Wādī Abū Ṭulayḥa is essentially a single-period site covered with aeolian deposits, the site stratigraphy was very simple. To list downward from the surface layer, Layer 1 was grayish buff, relatively loose, sandy silt deposit ca. 3-5cm thick; Layer 2 was light brown, slightly compact, silty sand deposit ca. 5-10cm thick, on which a pair of EBA cist enclosures were constructed; Layer 3 was heterogeneous deposits ca. 20-100cm thick that constituted fill deposits of PPNB semi-subterranean structures; Layer 4 was reddish-brown, loose, silty sand deposit no less than ca. 20-30cm thick, into which large foundation pits for PPNB semi-subterranean structures were dug. Layer 3 often faded out at the outer side of PPNB structures, where Layer 2 directly overlaid Layer 4. The deposits underneath Layer 4 varied in content depending on loci, but were commonly sterile in an archaeological sense. A limestone bedrock layer was reached at a level of ca. 1.2-1.5m below the present ground surface.

## Structural Remains

The excavation has revealed a total of eleven structural remains, Structures A to K (**Figs. 3, 4**). All of these were stone-built, semi-subterranean structures. Typologically, they fall into two types: smaller, shallower, round to oblong structures and larger, deeper, square to rectangular structures. They were arranged roughly in a semi-circle encompassing a communal forecourt to the east, with the former type structures in front and the latter behind. Interestingly, both types of structures were often, if not always, connected to each other by means of a narrow passage, thus forming a cross-species dual unit. In this sense, this settlement can be defined as a lateral development of these dual units; a key to understanding the formation process of this

elongate settlement. Owing to limited space, the following description will focus on general traits of these structures, leaving the details to another occasion.

### *Construction Material*

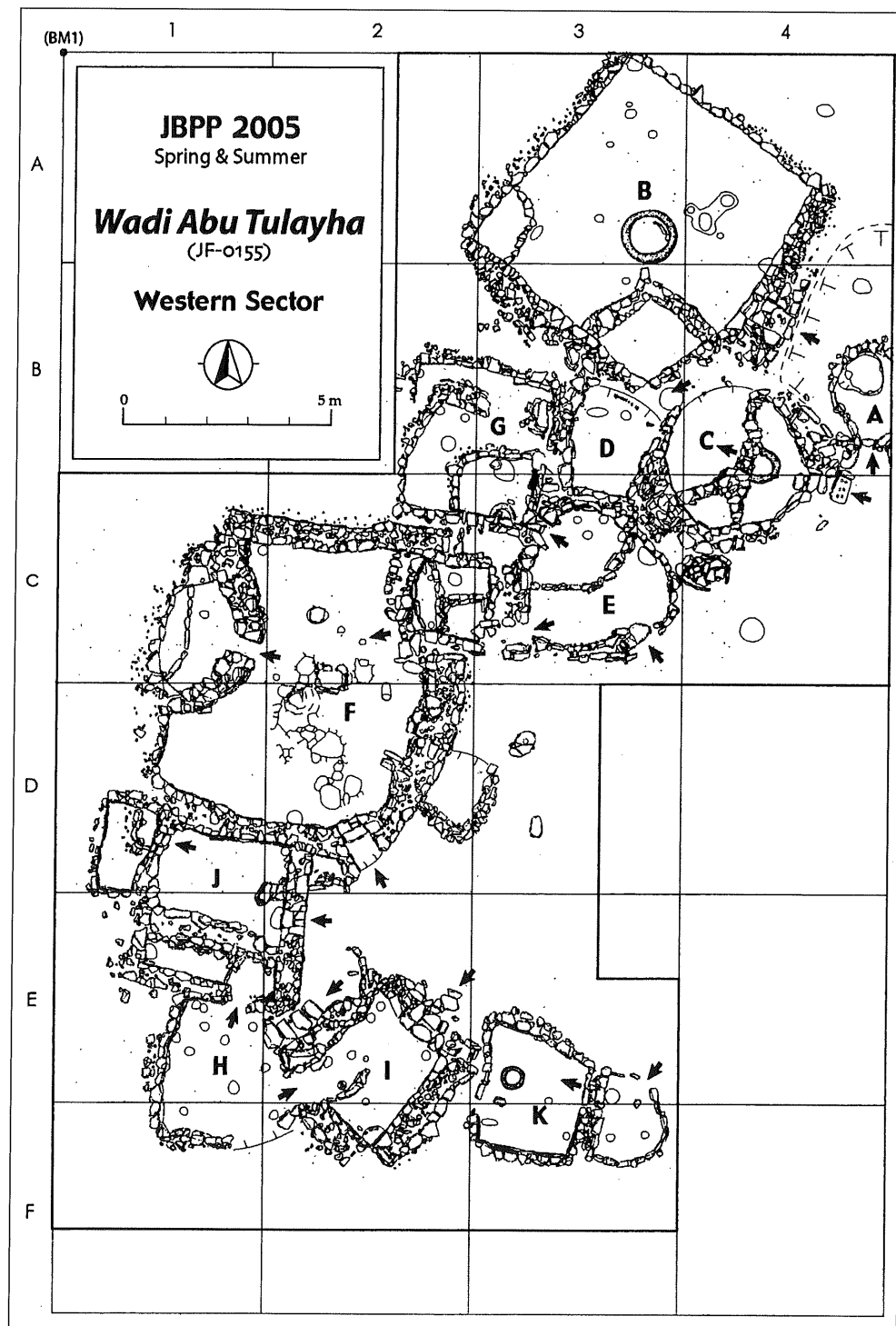
Partly dressed flat limestone cobbles, ca. 30-40cm long on average, were used for main construction material of walls, but larger angular cobbles were used especially for foundation stones often placed in an upright position. Smaller flint cobbles were also included, but to a lesser extent. In addition, flint and limestone rubble was applied to filling and adjustment material. These stones most likely came from the small wadi to the south of the outpost, where similar material is still found in large quantities. Noteworthy is the use of mud mortar, which, along with the use of standardized construction material, contributed to the quality of the masonry walls.

No special material was used for flooring. With the exception of some stone-paved storages and the base of a foundation pit, either stony or sandy depending on both loci and the floor depth, was used as a natural floor. No material for roofing was identified, but it seems likely that soft material such as wood, twig, and reed were used in combination with mud and stones. Mud and stones were also used for bordering some larger hearths.

### *Typology and Technology*

What characterize the structural remains at the Wādī Abū Ṭulayḥa PPNB outpost are that: 1) they are stone-built, semi-subterranean structures constructed on a large foundation pit ca. 0.4-1.2m in depth; 2) they fall into smaller, shallower, round to oblong components (**Fig. 5**) and larger, deeper, square to rectangular components (**Figs. 6-8**); 3) both types of structures are often connected with each other by means of a narrow passage, thus forming a dual unit (**Fig. 9**); and, 4) they developed in lateral direction, forming an elongate, curvilinear settlement.

The first item (i.e. the semi-subterranean type of structures) is a key to understanding the architectural properties of these structures, in that a large foundation pit dug beforehand, determined not only the floor depth of a structure but also the other major attributes including its size,



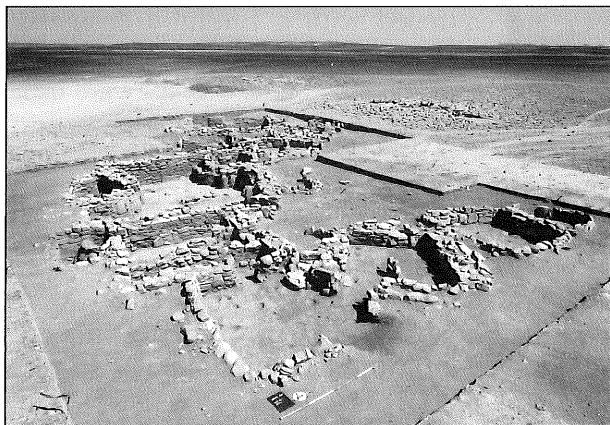
3. Wādī Abū Ṭulayḥa: the western excavation sector of the PPNB outpost.

orientation, and general plan. Nonetheless, this is not to say that it was dug arbitrarily; rather, it seems more reasonable to assume that it was excavated following a given design. It is quite conceivable, however, that the supposed design was subject to some modification in the course of the digging depending on the nature of the underlying deposits, which in turn affected the

size and form of the structure.

Available evidence suggests that these foundation pits were dug at a relatively steep angle, and that masonry walls were constructed partly leaning on them. (It is for this reason that the profile of a foundation pit is often untraceable). The stone masonry technique varied to a considerable degree depending on loci. Subterra-

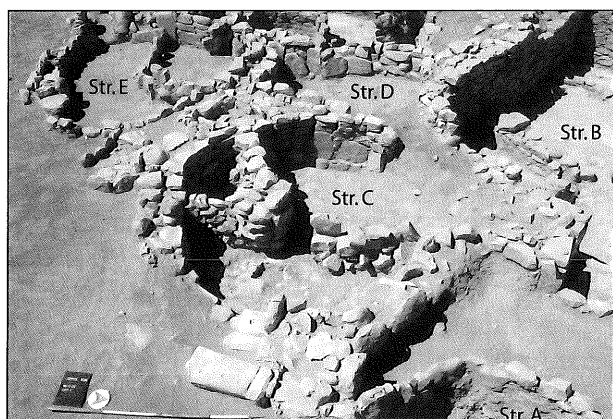




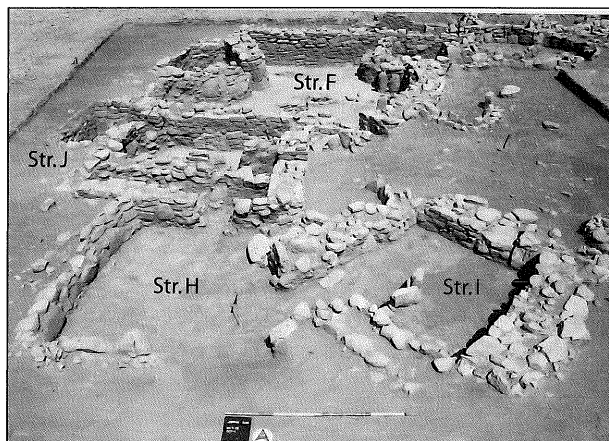
4. Wādī Abū Ṭulayḥa: the general view of the PPNB outpost (from SW).



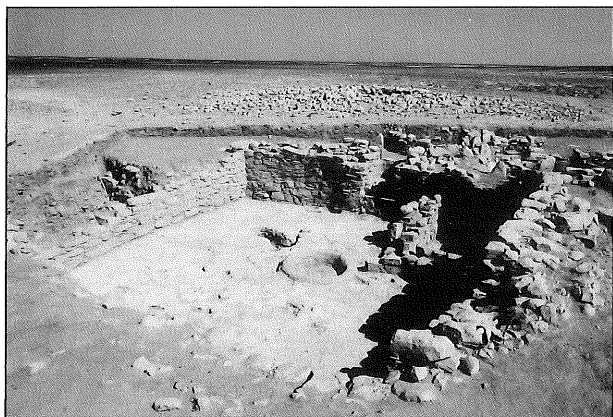
7. Structure F: general view (from E).



5. Structure A-E: general view (from E).



8. Structure H-J: general view (from S).



6. Structure B: general view (from SW).

nean walls were commonly a single-row wide, whereas aboveground walls, especially those of rectangular structures, were often two-row wide with rubble being packed in between. As for stacking pattern, stretcher bond was the norm of subterranean walls, but header bond technique was often applied to aboveground, two-rowed walls. It should also be added that upright stones were often used for foundations.

Overall, the mason's work was superior in



9. Structure K: general view (from S).

quality and every course was piled up roughly in a horizontal position, using rubble and mud mortar as adjustment material. The use of partly dressed flat cobbles as construction material also contributed to this stability. Another contributing factor is rubble and sand filled into a narrow gap behind the walls, which served as a rear support for the walls especially of large, rectangular structures. Contrary to this were walls of small round structures and shallower

rectangular structures, which were usually built appressed to a flank of a foundation pit without any filling in between. For this reason, the profile of a foundation pit of these structures was less traceable in comparison with that of the larger, rectangular structures.

The wall height varied from one to a dozen courses high depending on the structures. Overall, subterranean walls were well preserved owing to the existence of a rear support and the covering with aelian deposits. In contrast, aboveground walls were poorly preserved due to the lack of such helpful agencies; being preserved up to only a few courses. Nonetheless, the amount of fallen stones around them suggests that they were originally a few courses higher, especially in the case of rectangular structures. It appears, however, that the ceiling height of most of the structures was not enough to allow people to walk around a room without arching one's back. Unfortunately, nothing specific is known about the roofs, but, in view of the general plan of the structures, the arrangement of plinth stones and postholes, it seems most likely that flat roofs supported with wooden pillars and beams were used for the rectangular structures. In contrast, a temporary shed is more plausible for round structures.

The second and third items (i.e. the combination of two distinct types of structures) are mostly involved in the functional division among the structures. As noted above, round structures are usually smaller in both total size (ca. 2-3m in diameter) and floor depth (ca. 0.3-0.5m), more atypical in general plan, and inferior in construction quality. In addition, they often lack a stone-fringed, stepped entrance, which is substituted by a simple slope. All this, coupled with the relative scarcity of postholes, suggests that they were semi-open spaces under a temporary shed. Of significance is the fact that they are often equipped with a few small compartments and plural hearths, an indication that they were used for domestic affairs including cooking and storing. For this reason it seems probable that they were arranged in a line facing the communal forecourt. The contrary applies to rectangular structures, which are larger in both size (ca. 3.5-6.5m wide) and floor depth (ca. 0.5-1m), more standardized in general plan, and far superior in construction quality. Furthermore,

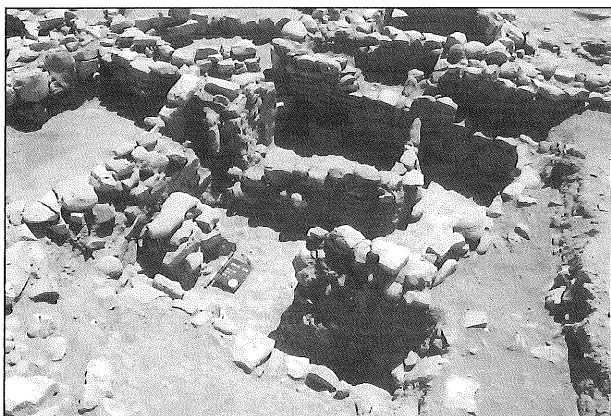
they are equipped with a carefully designed, stone-lined, stepped entrance as well as plural postholes. One may also note that they are usually separated from the communal forecourt with round structures in between. There is little doubt that they served as the living and sleeping space, protected by higher masonry walls and a substantial roof. Considered in this light, it is no wonder that these rectangular main rooms were often connected with round structures, the domestic section in front, to form a cross-species dual unit.

All these observations provide a likely explanation for the fourth point (i.e. the elongate, curvilinear settlement form). The unique profile of this settlement can best be understood as a lateral aggregation of dual structures consisting of a semi-open, round anterior chamber for domestic affairs and a main rectangular room for living and sleeping. It should be noted, however, that the combination of both components varies to some extent from unit to unit. It should also be added that the settlement incorporates a variety of small features including curvilinear windbreak walls and small aboveground storages. The various combinations of these distinct components are responsible for the complicated, heterogeneous appearance of this unique settlement.

### *Burial Practice*

A few special comments should be made about a burial cairn that was found along the eastern wall of Structure G. This structure occupied a narrow space sandwiched between Structure B and F, and, through a narrow passage at the southeastern corner, it was connected with Structure E, a communal anterior chamber shared with Structure F. In comparison with the two neighboring rectangular structures, it was much smaller in size (ca. 3-3.5m on a side and ca. 1m in floor depth) and inferior in construction quality (**Fig. 10**). Nonetheless, this structure is highly important in that it has provided specific information about a unique burial practice at this outpost.

In order to understand the archaeological implications of this burial cairn, it is essential to put it in the context of the occupational history of Structure G. The careful excavation has shown that this structure contained at least three con-



10. Structure G: general view (from NW).

struction phases. The first phase, or the original state of this structure, is represented by the four exterior walls and the lowest floor. Noteworthy is the fact that the northern wall was poorly preserved, and that the western wall diverged on the way. This means that both of these walls partly collapsed due to strong sideways earth pressure. (Contrary to this were the southern and eastern walls, both of which were built leaning against neighboring structures and, for this reason, saved from collapse). The second phase is marked by the abandonment of the northern wall and the reconstruction of the northern half of the western wall. Since no remarkable stratigraphical gap was recognized between the original western wall and the reconstructed part, it is likely that these episodes happened soon after the construction of this structure. What interests us is the fact that, despite the addition of a buttress wall at its northern end, the western wall thus renovated is still remarkably inclined inward. This suggests that the reconstruction of the western wall ended with a failure and the northern half of the structure was left as semi-open space without roofing. The third phase followed this episode, but a certain stratigraphical gap intervened between the two. What took place in this final phase is the addition of a L-shaped partition wall at the southeastern corner, which converted this narrow space into a kitchen equipped with a small, clay-lined hearth. This means, in turn, that the northern, probably unroofed half of this structure was finally abandoned as an indoor space at this stage.

What occurred at roughly the same time as the last episode was the construction of a small burial cairn along the northern half of the east-

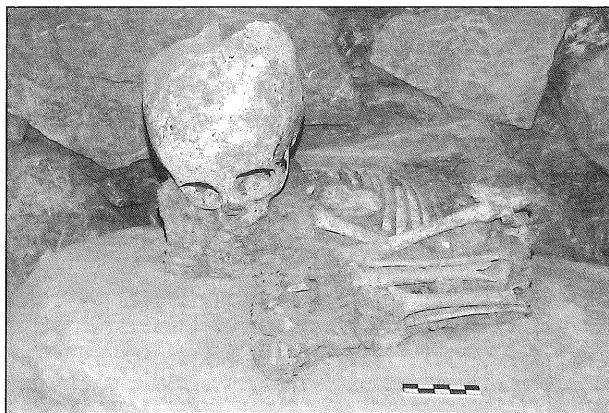
ern wall, where a primary interment of an infant assuming a crouching position was found *in situ* underneath a large capstone (Fig. 11). It is possible that this interment triggered the functional conversion of the southeastern corner as well as the final abandonment of the northern half. An alternative interpretation is that the interment took place at the northern half of this structure, precisely because it had already been broken down as a living room. Whatever the case, this burial is highly important in that it is the first to exemplify the facade-side cairn burial leading to (or, possibly, deriving from) the abandonment of a house, a unique funeral practice inherited, though losing its substance, down to Late Neolithic pseudo-settlements mentioned below.

### The Finds

The finds from the Wādī Abū Ṭulayḥa PPNB outpost were abundant, consisting of some hundreds of bags of chipped flint artifacts, dozens of ground stone artifacts made of either flint or limestone, several game boards made of limestone slabs, a few dozen bone tools, and a number of miscellaneous objects. In addition, faunal remains occurred in considerable quantity. Since close examinations are still in progress, the following description will be confined to general characteristics of each category.

#### Chipped Stone Artifacts

Raw material for chipped stone artifacts consisted exclusively of fine-textured, grayish brown to dark gray flint nodules, which were probably brought from outcrops lined along the northern fringe of the Al-Jafr basin. Overall, they were based on the naviform core-and-blade technol-



11. Structure G: close-up view of the interment after removing a capstone (from W).

ogy, a hallmark of the PPNB flint industry, but other types of cores, largely of single platform type, also occurred to some extent. The debitage classes included cortical chunks as raw material, naviform cores (**Fig. 12: 1-4**), crest blades (**Fig. 12: 5**), core tablets (**Fig. 12: 6**), and bidirectionally detached blade blanks (**Fig. 12: 7-11**). It is evident that the inhabitants of this outpost were engaged in on-site tool production utilizing the rich flint resource of the Al-Jafr basin.

The tool kit is characterized by the predominance of points and arrowheads, which, along with the frequency of faunal remains, points to the importance of hunting activities at this outpost. Typologically, they fall into Byblos (**Fig. 12: 12-21**), Amuq (**Fig. 12: 22-28**), and Jericho types (**Fig. 12: 29-34**), the first of which were the most predominant. Next came the Amuq type points and arrowheads, which are suggestive of a Late PPNB date for this flint assemblage. The tool kit also included finely serrated sickle blades (**Fig. 13: 1-4**), notches and denticulates (**Fig. 13: 5-6**), drills (**Fig. 13: 9-11**), burins (**Fig. 13: 12-14**), side- and endscrapers (**Fig. 13: 15-16**), picks (**Fig. 13: 17**), axes/adzes (**Fig. 13: 18**), and large bifacial knives (**Fig. 13: 19**). The frequency of sickle blades suggests that plant resources, probably including cereal crops, were extensively exploited around the site. Likewise, the existence of axes and adzes implies that wood processing was essential at this outpost where substantial structures were built using pillars and beams. Also of interest are the occurrence of large bifacial knives and the predominance of angle burins, both of which are characteristic of al-Bādiya PPNB-LN sites, among others, in the Transjordan plateau. These observations allow us to define this flint assemblage as an eclectic form sharing the two distinct cultural aspects: the sedentary PPNB to the west and the al-Bādiya PPNB to the east.

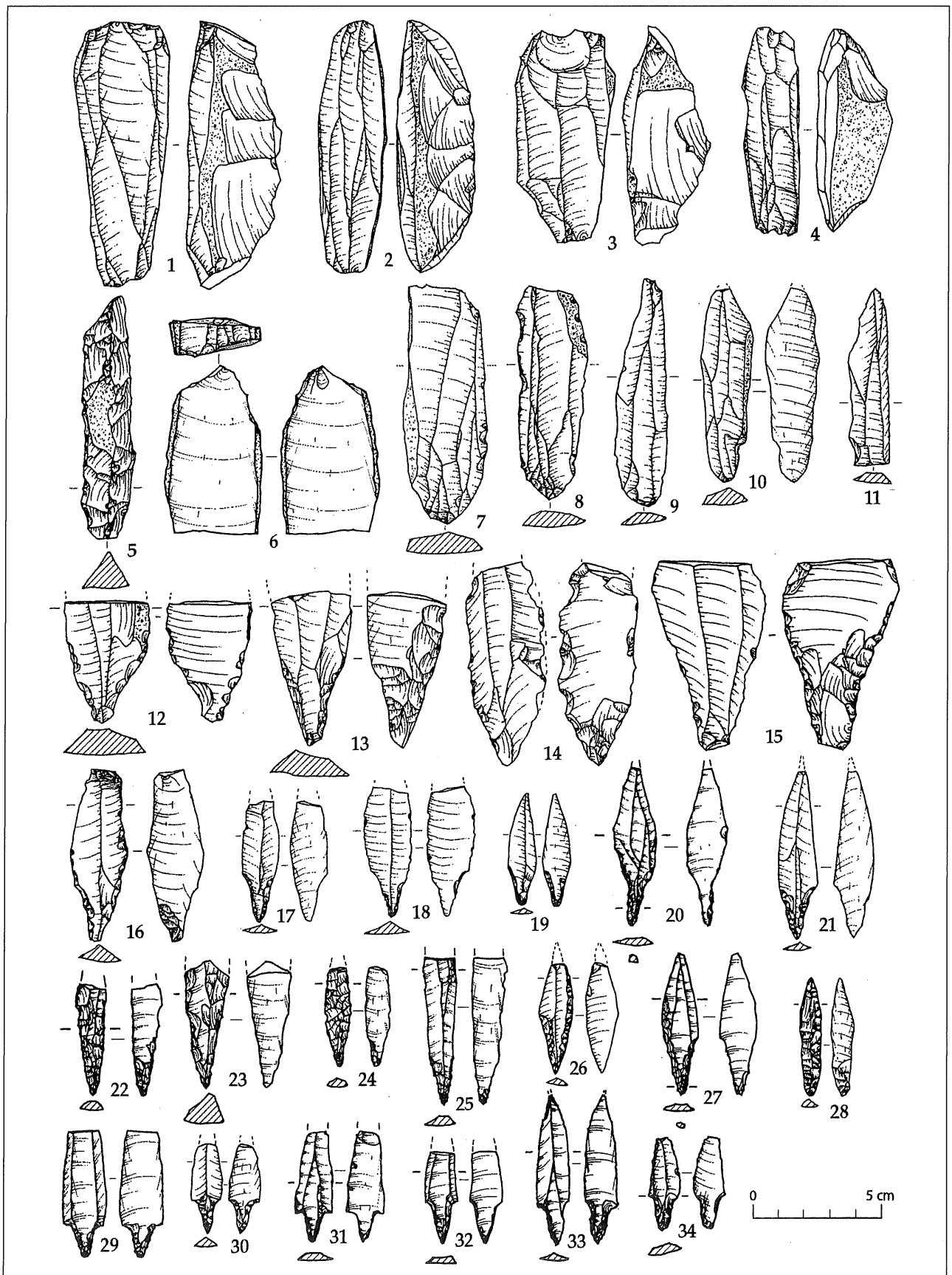
### *Ground Stone Artifacts*

This second largest category included grinding equipments and plinth stones as two major classes. Grinding equipment consisted of upper and lower stones, the former was relatively homogeneous in both size and morphology. In contrast, querns varied from smaller, oblong, flat examples made of cortical flint (**Fig. 14: 1; Fig. 15**) to larger, round, basin-like examples

made of fine-textured limestone (**Fig. 14: 2-3; Fig. 16**). Interestingly, basalt products, the norm of grinding tools, were totally absent and, instead, flint products were relatively common. It seems that the unique site location in the middle of *al-Ḥamād* is responsible for this imbalance in material choice. It should be added, however, that upper stones included a few basalt products (**Fig. 14: 4**). The common use of heavy-duty grinding implements, along with the occurrence of sickle blades, strongly suggests that the cultivation of cereal crops played an important role in the subsistence strategy of this outpost. It should be added, however, that a few of the querns, especially of smaller examples, still retain red residue (probably of ochre) on their working surfaces, an indication that they were also used for cosmetic pallets to grind pigment. The occurrence of various pigments mentioned below corroborates this view.

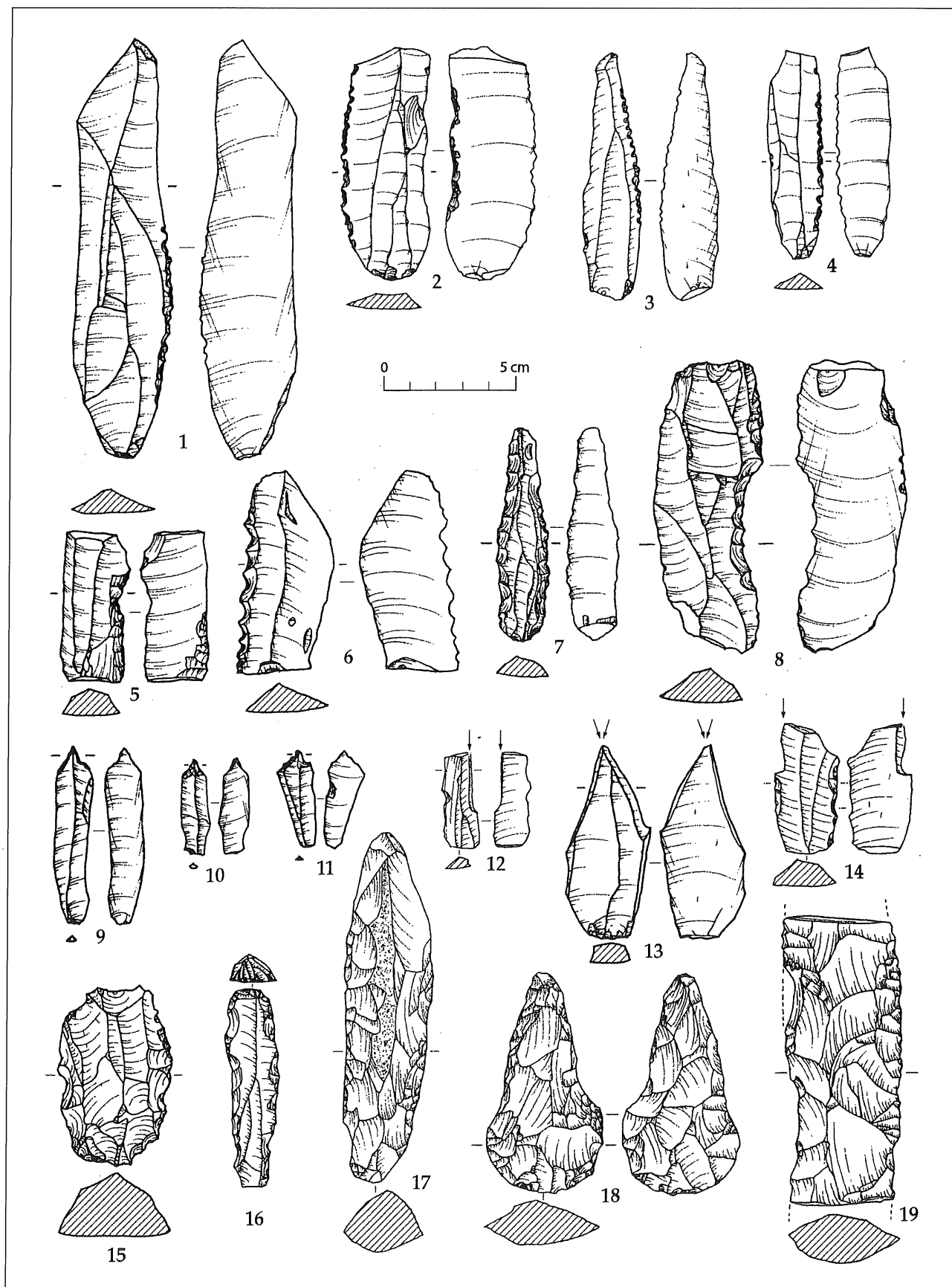
Plinth stones, defined by a flat upper surface and a relatively small yet deep central depression or hole, were made usually of coarse-textured limestone and were amorphous in profile. The only exception to this was a biconical plinth stone that was found *in situ* on the eastern floor of Structure B (**Fig. 14: 5; Fig. 17**). This example stood out in terms of the superior craftsmanship as well as in the use of fine-textured limestone as its raw material. The existence of such a sophisticated pillar base was quite unexpected for us who initially imagined a temporary campsite consisting exclusively of small huts. It should be noted, incidentally, that these plinth stones were rarely found *in situ*; instead, they were often found incorporated into walls as converted construction material. This provides further support for our hypothesis that the cycle of the abandonment and reconstruction at abutting lots, of a single or a few structural unit(s), contributed to the formation of this elongate settlement.

This category also included, as minor components, a few large engraved weights made of coarse limestone (**Fig. 14: 6**), some stone vessels made of either flint or limestone (**Fig. 14: 8, 9**), a grooved whetstone or an arrow shaft straightener made of reddish sandstone (**Fig. 21: 5**), a partially polished small axe made of fine-textured limestone, and several pumice stones possibly used for scrubbing grime off the skin.

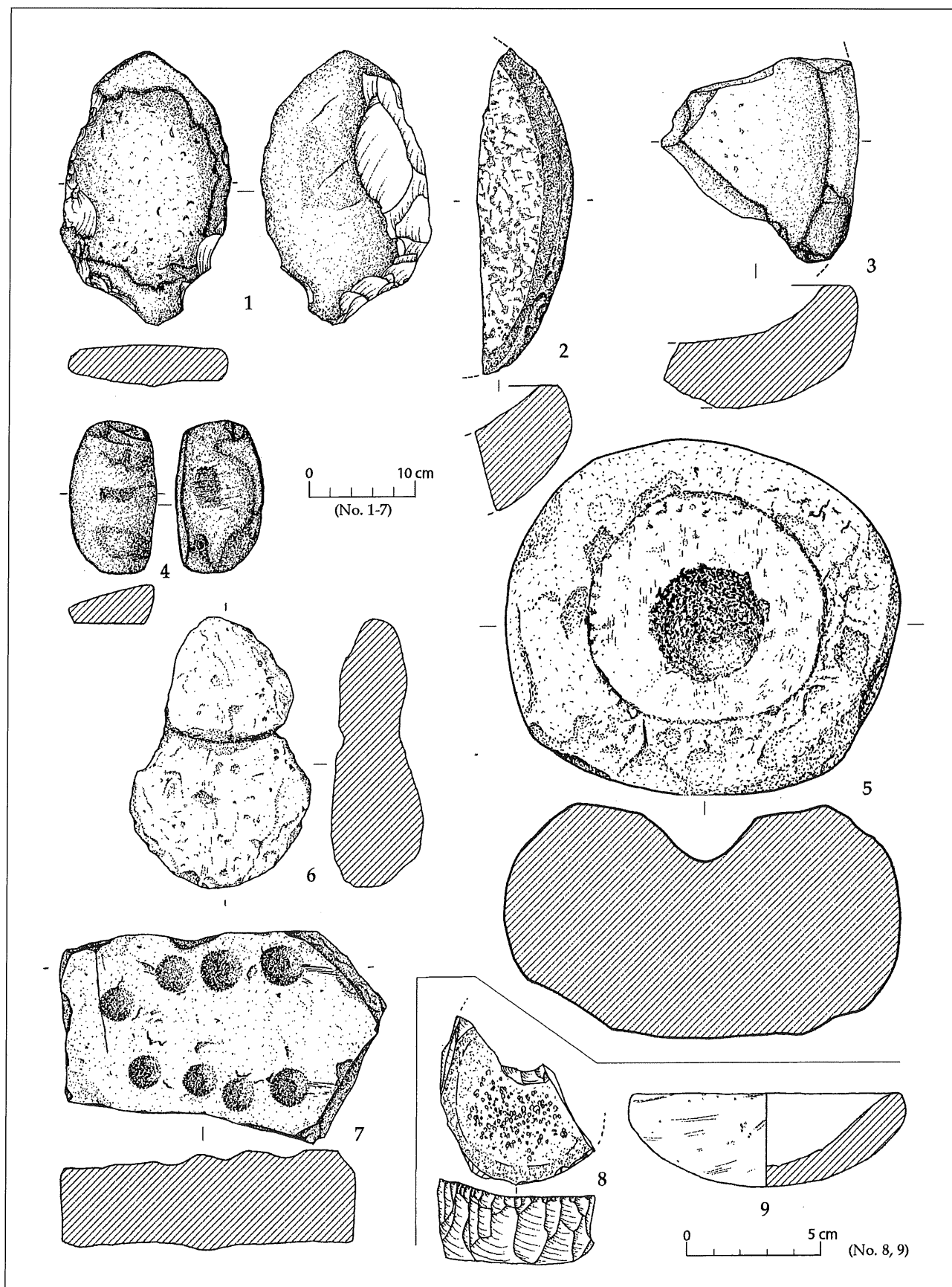


12. The finds from the PPNB Outpost: chipped stone artifacts.

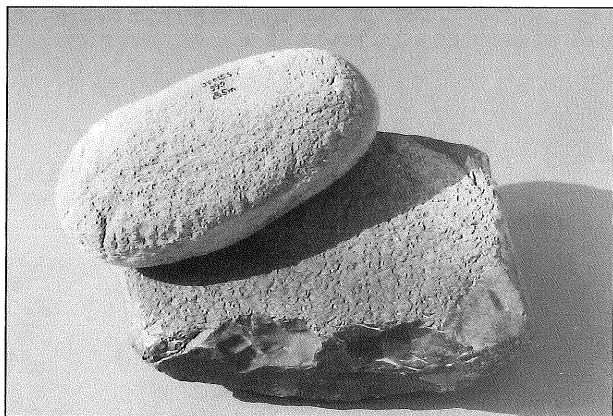




13. The finds from the PPNB Outpost: chipped stone artifacts.



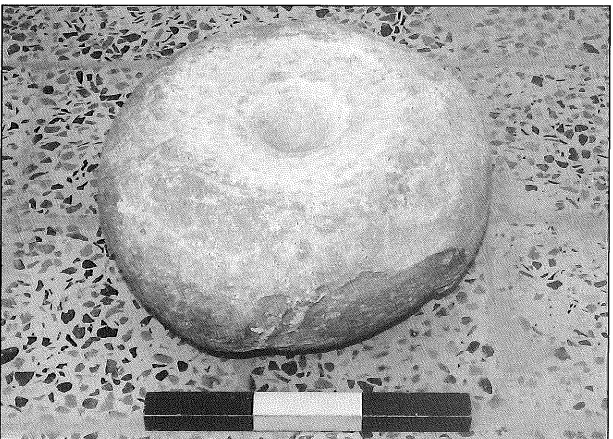
14. The finds from the PPNB Outpost: groundstone artifacts.



15. The finds from the PPNB Outpost: a flat quern and grinding stone both made of flint.



16. The finds from the PPNB Outpost: a basin-like quern made of limestone.



17. The finds from the PPNB Outpost: a plinth stone made of limestone.

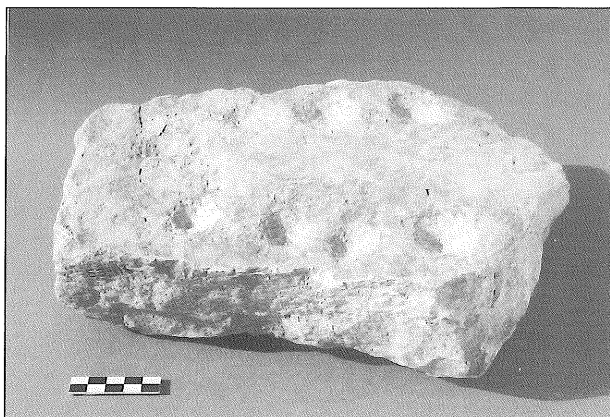
In addition, fist-sized hammer stones made of cortical flint nodules, another line of evidence of the on-site flint tool production, occurred in considerable quantity.

#### Game boards

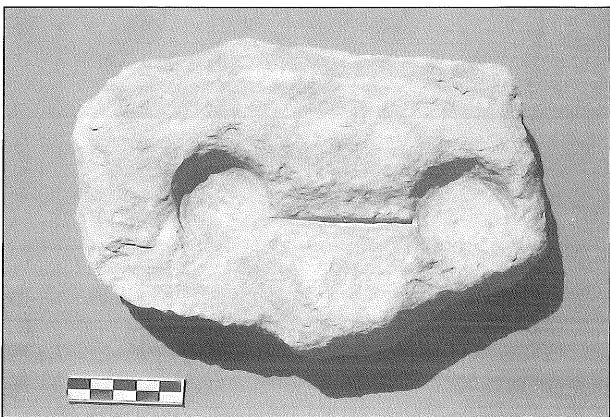
It was to our great surprise that several game boards occurred at an outpost isolated in the

middle of *al-Ḥamād*. These unique artifacts, all made of relatively fine-textured limestone slabs, fall into two types: boards with six depressions in two rows and those with eight depressions in two rows (Fig. 14: 7; Fig. 18). It is interesting to note that the same holds true of samples from al-Bayḍa ca. 50km southwest of this outpost (Kirkbride 1966: fig. 8). Furthermore, the existence of engraved lines connecting any two neighboring depressions is also common to both sides (Fig. 19). These observations highlight that there was a close relationship between this outpost isolated in *al-Ḥamād* and sedentary PPNB settlements to the west. Unfortunately, no clear evidence for game pieces was noted, but small, semi-transparent colorful pebbles, found in a considerable number from fill layers, might have substituted for them.

In light of the existence of plural pairs of shallow depressions, it seems that these limestone boards were used for playing a board game analogous to *manqala*, a number-juggling



18. The finds from the PPNB Outpost: a game board made of limestone.



19. The finds from the PPNB Outpost: a game board made of limestone.



game popular throughout modern Africa and Southeast Asia as well as the Near East (Murray 1951: 138-225). Similar examples have been reported from many archaeological sites including al-Bayḍa and Abū ash-Sha‘ar, a late Roman fort along the Red Sea coast (Mulvin and Sidebotham 2004). The occurrence of such heavy-duty game boards is suggestive of a relatively long stay at and repeated use of this outpost.

#### *Bone Artifacts*

Animal bone artifacts were less common, totaling a few dozen pieces. They included narrow spatulas (Fig. 20: 1-2), long points and needles (Fig. 20: 3-7), and chunky drills with a short tip (Fig. 20: 8-10). In addition, personal adornments such as beads, pendants, and rings occurred in limited numbers (Fig. 20: 11-13). A preliminary examination by Dr. Hitomi Hongo, the zooarchaeologist of our team, suggests that these artifacts were made largely of gazelle bones, a conclusion consistent with the excavated fauna referred to below.

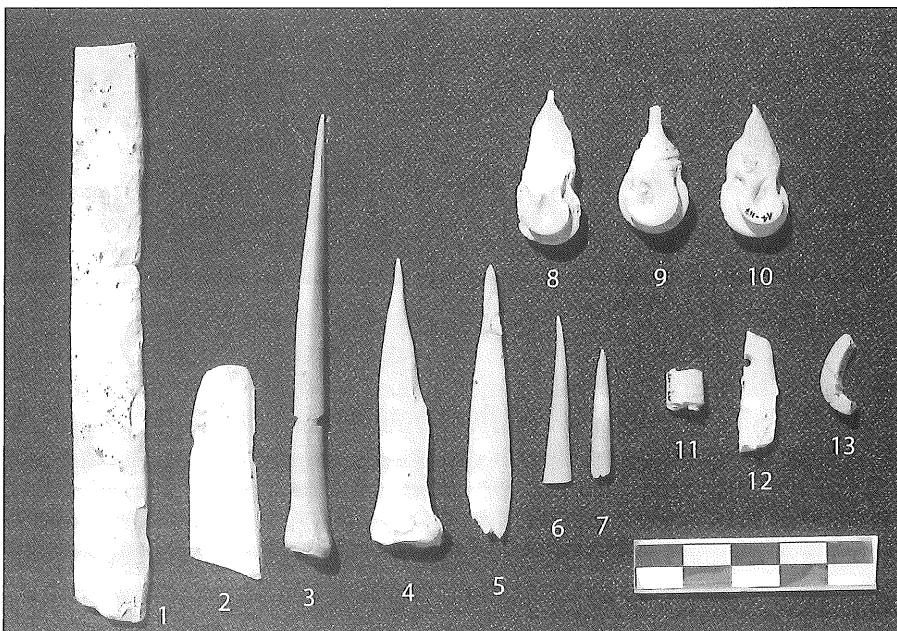
#### *Miscellaneous Finds*

Miscellaneous finds included an unworked shark tooth (Fig. 21: 1), some beads and pendants made of sea snail (Fig. 21: 2-4), and an engraved plaque made of reddish stone (Fig. 21: 9). The finds also included several fragments of malachite (Fig. 21: 6), crystal (Fig. 21: 7), and reddish sandstone (Fig. 21: 8), probably as

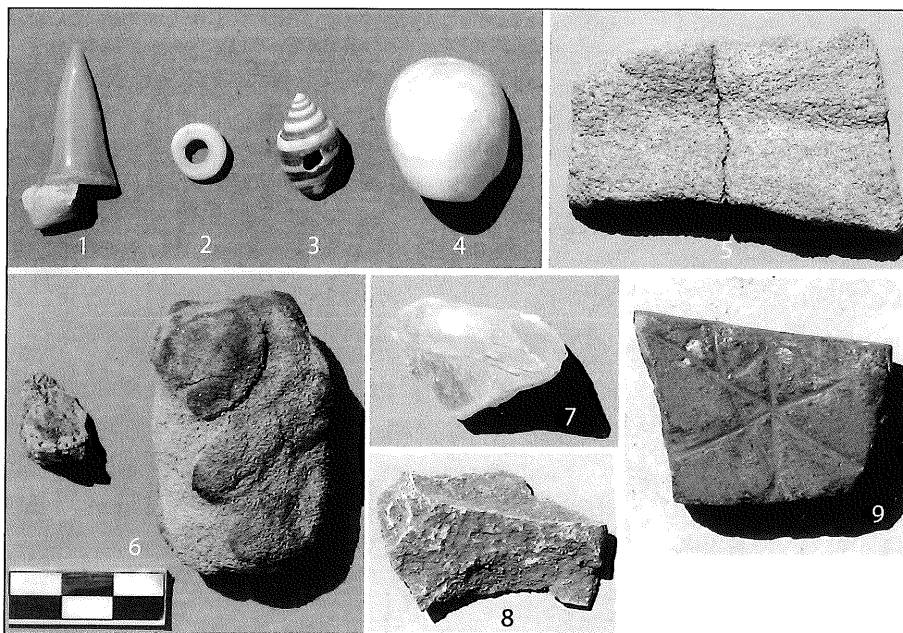
pigment or raw material for adornments. Since none of these is available in the Al-Jafr basin, it must be concluded that they were imported from outside. A long-distance trade with, or transhumance from the western or southern region can be assumed to be the social background of this material flow. In addition, a number of unbaked or slightly baked clay fragments were found, but nothing specific can be said about their use because of the total absence of complete examples.

#### *Faunal and Floral Remains*

Faunal remains were relatively common. A preliminary analysis by Dr. Hitomi Hongo suggests that they consist largely of gazelle, sheep, and goats, the norm of excavated fauna from Levantine PPNB settlements. An important observation is that the gazelle samples include post-neonatal individuals in a relatively high percentage. This probably indicates that the use of this outpost was focused on the few months after their birth season, that is, a term from spring to early summer. Of even further significance is the observation that, mingled with wild individuals, domestic sheep and goats occur to some extent. This means that, along with hunting and cereal cultivation, stock breeding was among the major subsistence strategies of this outpost. Given the seasonal use of this outpost, there is a strong likelihood that the inhabitants were engaged in small-scale transhumance from



20. The finds from the PPNB Outpost: bone artifacts.



21. The finds from the PPNB Outpost: miscellaneous finds.

a parent settlement probably to the west.

No specific information has been obtained about floral remains. Nonetheless, in light of the common use of reaping and grinding tools, there is little doubt that plant resources were extensively exploited around the site. A few dozen bags of floor soil and hearth contents, now stored in our house at al-Ḥusayniyya, would hopefully provide a key to the plant exploitation strategy at this outpost.

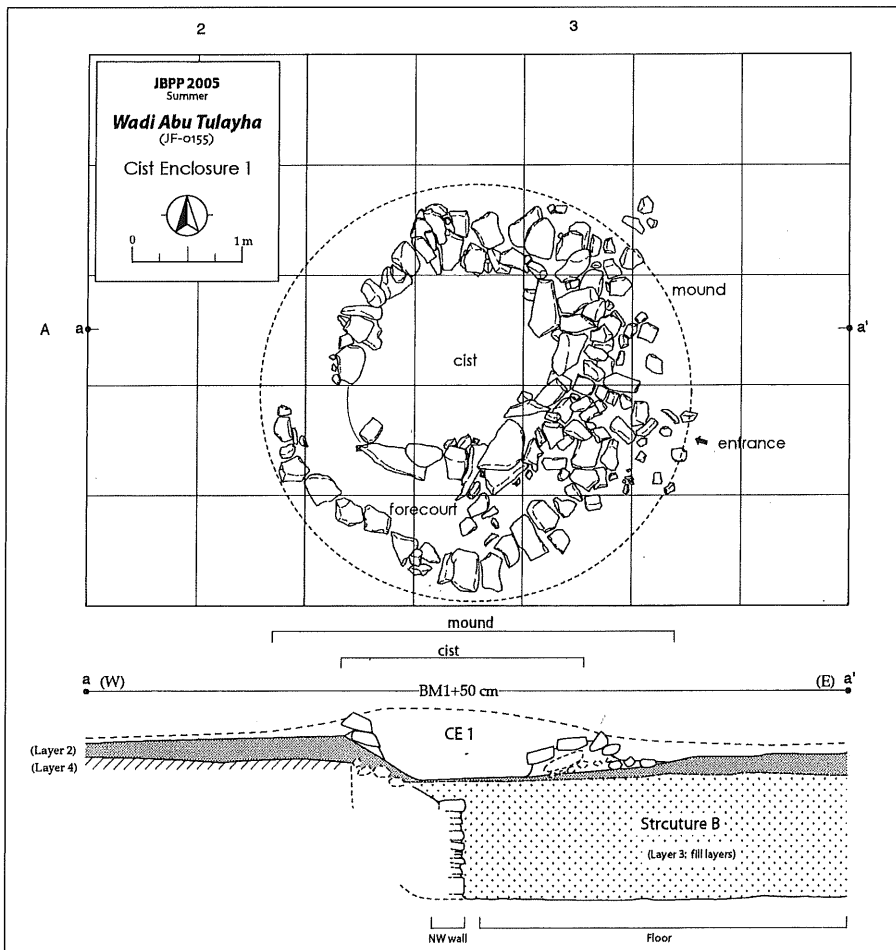
### Cist Enclosures

A pair of large burial cairns, or cist enclosures in our terminology, was found overlying the middle part of the PPNB outpost (Fig. 2). Stratigraphical observations have proved that both of these were constructed on the upper surface of Layer 2 and separated from the PPNB outpost by thick intervening deposits of Layer 2 and, at some loci, Layer 3. The excavations have also shown that they can be referred to cist enclosures first identified in our previous investigations at Wādī Burma and Tal'at 'Ubyda cairn fields (Fujii 2004a, 2005a). Cist enclosure 1, the smaller example to the west, was fully examined and then removed in advance of the excavation of the underlying PPNB outpost. Cist enclosure 2, the larger counterpart to the east, was briefly examined by means of a 2m wide test trench across the center of the cobble mound. Although no datable *in situ* finds were uncovered, they were tentatively dated to the EB I period on the

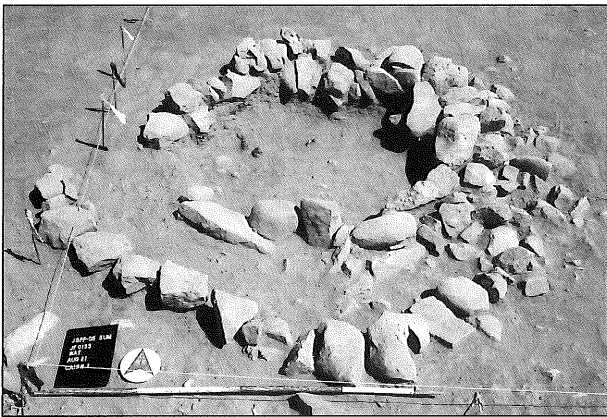
basis of the typological comparisons with dated examples to the west.

### Cist Enclosure 1

This small cist enclosure overlays the north-western part of Structure B, one of the major components of the PPNB outpost, and, as mentioned above, was separated from it by the thick deposits of Layer 2 and 3 (Figs. 22, 23). It is for this reason that it slightly sloped down toward the southeast. The excavation revealed that a round cist ca. 2m in diameter and a square forecourt ca. 2m to one side underlay a cobble mound ca. 3.5m in diameter and ca. 0.5m in relative height. This enabled us to define this feature as a forecourt type cist enclosure unique to the Wādī Burma North and South cairn fields. Both the 45-degree turning angle of the forecourt and the existence of an east-oriented entrance are common to the cist enclosures at the type of sites to the west. Nonetheless, a few minor differences were recognized. First, the forecourt was attached to the core feature from the south, not from the east. Second, neither a cist entrance nor an upright stone just behind it was clearly demonstrated, although this might be due to the poorly preserved state of this cist enclosure. Third, the cist wall was built not on the ground surface in those days but around a shallow pit dug beforehand. These observations led us to the conclusion that this cist enclosure was a local imitation of the proto-type at Wādī



22. Cist Enclosure 1: plan and section/elevation.



23. Cist Enclosure 1: general view (from S).

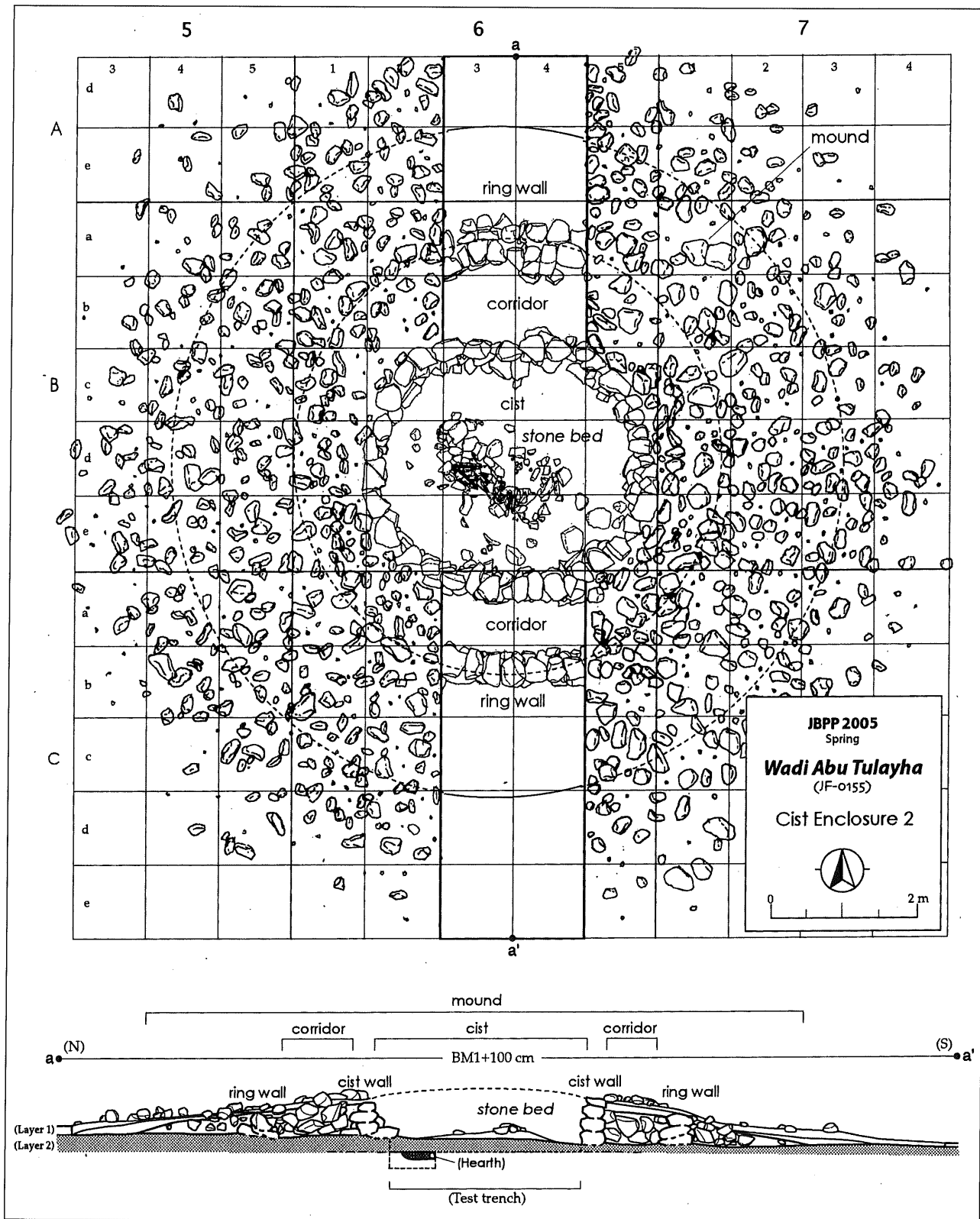
Burma cairn fields. Nonetheless, there is little doubt that this feature can be basically defined as a forecourt type cist enclosure and, therefore, probably dated to the EBI period. In light of its smaller size and atypical morphology, it can be referred to in relation to the later stage of the chrono-typological sequence of the Wādī Burma cist enclosure entity (Fujii 2005a).

No burial gifts were found, but a handful of

human skeletal remains were recovered from the cist floor, especially from its northwestern corner. It is a tentative conclusion of Dr. Hiroko Hashimoto, the physical anthropologist of our team that they came from a secondary interment of an adult. The sexuality of the skeleton remains uncertain due to the lack of diagnostic bones.

### Cist Enclosure 2

This cist enclosure was much larger in size than the western counterpart, measuring ca. 9m in diameter and ca. 1m in relative height (Figs. 24, 25). The limited excavation has proved that it falls within the corridor type non-corbelled cist enclosure represented by Tal'at 'Ubyda Cist Enclosure 116 (TA-CE116) and, therefore, can be dated to a subsequent phase to Cist Enclosure 1 (Fujii 2005a). As its name suggests, this cist enclosure consisted of a non-corbelled, slightly oblong cist ca. 3-3.5m in diameter and a ring wall ca. 6m in diameter encompassing it. No clear evidence for an entrance was attested, but it appears to underlie the cobble mound, prob-

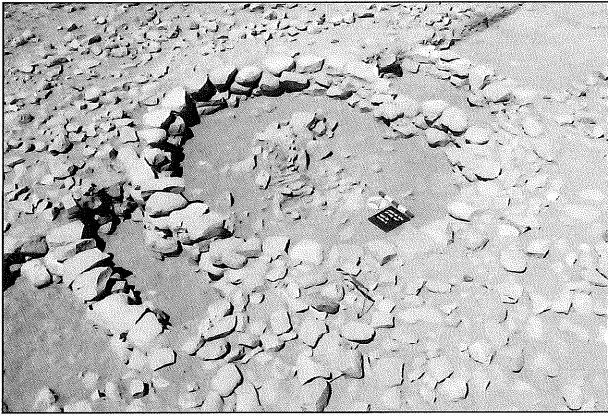


24. Cist Enclosure 2: plan and section/elevation.

ably its eastern part.

Of interest was a stone-paved bed ca. 2m long, that was constructed roughly in the center

of the cist floor. There was a shallow depression along its major axis, on which a primary interment of a sturdily-built adult male was found



25. Cist Enclosure 2: general view (from SE).

(Fig. 26). The deceased person was buried in a crouching position and faced to the northeast with his left shoulder below (Fig. 27). It should be added, however, that a certain number of skeletal remains belonging to other individuals also occurred both on and underneath this bed. Dr. Hiroko Hashimoto has tentatively concluded that a total of four individuals, three male adults and a single infant, were collectively buried in this cist. She also claims that, in view of the lack of some major components including teeth, the three individuals other than the robust male, carefully buried on the stone bed, represent a secondary interment.

Again, no burial gifts were found. Instead, a dozen PPNB flint artifacts including a few Amuq and Byblos points occurred on the cist floor. It is of interest that a small hearth was found ca.

25cm below the cist floor. Both of these observations indicate that this cist enclosure was also constructed over the PPNB outpost, probably converting its construction material.

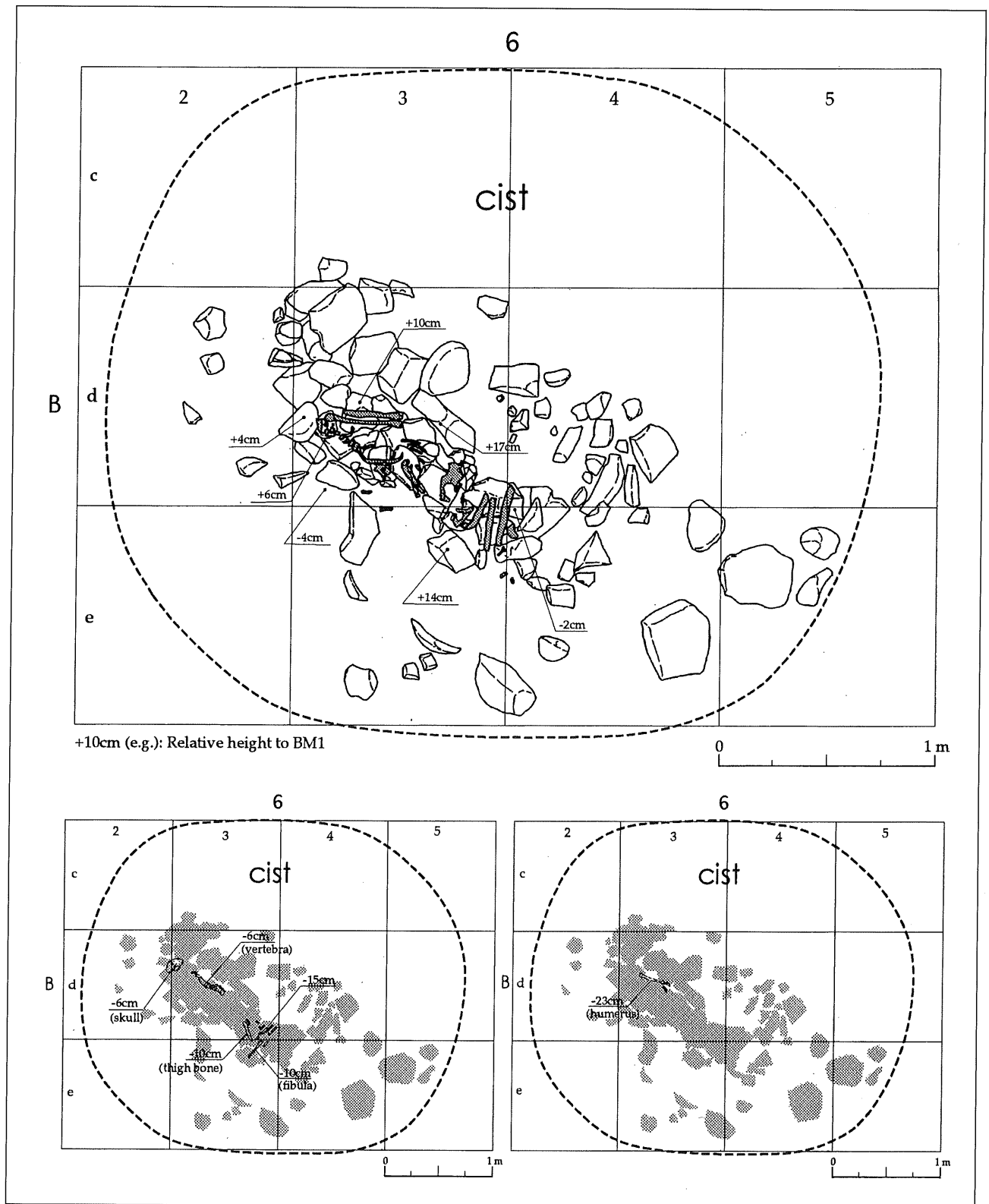
### Barrage System

The third component of this composite site — a long (ca. 150m), roughly V-shaped, free-standing wall that sporadically incorporates intermittent wall alignments less than ca. 10m long and several stone concentrations ca. 1-3m in diameter — was situated ca. 80m southwest of the PPNB outpost (Figs. 2, 28). The limited excavation at WS-6/7 (the Wall Segment between Point 6 and 7) has shown that it was built with a single row and course of undressed limestone and flint cobbles (Fig. 29). No clear evidence for mud mortar or other filling material was attested.

Since no datable *in situ* finds were recovered, nothing can be said about the date of this unique feature. On the other hand, its function is apparent; there is little doubt that it served as a barrage to collect seasonal runoff water from a small wadi that flows eastward across the southern half of the site. First of all, its unique location across a wadi is exceptional in ordinary, domestic structures. The complete absence of *in situ* finds also supports this hypothesis. Second, the V-shaped general plan opening toward the upstream of the wadi is typical of water catchment facilities. The same holds true of the elongated wall which extends roughly in parallel



26. Cist Enclosure 2: a close-up view of the stone bed (from W).



27. Cist Enclosure 2: the stone bed and human skeletal remains found at various levels.

with the contour lines. Third, the use of larger stones around the converging point to the east can be reasonably understood as an essential de-

vice to bear sideways water pressure. The formation of a few small playas at the upstream of this core part corroborates this view. Thus, the





28. Barrage: general view (from E).



29. Barrage: Wall Segment 6/7 after excavation (from W).

use of this feature as a water catchment seems in little doubt.

The significant point is however its specific use. Both the flat topography around this feature and the large evaporation rate in the al-Jafr basin cast doubt on its use as a simple reservoir. Rather, its use as an irrigation installation would be more likely. It is intriguing to hypothesize that optimistic agriculture based on primitive basin irrigation was incorporated into the subsistence strategies of the neighboring PPNB outpost. Nevertheless, this will remain a mere hypothesis until the date of the barrage itself is

clearly defined. An excavation focusing on the converging point, scheduled for the spring season of 2006, will hopefully provide a key to dating this unique feature.

### **Summary and Discussions**

The spring and summer excavation seasons in 2005 have proved that the site of Wādī Abū Ṭulayḥa (JF-0155) contains a Late PPNB outpost, a pair of EBI cist enclosures, and a barrage system yet to be dated for certain. Of further interest to the excavation team was the first component. It was a great surprise that such a sizable

outpost was founded in the middle of *al-Ḥamād* where no perennial natural water source is (and probably was) available. On the basis of excavated evidence, a brief discussion will be made below about the archaeological implications of the PPNB agro-pastoral outpost.

The first question is concerned with the seasonality of this outpost. Was it used all-year round or only on a seasonal basis? This question seems less troublesome, because, in light of the harsh site setting, it is most unlikely that this outpost was used all year round. Both the blockade of entrances and the rarity of burials also cast doubt on the year-round use of this outpost. It is therefore reasonable to suggest that it was used on a seasonal basis. Thus the next question becomes in which season of a year was it used. Noteworthy in this regard is the frequency of postneonatal gazelle bones in the faunal remains, which as mentioned above, points to the limited use of this outpost probably from spring to early summer. This is conceivable in terms of water supply too. Then, for how long was this outpost used in each season? Unfortunately, it is difficult to answer this question on the basis of available evidence. All we can say is that both the durability of the structures and the rich occurrence of heavy-duty grinding tools and game boards are suggestive of a relatively long stay, of at least more than a few weeks. What is of more significance is that, although on a seasonal basis, this outpost was used regularly over a long period, as suggested by the frequent reconstruction and the thick floor deposits. Both the construction of substantial structures and the occurrence of heavy-duty grinding tools and game boards can not be understood until one supposes a relatively long-term stay at and repeated use of this outpost. It is therefore likely that this outpost was used consistently every year, probably for more than a few weeks from spring to early summer.

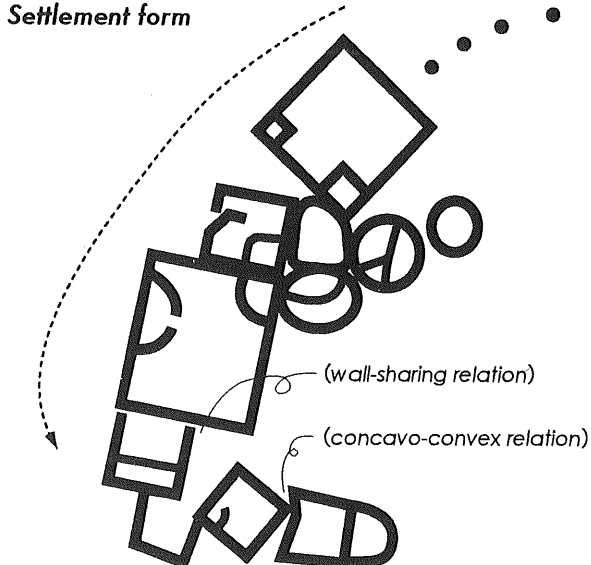
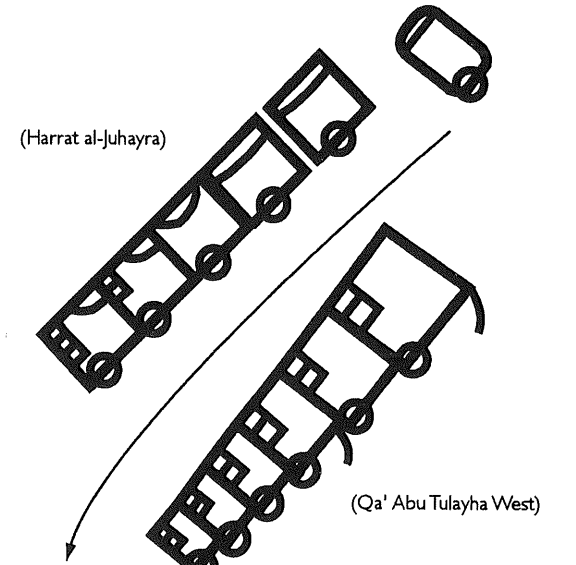
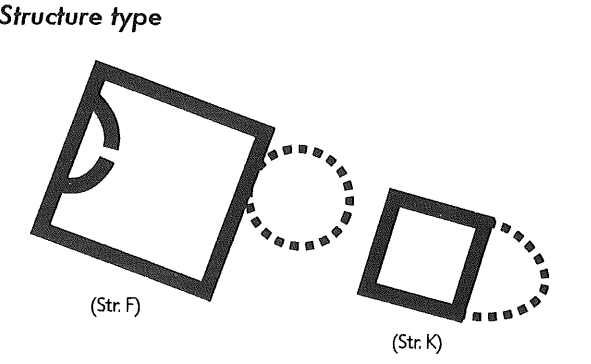
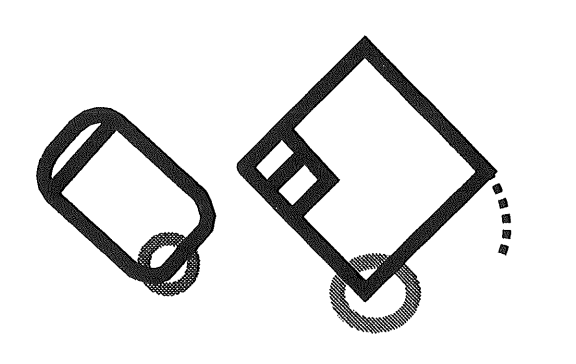
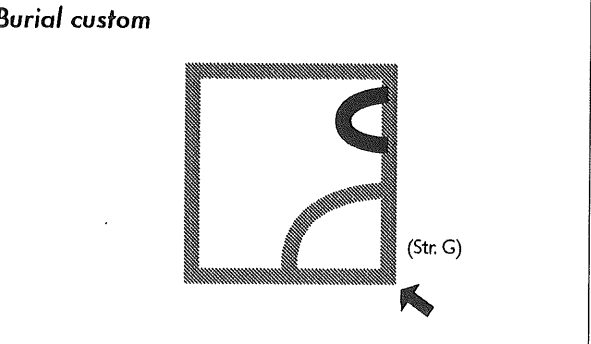
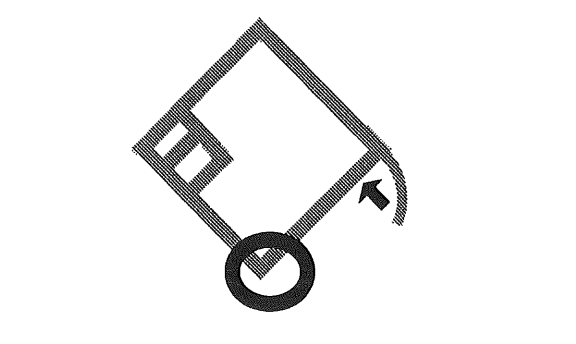
The next question concerns the subsistence strategy that enabled a sizeable population to survive under the harsh environment. Suggestive in this regard are the predominance of hunting weapons in the tool kit and the rich occurrence of faunal remains. There is little doubt that hunting of wildlife played a major role in the subsistence strategy of this outpost. It seems most unlikely, however, that this sizable outpost was sustained

only by such an unpredictable form of subsistence. Noticeable in this respect is the sporadic occurrence of domestic sheep and goats in the excavated fauna, which implies that small-scale transhumance from a parent settlement probably to the west also contributed to the livelihood in *al-Ḥamād*. It is no less important to note that the tool kit also included a large number of reaping and grinding tools. The occurrence of such agricultural utensils strongly suggests that plant resources probably including cereal crops were also extensively exploited around this outpost. One may therefore tentatively conclude that a mixed economy based on hunting (mainly of gazelle), transhumance (focusing on sheep and goats), and cereal cultivation (possibly linked with the barrage system) supported the relatively long stay at and the steady use of this isolated outpost in the middle of *al-Ḥamād*.

The third question is concerned with the correlation with the other sites thus far investigated in the al-Jafr basin. Interestingly, this agro-pastoral outpost has much in common with Late Neolithic pseudo-settlements first identified at Qā' Abū Ṭulayḥa (Fujii 2000, 2001, 2002a, 2002c, 2003) and then re-exemplified at Ḥarrat al-Juḥayra (Fujii 2005b). What attracts attention initially is that these three sites share the elongate settlement form, extending from observers' right to left, or more precisely, from the northeast to southwest (**Fig. 30**). This unique settlement form is also common to the Azraq-Jilāt PPNB-LN entity (Garrard *et al.* 1994) and, at the same time, a critical difference from the Ḥismā-Negev-Sinai PPNB-LN entities; where a beehive-like, conglomerate settlement form is the norm (Kirkbride 1978; Goring-Morris 1993; Henry *et al.* 2003).

Another similarity is the structure typology. As noted above, Wādī Abū Ṭulayḥa PPNB outpost is marked by a combination of a larger, square to rectangular main room and a smaller, round to oblong anterior chamber. The same is roughly true of the Late Neolithic pseudo-settlements, where a square to rectangular main room is often accompanied by a curvilinear windbreak, probably a deteriorated form of a round anterior chamber, near its entrance (Fujii 2004b). It is highly suggestive in this respect that the anterior chamber of Structure K, probably the last structural unit of the Wādī Abū



<p><b>Wadi Abu Tulayha</b> (Late PPNB)</p>	<p><b>Harrat al-Juhayra</b> <b>Qa' Abu Tulayha West</b> (Late Neolithic)</p>
<p><b>Settlement form</b></p>  <p>curvilinear development from NE toward SW</p>	 <p>linear development from NE toward SW</p>
<p><b>Structure type</b></p>  <p>rectangular houses with a round anterior chamber</p>	 <p>rectangular pseudo-houses often with a curvilinear windbreak</p>
<p><b>Burial custom</b></p>  <p>facade-side cairn burial at a true house</p>	 <p>facade-side cairn burial at a pseudo-house</p>

30. The comparisons between the Wādī Abū Ṭulayḥa PPNB outpost at and the two Late Neolithic pseudo-settlements.

Ṭulayḥa structural complex, was remarkably reduced in size and, at the same time, simplified in morphology. The arrangement of the main component to the windward side and the minor component to the lee side is also shared between the three. In addition, the presence of a single or a few compartment(s) at a rear wall of a main room is also common to the three. All these observations allow us to conclude that there is an intimate relationship among the three structural complexes.

Of even more significance is that the three sites share the façade-side cairn burial, a unique burial practice related to both the abandonment of a structure and its renewal at an abutting, southwestern lot. This is all the more important because burial practice is among the most conservative of cultural spheres and, for this reason, serves as a telling indicator when tracing the genealogy of a cultural entity. In this sense, it deserves special emphasis that the unique burial custom attested to in the Late Neolithic pseudo-settlements can be traced back to the PPNB outpost in the same area.

Thus, in view of a few major aspects noted above, there is little doubt that the two Late Neolithic pseudo-settlements are directly-descended from the PPNB outpost at Wādī Abū Ṭulayḥa. Given this, the following flow chart will highlight the pastoral nomadization in the al-Jafr basin. That is — *A small agro-pastoral group seasonally moved into al-Ḥamād, bringing along a small number of domestic sheep and goats from a parent PPNB settlement probably to the west. Being engaged in hunting, short-distance transhumance, and optimistic agriculture based possibly on basin irrigation, they stayed at an outpost founded at Wādī Abū Ṭulayḥa from spring to early summer, probably for more than a few weeks. They constructed stone-built, substantial houses consisting basically of a round anterior chamber and a rectangular main room. Since they often abandoned a house (probably following the façade-side cairn burial) and reconstructed it at an abutting, southwestern lot, the outpost was gradually developed from the northeast to the southwest, resulting in the elongate, curvilinear settlement form encompassing the communal forecourt to the east. Nonetheless, a turning point came when the parent settlement was abandoned for some reason at*

*the end of PPNB period. Making use of their past experience as transhumants, they gradually adapted themselves to a new lifestyle, that is, pastoral nomadism. However, a fixed outpost makes sense only in connection with a parent, sedentary settlement. In the course of the lifestyle transformation, they finally abandoned it and, instead, constructed a pseudo-settlement as a large cemetery that inherited the unique burial practice of the direct ancestors.*

Such is a scenario of the pastoral nomadization in the al-Jafr basin retrieved from the excavated evidence. Needless to say, the validity of this tentative perspective is yet to be assessed carefully through further investigations. It leaves no doubt, however, that the Wādī Abū Ṭulayḥa PPNB outpost and the Late Neolithic pseudo-settlements were inseparably linked to each other in many aspects. It is therefore reasonable to assume that the small-scale transhumance attested to at the PPNB outpost paved the way to the pastoral nomadization that took place in the subsequent period.

### Concluding Remarks

The excavations at Wādī Abū Ṭulayḥa have enabled us to incorporate the al-Jafr basin thus far taken archaeologically as a *terra incognita* into the southeastern fringe of the PPNB cultural sphere. This site is important in that it fills a large hiatus between the Azraq/Jilat PPNB entity to the northeast and the Ḥismā/Negev/Sinai PPNB entity to the south or southwest, and, in so doing, facilitates the north-south comparative studies of the al-Bādiya PPNB. Not only that, it has also provided a reliable base to trace the pastoral nomadization in the al-Jafr basin as far back as to its very beginning. We can now draw a rough flow chart of this epoch-making episode on the basis of reliable evidence. Nonetheless, two issues still remain to be addressed at this site: the clarification of the overall picture of the PPNB outpost including its eastern half and the dating of the barrage system on the basis of excavated evidence. Further investigation focusing on these two issues is scheduled for the spring and summer seasons of 2006.

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