# NEO-LITHICS 2/17

## The Newsletter of Southwest Asian Neolithic Research

Contents



## Editorial

This is the last hardcopy issue of Neo-Lithics; from Issue 1/18 onwards, the newsletter is published online and will be freely available in the Neo-Lithics download section of www.exoriente.org/bookshop. Subscribers will receive the printed version until their subscription period ends; no new subscriptions are accepted from now on. Members of ex oriente, however, will continuously receive hardcopies. While all old issues are meanwhile freely available at the aforementioned link, old hardcopies can be purchased at 5 Euro / issue (contact one of the co-editors for this).

When deciding for an online publication, at the same time we were following the advice of a majority of colleagues to not become a peer-reviewed periodical. We are happy not to have joined this sort of business – and we really mean business in the common sense, since we are not at all convinced that it represents a fair and honest promotion of research. Impact point systems may represent new forms of academic slavery and alignment; buying (online) spaces in renowned journals appears to unmask academic honesty; and opaque and informal peer-review practices and regimes seem to manipulate resources, employments, and academic freedom.

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# Subsequent Excavations at the Neolithic Rockshelter Settlement of Jabal Juhayra (al-Jafr Basin, Jordan)

Sumio Fujii

## Introduction

Jabal Juhayra is a small, stratified Neolithic settlement at the northwestern corner of the al-Jafr Basin, southern Jordan. The site was discovered in December 2001 during our general survey (Fujii 2002: 41; Fujii and Abe 2008: 70) and rescue-excavated over five successive field seasons from August 2014 until June 2016 to avert the crisis of disappearance due to industry-level scoria quarrying. The last reports summarized the research outcomes of the first two seasons that dealt primarily with the Layer 2 settlement dated to the Late Neolithic/Chalcolithic transitional (hereafter LN/Chalcolithic transitional) phase (Fujii 2015; Fujii *et al.* n.d. a). This prompt report briefly reviews the results of the subsequent three seasons that focused on the Layer 3 Late Pre-Pottery Neolithic B (hereafter LPPNB) settlement (Fujii *et al.* n.d. b). The excavations at the following seven major operation areas revealed a well-organized, outpost-size settlement consisting of six rockshelter dwellings, several terrace walls, a stone-built barrage, and several dozen rock-cut, open-air cisterns (Figs. 1, 2).

## Area 1

Area 1 is the core of the Layer 3 settlement, containing six rockshelter dwellings (RS-1~6), some thirty rock-cut cisterns, several terrace walls, and a few miscellaneous stone-built features (Fig. 3). They are aligned along the edge of the NE-facing scoria terrace to form an elongated structural complex with a total area of *c*. 0.02-0.05 ha (= *c*. 40-50 m by *c*. 5-10 m).

### *Rockshelter Dwellings*

The highlight of the excavation in Area 1 was Rockshelter 6 at its southeastern edge, into which a rectangular structure, *c*. 5-6 m in frontage and at least *c*. 7 in depth, was incorporated (Figs. 4, 5). This structure adopted a unique construction method of attaching masonry facing walls to the inner surfaces of the rockshelter modified in advance into a predetermined form. In terms of typology, it was equipped with a gable-side entrance and two pairs of buttress-like partition walls and, in this sense, had much in common with the *pier-house*

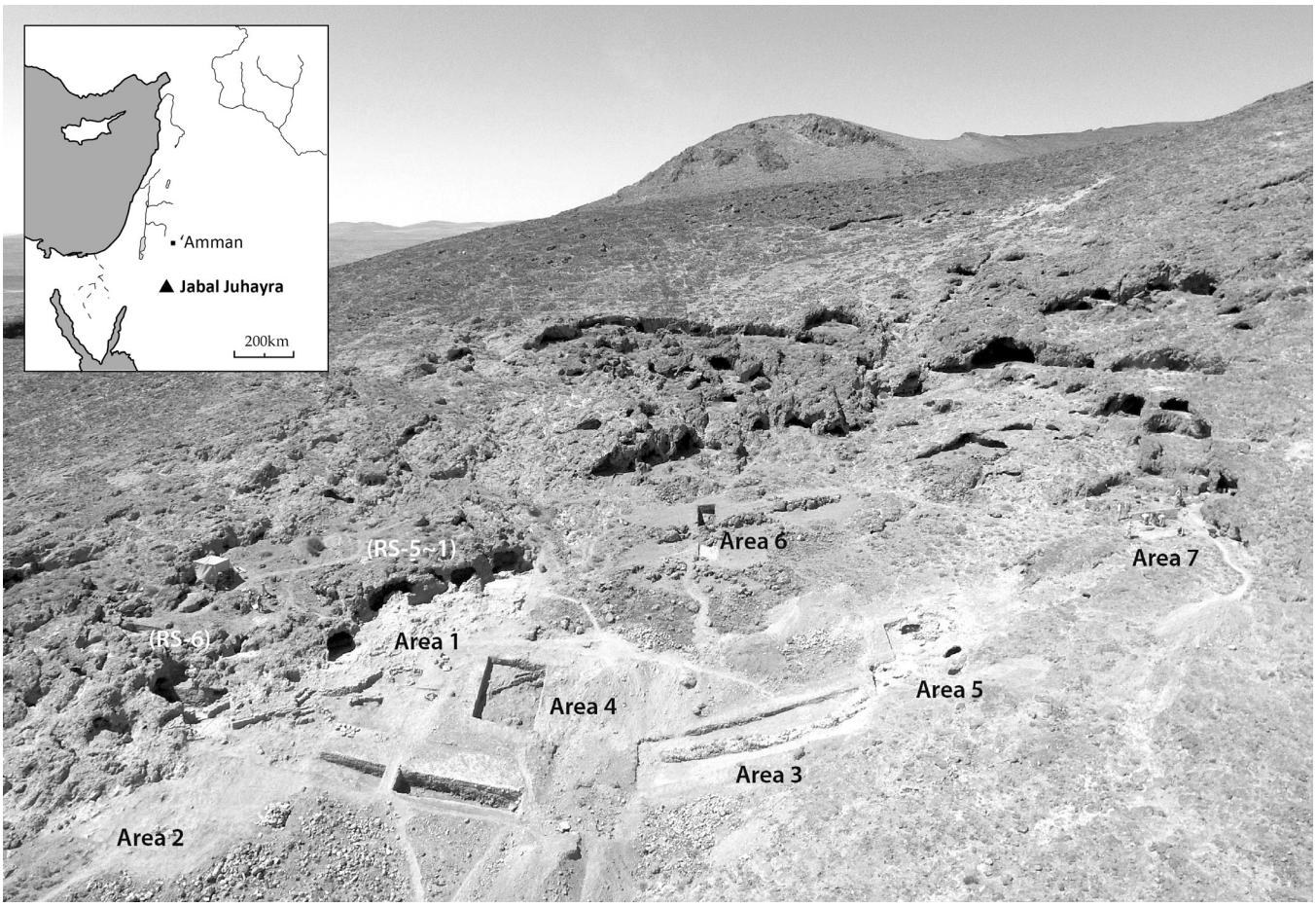


Fig. 1 Jabal Juhayra: General view of the site (looking W). (Photo: S. Fujii)

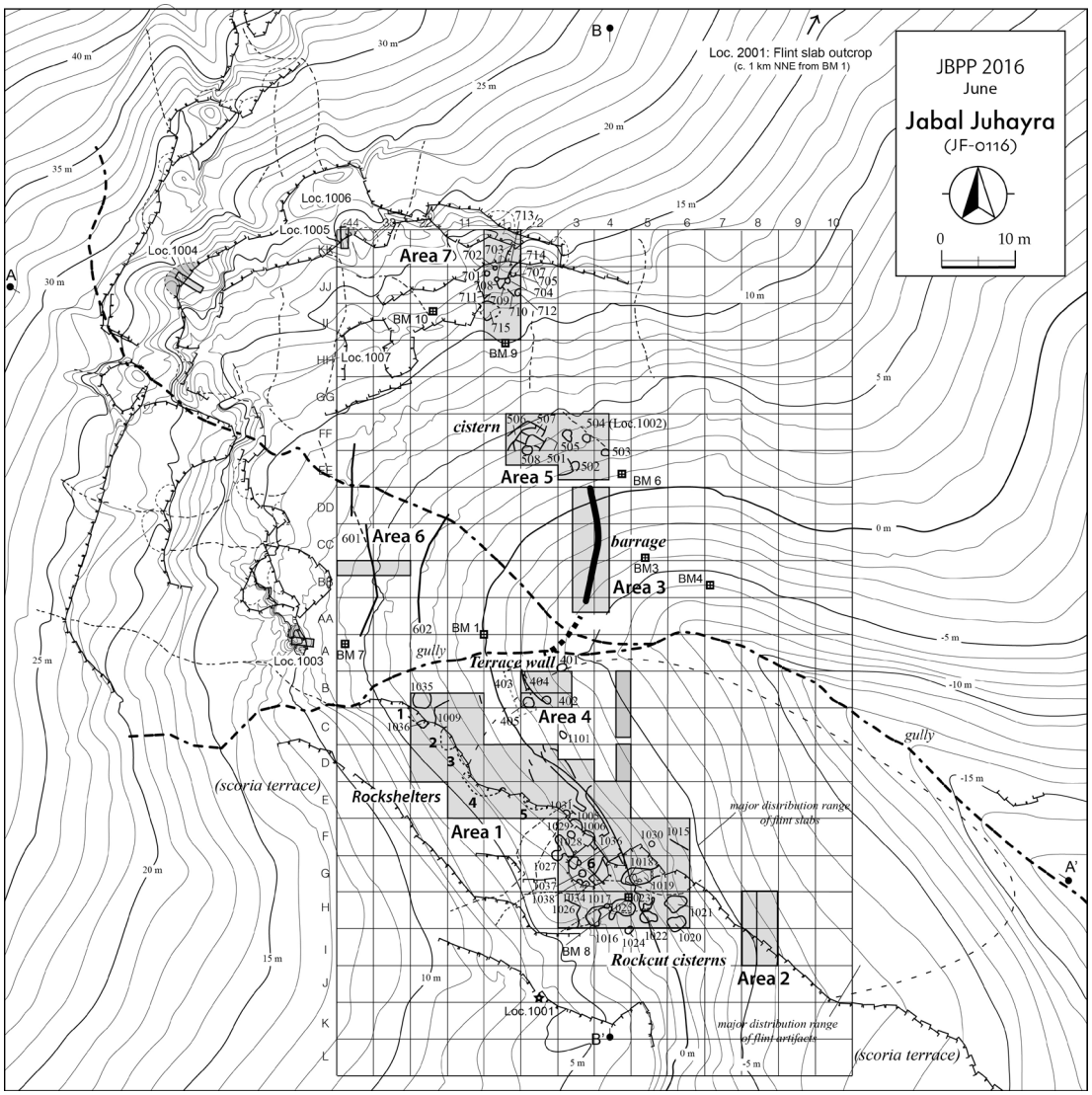


Fig. 2 Jabal Juhayra: Site contour map and operation areas. (Map: S. Fujii)

characteristic of the Beidha layer 2 (Kirkbride 1966) or Phase B (Byrd 2005) structural complex and other contemporary settlements in the southern Levant (Banning and Byrd 1988). Several $^{14}$C data from the floor deposits fall within a limited time range around 7500-7200 BCE (Fig. 15; Fujii *et al.* n.d. b), suggesting that the structure dates back to the LPPNB, especially its first half. The flint assemblage dominated by naviform core-and-blade components and Amuq-type points also supports the chronological perspective (Fig. 14).

In view of techno-typology, the remaining five rockshelter dwellings can be regarded as subsequent forms of the eclectic pier-house. It is our tentative interpretation that the Layer 3 rockshelter settlement in Area 1 started with the full-fledged, built-in pier-house (Rockshelter 6), through transitional forms equipped with a pair of rock-cut frontal protrusions (Rockshelters 5-2), and ended eventually with a simple dwelling without any remarkable modification (Rockshelter 1). This sequence would mean that the pier-house originated from a Beidha-type parent settlement was gradually replaced by their simplified forms in the course of the adaptation to the unique geological landscape and the arid environment. The continued use of the simple rockshelter dwellings by the overlying Layer 2 settlement can also be understood as its extension (Fujii 2015: Fig. 4).

*Rock-cut Cisterns*

Some thirty rock-cut, open-air cisterns were found in Area 1. Most of them focused on a gentle scoria/basalt slope behind Rockshelter 6 (Fig. 6), but a few examples occupied a flat terrain in front of Rockshelter 1 (Fig. 7). They varied in typology from small, basin-like depressions less than 1 m in diameter, through pit-type or shafttomb-like features up to *c*. 1.5 m deep, to roughly square, tub-type ones *c*. 0.5 m deep and *c*. 2-4 m on one side. The cisterns behind Rockshelter 6 centered on the simple types, whereas those in front of Rockshelter 1 consisted only of the more developed, tub-type examples. The surface treatment of these cisterns also varied from merely pecked examples, through (pecked and then) carefully smoothed ones, to (pecked, smoothed, and finally) scoria cement-coated features. The southern group was relatively simple in terms of the surface treatment as well, whereas the northern

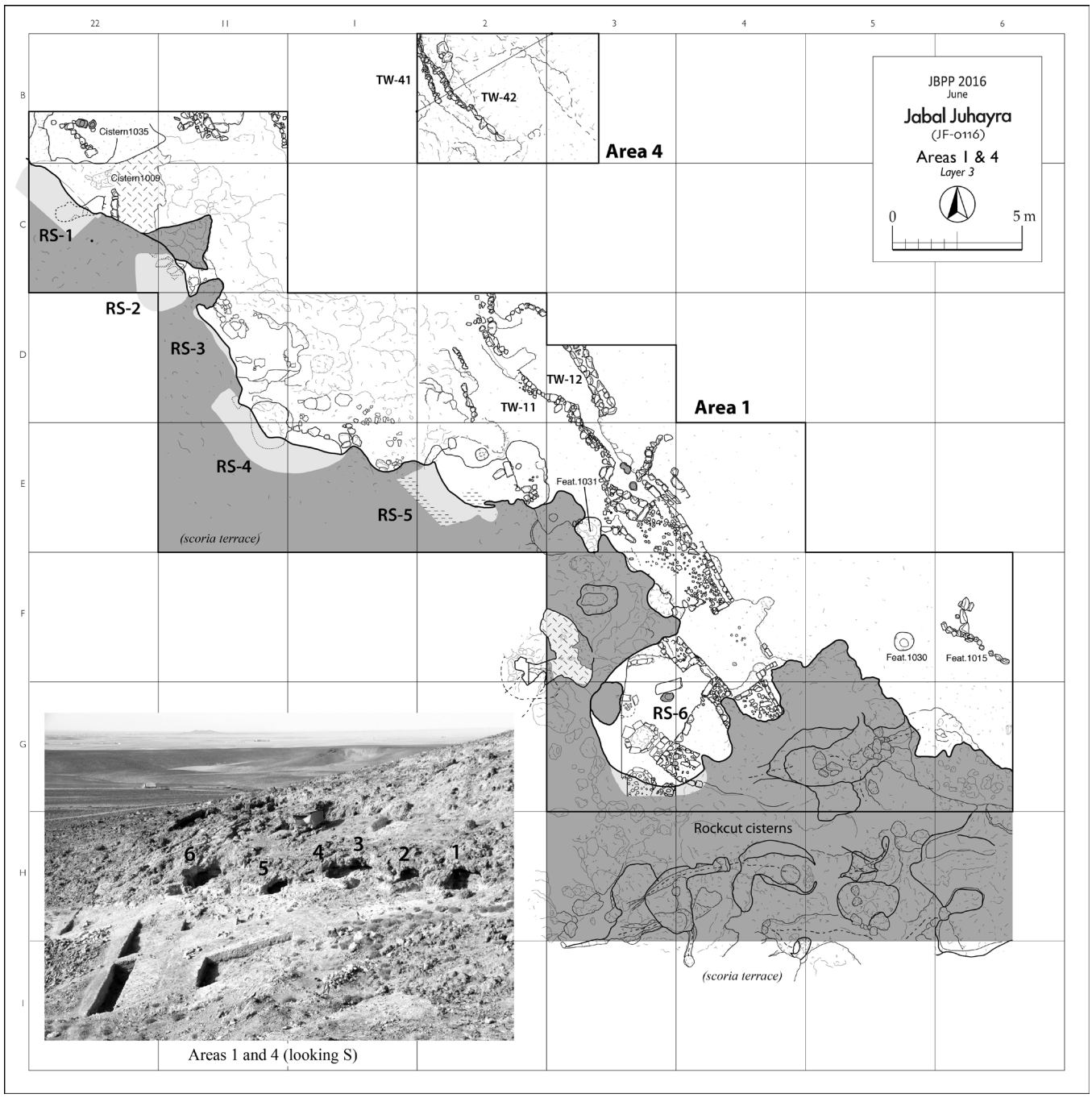


Fig. 3 Jabal Juhayra: Plan of structural remains in Areas 1 and 4. (Photo and map: S. Fujii)

one was more carefully finished to enhance water-proofing property. In addition, many of the cisterns were equipped with a natural or anthropogenic narrow ditch for taking in runoff surface water, but gravelly banks to dam up influent water were rarely preserved. Overall, the maximum storage capacity of individual examples was small (usually less than 1 cubic meter), but they were often connected with each other to form a vertical chain of cisterns for increasing the efficiency of impoundment.

The question is their correlation with the adjacent rockshelter dwellings. A key to the issue is the terrace-type Cistern 1009 in front of Rockshelter 1 (Fig. 7), which was not only buried with Layer 3-1 deposits but also superimposed by Feature 101 belonging to Layer 2 (Fujii 2015: Fig. 8). Furthermore, it yielded several querns and grinding slabs as well as typical PPNB flint artifacts as *in situ* finds on the floor. Thus the cistern undoubtedly belonged to the Layer 3 rockshelter settlement. The same is probably true with the neighbouring cisterns (and those in Areas 5 and 7 mentioned below) sharing the same stratigraphy and techno-typology with Cistern 1009. Meanwhile, the simple cisterns behind Rockshelter 6 were not only separated from the habitation area but also exposed on the scoria/basalt bedrock surface and, therefore, devoid of such clear evidence. However, as mentioned below, similar examples in Areas 5 and 7 corroborate that they were also among water catchment facilities of the Layer 3 rockshelter settlement.

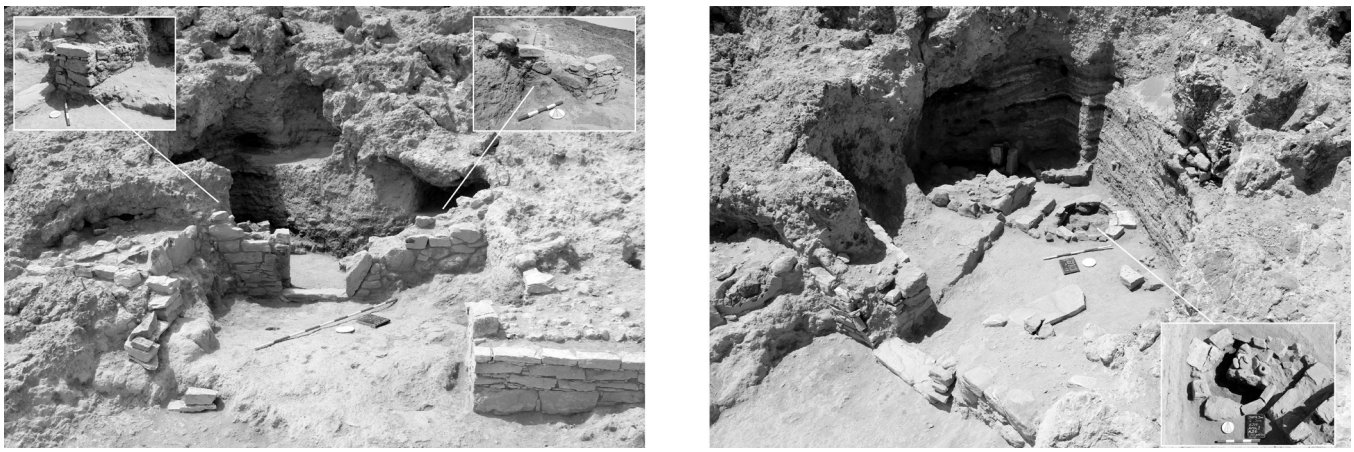

Fig. 4 Jabal Juhayra: General view of Rockshelter 6 in Area 1 (looking SW and S). (Photos: S. Fujii)

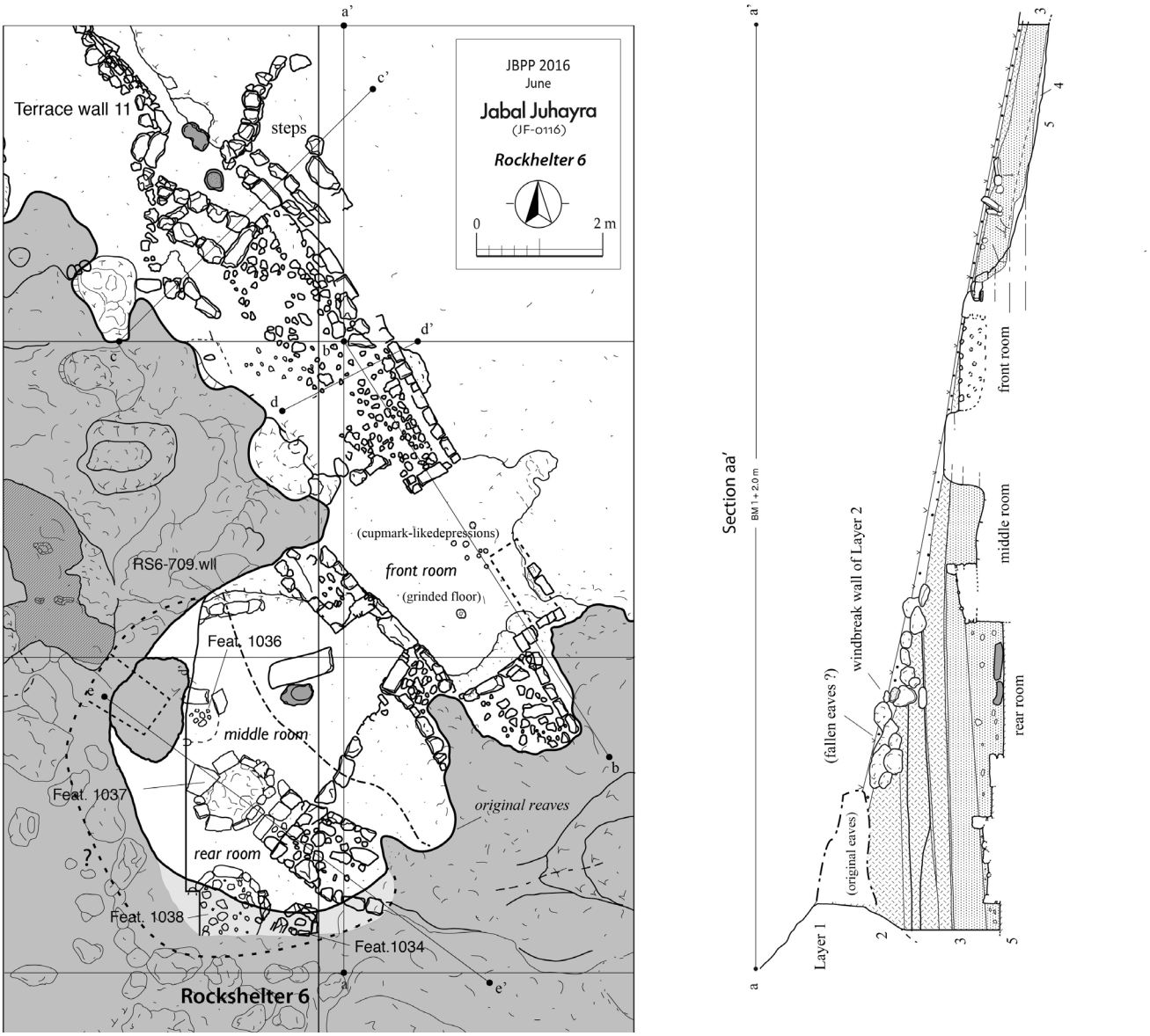


Fig. 5 Jabal Juhayra: Plan and section of Rockshelter 6. (Drawings: S. Fujii)

Fig. 6 Jabal Juhayra: Partial view of simple rock-cut cisterns behind Rockshelter 6 (looking SE). (Photo: S. Fujii)

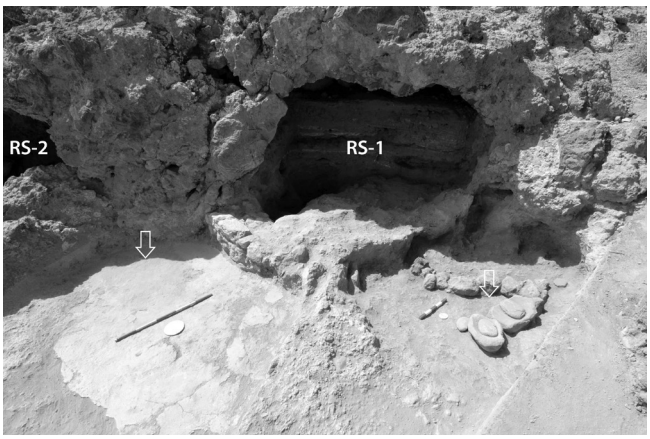


Fig. 7 Jabal Juhayra: Tub-type rock-cut cisterns in front of Rockshelter 1 (looking NW). (Photo: S. Fujii)


Fig. 8 Jabal Juhayra: General view of terrace walls in Area 1 (looking NW). (Photo: S. Fujii)

*Terrace Walls*

Several terrace walls *c*. 0.5-1 m high were found on the steep slope in front of the rockshelters, but most of them were poorly preserved. The only exception to this was Terrace Wall 11 found roughly in the center of Area 1, which stretched along the contour line to form a narrow anthropogenic terrace *c*. 8 m wide, *c*. 5 m deep and up to *c*. 0.7 m high in front of Rockshelter 5 (Fig. 8). Similar walls have been found at the LN settlement of Dhra and identified as a device for creating a cultivated land (Kuijt and Mahasneh 1998), but it is still uncertain whether the same is true with this example. The eastern edge of the terrace wall was associated with stone-built steps *c*. 1-2 m wide and several courses high, which was probably used for connecting the upper and lower terraces. A similar, yet larger-in-scale, example has been reported from Ghuwayr I, a contemporary settlement *c*. 25 km to the west (Simmons and Najjar 2003, 2006). It appears that such steps were the norm of Neolithic settlements in southern Jordan founded on a steep slope.

## Area 2

This small operation area was opened in the second season to define the southeastern limit of the site, but no structural remains were found. For this reason, no further excavation took place during the subsequent seasons.

## Area 3

Area 3 was set up in the third season to explore the character of a robust masonry wall that was slightly exposed on the lower part of the northern slope. The excavation revealed that the wall formed the northern wing of a small-scale, stone-built barrage to collect runoff surface water flowing down the scoria slope (Fig. 9). In terms of stratigraphy, it was constructed on the bedrock layer and covered entirely with Layer 3-1 deposits (Fig. 10). Thus it demonstrably dates back to the LPPNB. The $^{14}$C data obtained from the floor deposit immediately beside the wall is also consistent with this dating. It is evident that the barrage (and the neighboring cisterns mentioned below) constituted a par of the water catchment system of the Layer 3 rockshelter settlement.

## Area 4

This operation area was opened again in the third season in an effort to trace the southward extension of the barrage wall attested to at the opposite slope. Since no clear evidence for it was found, the subsequent fourth season enlarged the area northward and tried in vain to seek for the slightest remnants of the barrage. It is possible that the south wing of the barrage wall, together with its central part, was entirely washed away due to repeated floods.

What we found instead was a masonry terrace wall *c*. 0.5 m high, which was reinforced by a short additional wall and a gravelly bank (Fig. 11). In terms of stratigraphy, it was founded on Layer 4 or 5 and covered with Layers 3-1 deposits. Thus it is thought to date back to the LPPNB. Unlike the above-mentioned examples, this terrace is located near the barrage and, therefore, might have been used as a cultivated land. The pollen/phytolith analysis of terrace deposits kept in our digging house is expected to shed light on this issue.

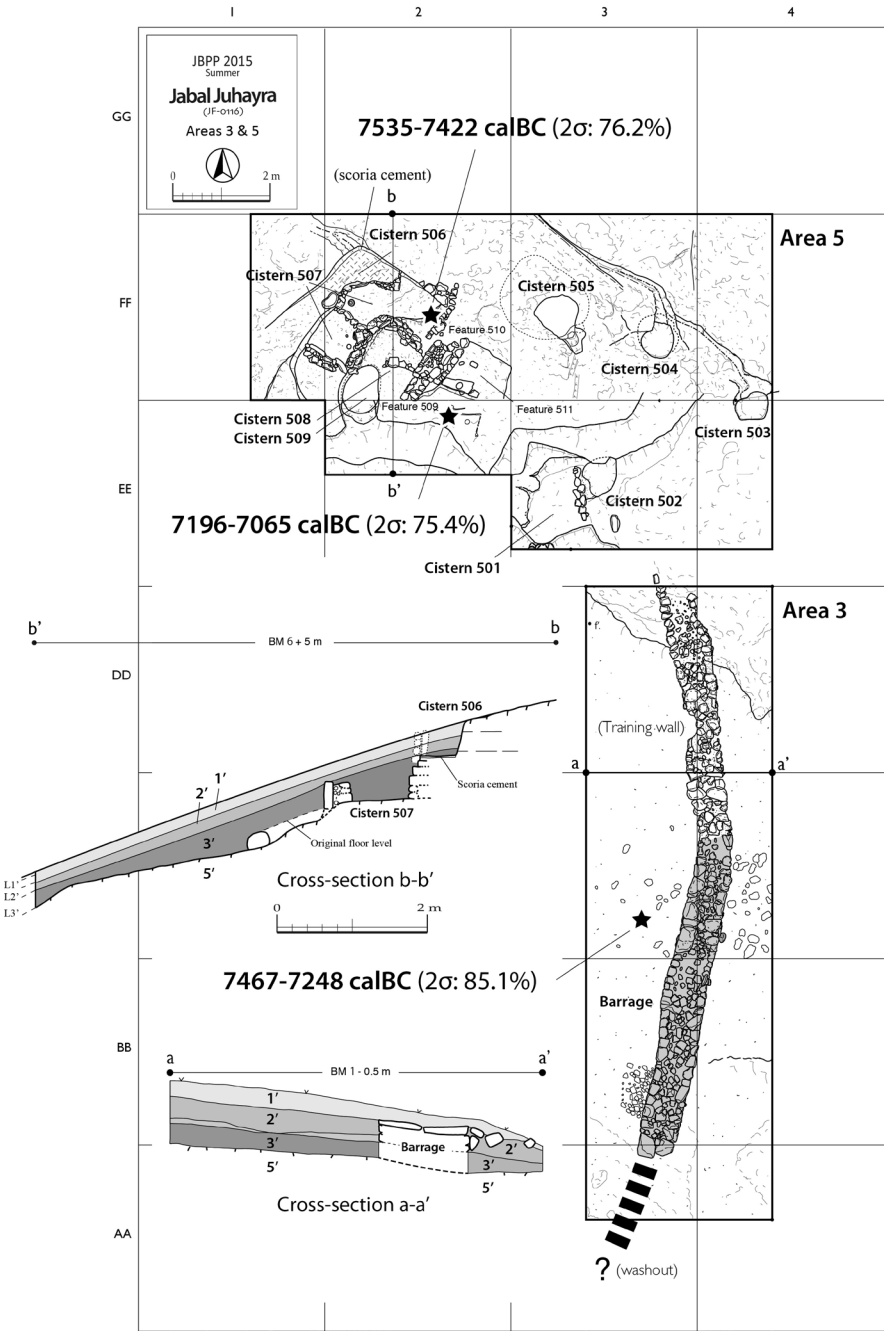


Fig. 9 Jabal Juhayra: Plan and section of the barrage and cistern system in Areas 3 and 5. (Drawing: S. Fujii)

## Area 5

Area 5 was opened in the third season and enlarged westward in the fourth season. The excavations revealed a total of seven rock-cut cisterns, which fall into cylindrical, bursiform, shafttomb-, and terrace-types (Figs. 9, 10). Although the former three types were exposed on the scoria/basalt bedrock layer, the last type (*i.e.* the composite Cistern 506/507/508) were buried with Layers 3-1 deposits (Fig. 12). In addition, it yielded a substantial number of *in situ* finds including querns and grinding slabs. Both facts, coupled with the two $^{14}$C data (Fig. 15), enable us to conclude that the cisterns in Area 5 also date back to the PPNB.

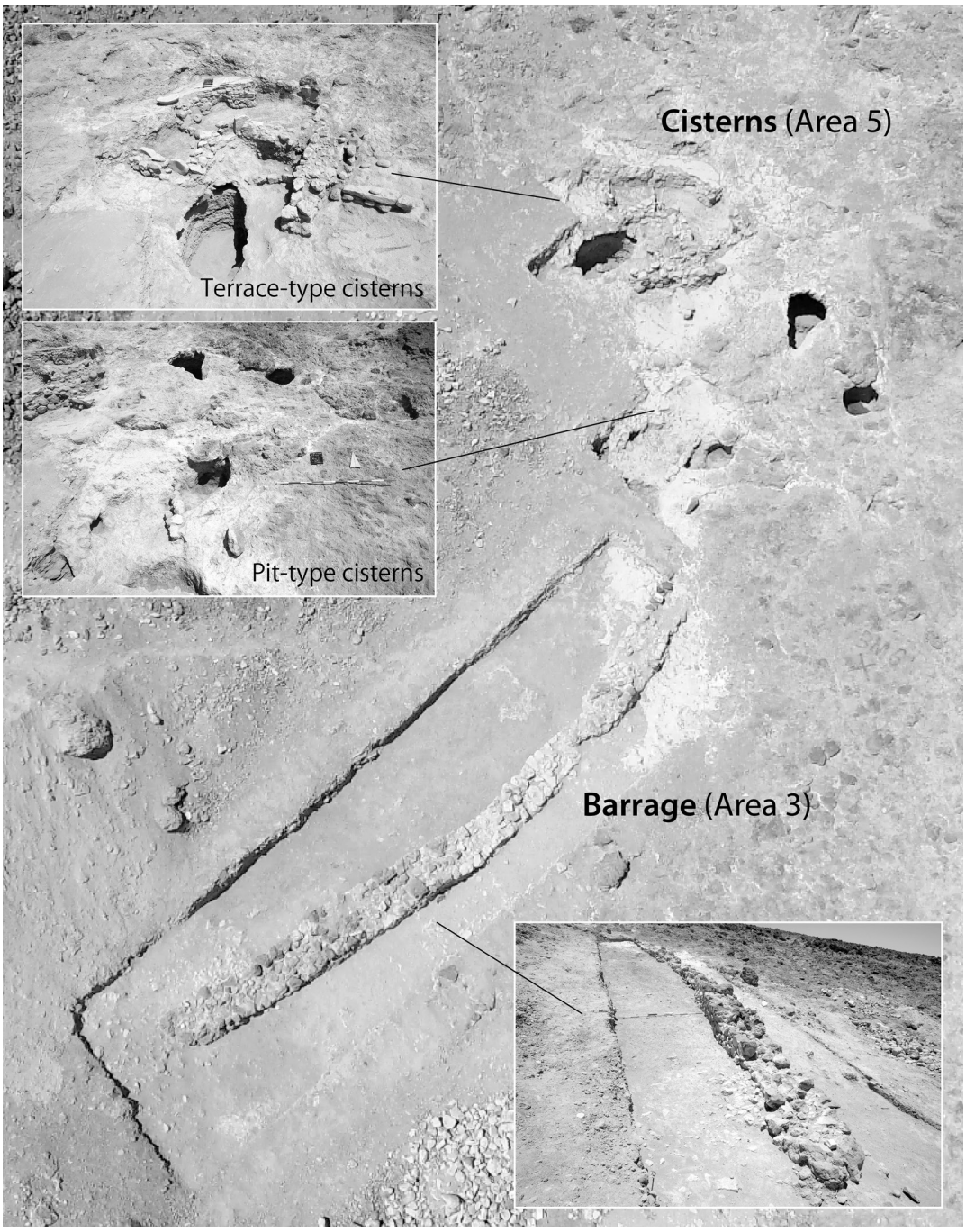


Fig. 10 Jabal Juhayra: Aerial view of the barrage and cistern system in Areas 3 and 5 (looking NW). (Photos: S. Fujii)

Aside from a half-finished cistern at the eastern edge of the area, the Area 5 cisterns were more elaborately finished than those in Area 1 and associated with a flat base and careful surface treatment to promote water-proofing property. Among others, the above-mentioned composite cistern consisted of upper two tiers (Cistern 506 and 507) with a L-shaped plan and a bottom tier (Cistern 508) with a square plan and, as a whole, was engraved rotating at a 45-degree angle against the gentle scoria/basalt slope. This unique structure can be understood as a reasonable device for saving labor-cost as well as coping with sideways water pressure. It is needless to say that they were coated with scoria cement.

**Area 6**

This trench-like operation area was opened in the fourth season to examine the stratigraphy of two large terrace walls that were exposed in the uppermost part of the valley. The excavation proved that both of them belong to Layer 1 and, therefore, have nothing to do with the stratified Neolithic settlement. However, the lower deposits in this deep trench included a large number of PPNB flint artifacts, suggesting that flint workshops existed nearby.

**Area 7**

Area 7 was set up in search of the northern counterpart of the rockshelter dwellings in Area 1. However, what we confirmed were limited to several stone-built small features and two rock-cut cisterns only, and no rockshelter dwellings were attested. The series of small features concentrated on a flat terrain in front of an empty rockshelter (Fig. 13). They belong to Layer 3 and probably represent outdoor versions of round features found in the rear room of Rockshelter 6 (Figs. 5, 6).

Meanwhile, the two pit-type cisterns measured *c*. 1-2.5 m in diameter, being cut into the scoria bedrock layer exposed in the southern half of the operation area and buried again with Layers 3-1 deposits. Both of them were inferior in construction quality and resembled the simple cisterns behind Rockshelter 6 rather than the carefully finished examples in the neighbouring Area 5.

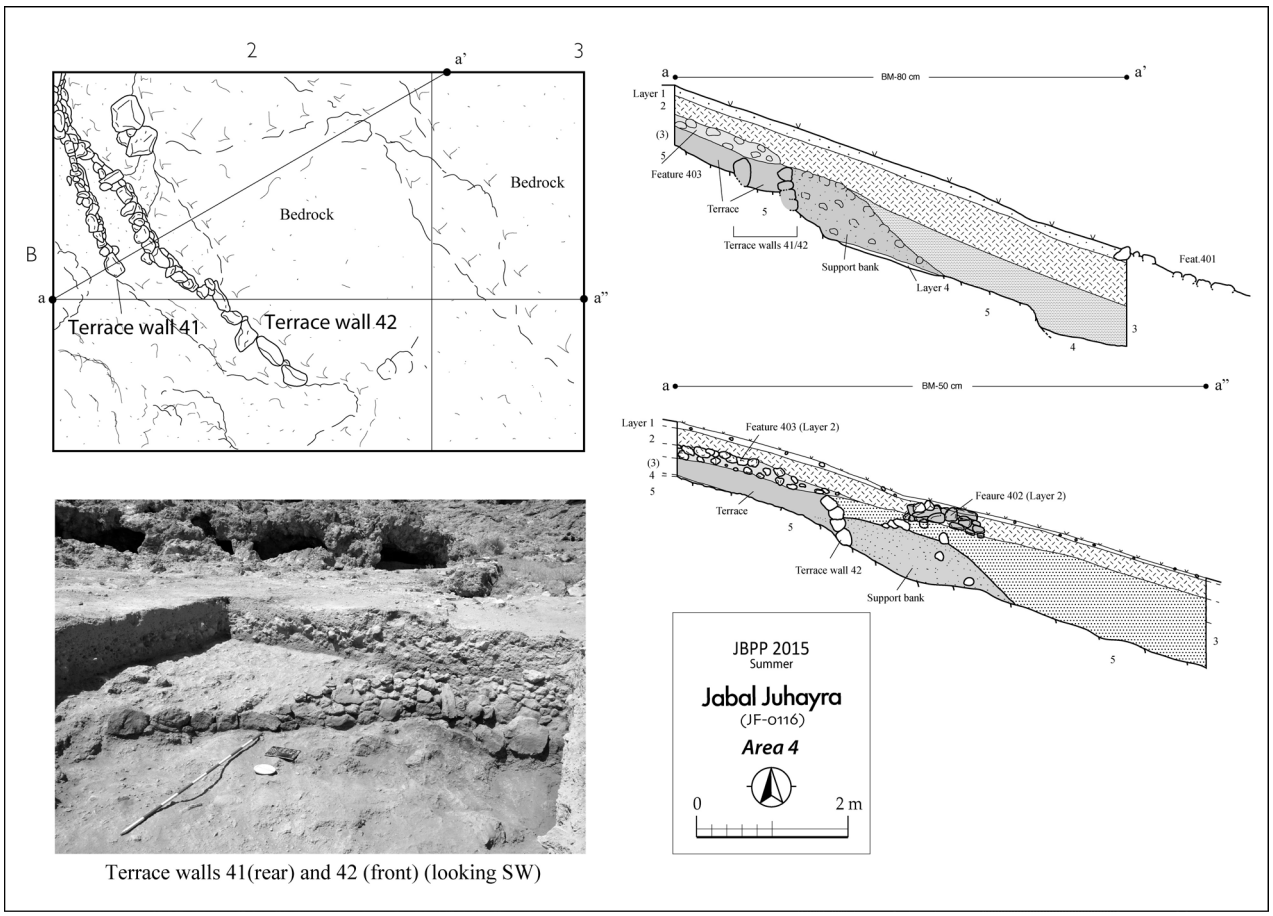


Fig. 11 Jabal Juhayra: Plan and sections of the terrace wall in Area 4. (Photo and drawing: S. Fujii)

## Small Finds

The Layer 3 settlement yielded a huge number of artifacts, which were dominated by chipped stone artifacts, grinding implements, and stone vessels. Other finds were limited to miscellaneous stone products, shell/snail ornaments, and bone tools only. The scarcity in artifact variety is a remarkable trait of the Jafar PPNB that developed in the arid periphery, suggesting the involvement of a small-scale, high-mobility population group.

The chipped flint/calcite assemblage centers on naviform core-and-blade components (Fig. 14: 1), and the tool class products include Amuq and Badia types of points (Fig. 14: 2-5, 6-9), drills (Fig. 14: 11-12), finely serrated blades or probably sickle elements (Fig. 14: 13), burins (Fig. 14: 14), backed blades, and heavy-duty digging tools with a robust edge. The predominance of hunting weapons and the occurrence of sickle elements suggest that the exploitation of wild animals and plant resources probably including cereals sustained the rockshleter settlement.

Fig. 12 Jabal Juhayra: General view of the terrace-type composite Cistern 506/507/508 in Area 5 (looking N). (Photo: S. Fujii)

Fig. 13 Jabal Juhayra: Partial view of Area 7 (looking NWN). (Photo: S. Fujii)

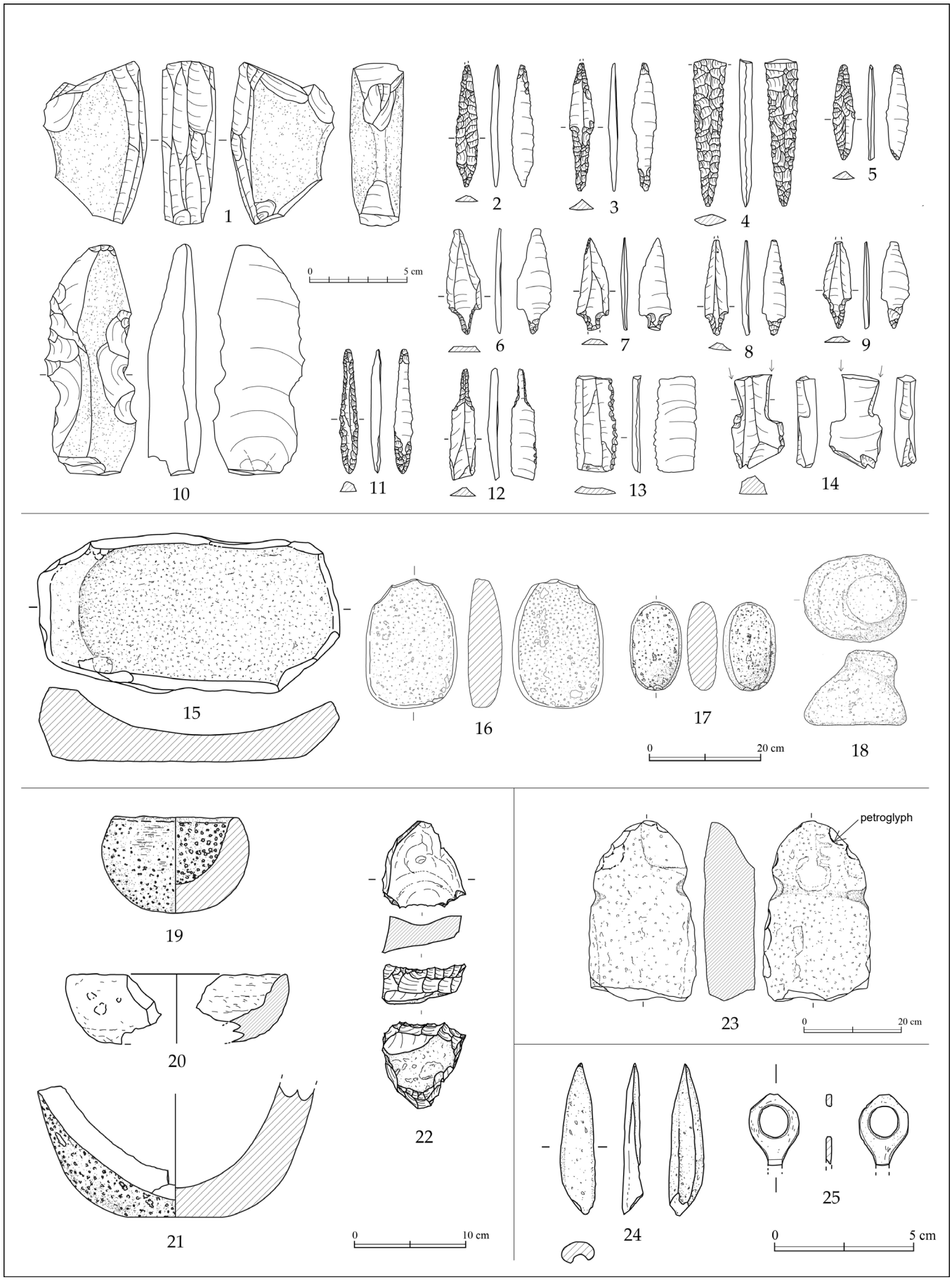


Fig. 14 Jabal Juhayra: Small finds from the Layer 3 settlement. (Drawings: S. Fujii)

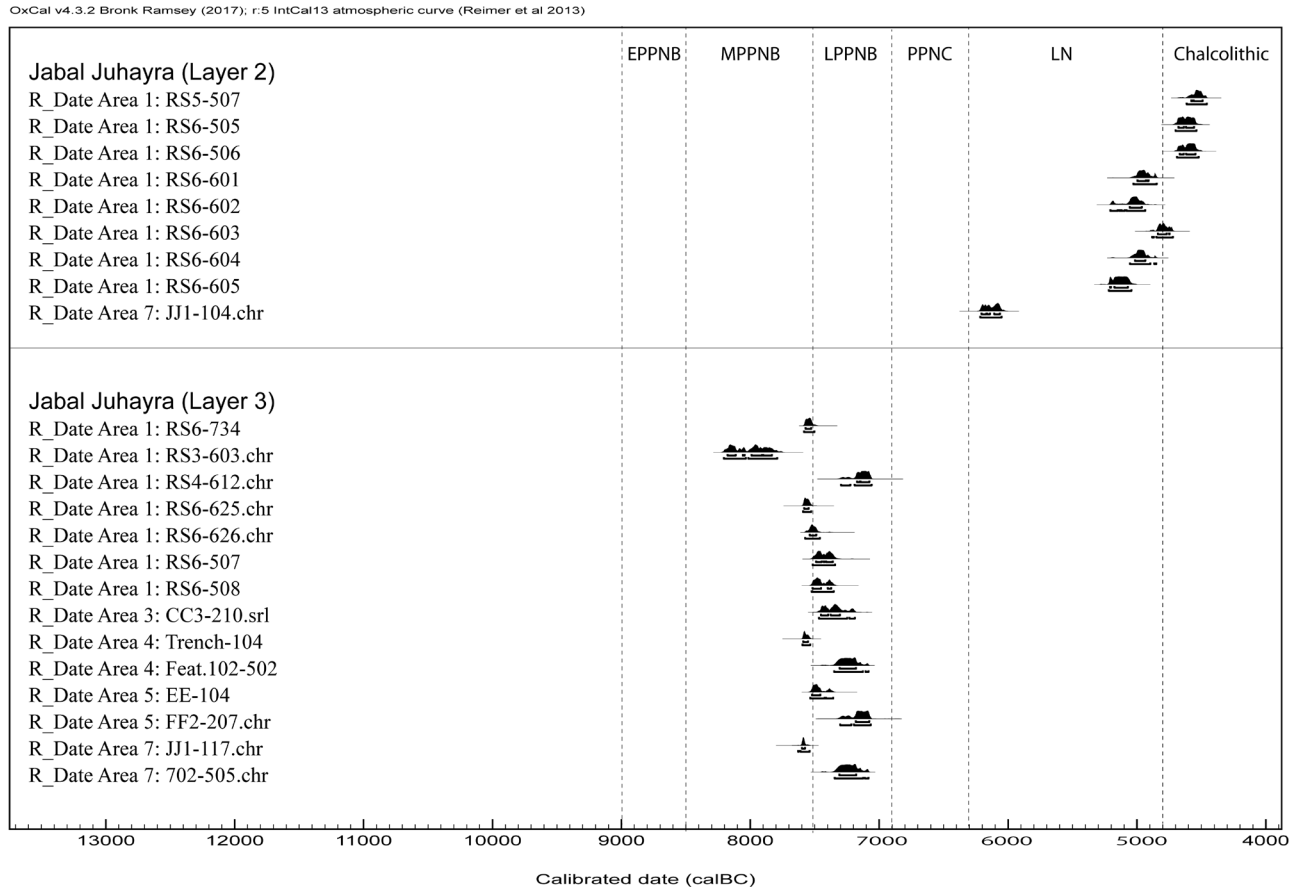


Fig. 15 Jabal Juhayra: $^{14}$C data (all from charcoal remains).

The grinding tools were made largely of limestone and marked by the combination of basin querns and oval to semi-rectangular grinding slabs (Fig. 14: 15-17). As noted above, some of them were found *in situ* besides the tub- and terrace-type cisterns, suggesting that the rockshelter inhabitants preferred a waterside for their domestic duties. It is possible, however, that some of the grinding slabs were used for the surface treatment of the cisterns. This is because their working surface often stained red due to the granule of scoria. In view of its unique form, a stamp-like scoria product with a round knob might also have been used for the same purpose (Fig. 14: 18).

Limestone vessels are relatively common in the Jafr PPNB, and the Jabal Juhayra rockshelter settlement is no exception to this. Various vessel forms including large basins, shallow bowls, and small cups were attested (Fig. 14: 20-21). In addition, several miniature vessels made of scoria (Fig. 14: 19) and two flint bowlets (Fig. 14: 22), a landmark of the M-LPPNB in the southern Levant (Gebel 1999; Fujii 2009b, 2012; Wilke *et al*. 2014), also occurred. Other stone products included a large grooved stone weight made of basalt (Fig. 14: 23) and several whetstones made of sandstone and scoria. The former is among chronological indicators of the PPNB outpost and barrage system in the Jafr Basin (Fujii 2013: Fig. 13). A petroglyph of a quadruped with a long tail, probably a cheetah or a panther, was depicted on its upper surface.

Animal bone tools were scarce considering the frequency of faunal remains, being limited to a tip fragment of a small spatula, a rubbing tool, two awls (Fig. 14: 24), and a robust pointed tool. The scarcity of animal bone tools also marks the Jafr PPNB.

Adornments were even scarcer, consisting only of a fragment of a flat, bottom-like shell product with a central hole (Fig. 14: 25) and a fragment of a cowrie shell. The extreme scarcity of adornments is another trait of the Jafr PPNB that developed in the inland basin.

In addition, hundreds of faunal remains and several dozen litters of floor deposits are laid aside in our digging house. Their analyses are expected to shed light on the subsistence strategy of, and palaeo-environment around, the LPPNB rockshelter settlement.

## Discussion

The excavations of the LPPNB rockshelter settlement have enabled us to settle the following two long-standing issues. To begin with, they shed new light on the dating issue of the barrage and cistern system in the Jafr Basin that has been questioned by some scholars (*e.g.* Finlayson *et al*. 2011). The three $^{14}$C data and a number of *in situ* finds, coupled with the site stratigraphy, clearly demonstrate that the barrage and cistern system was combined with the adjacent rockshelter dwellings to form a unified LPPNB settlement. Seeing

that a similar combination is attested at Wadi Abu Tulayha (Fujii 2007a, 2007b, 2009a, 2010, 2014) and Wadi Ghuwayr 16 (Quintero *et al*. 2011; Fujii, Adachi *et al*. 2011; Fujii, Adachi, Yamafuji *et al*. 2016), it is no longer questionable that the well-organized water management system was the standard of the Jafr PPNB (Fujii 2010, 2013). It is noteworthy in this regard that aside from a few semi-anthropogenic candidates (Gebel 2004), the adjacent sedentary cultural sphere is devoid of clear evidence for such advanced water management technology. This means, for one thing, that well-watered farming communities to the west were less motivated in terms of the exploitation of water-use technology. What is more important is that the Jafr PPNB was by no means a mere hinterland culture of the south Jordanian intermountain PPNB. In this sense, acculturation in the intermediate zone including Jabal Juhayra deserves further scrutiny.

In addition, the series of new research outcomes has offered valuable insights into the parent settlement issue of the Jafr outpost PPNB. A key to the issue is the pier-house built in Rockshelter 6, which clearly illustrates the fact that the PPNB outposts as a remote station of initial pastoral transhumance derived from Beidha-type settlements. Although individual correlation between an outpost and its parent settlement is difficult to specify, the finding of the unprecedented structure highlights the origin of the Jafr outpost PPNB beyond limited evidence for material flow (Fujii 2006). The archaeological significance of the structure cannot be over-emphasized.

## Concluding Remarks

The excavations at the Layer 3 rockshelter settlement of Jabal Juhayra have shed new light on the Jafr PPNB. Among others, the finding of the built-in pier-house and the advanced water management system has enabled us to specify the origin of the Jafr outpost PPNB and, at the same time, reaffirm its innovative character in water-use history. However, the excavations have just finished. We would like to continue our effort toward a deeper understanding of the key site.

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# Re-excavation at Tapeh Ali Kosh, Deh Luran Plain, Iran

Hojjat Darabi, Saeid Bahramiyan, Saman Mostafapour, Mahyar Khademi Bami, and Ali Yari

## Introduction

As a well-known Neolithic site, Tapeh Ali Kosh (N 3604644, E 718397) is located on the Deh Luran Plain, Southwestern Iran, *c.* 10 km to the northwest of the town of Mousian, at an elevation of 150 m a.s.l. (Fig. 1). The mound is roughly circular in shape and rises 4 m above surrounding fields (Fig. 2). Archaeologically, the Deh Luran Plain is known as a part of "Greater Susiana" that, in a northwest-southeast orientation, extends from the Mehran Plain to the Zohreh Plain, and geomorphologically forms the lowlands of southwestern Iran (*cf.* Kouchoukos and Hole 2003; Moghaddam 2012). The plain was first targeted by the French team who excavated some sites including Ali Kosh, then referred to as Tepe Mohamad Djaffar, in 1903 (Gautier and Lampre 1905). Main fieldwork was conducted later by F. Hole in the early 1960s (Hole and Flannery 1962; Hole *et al.* 1969). During two field seasons, he opened an area in the northeastern corner of the site (Fig. 3). Following an analysis of diachronic distribution of artifacts, with an emphasis on economic factors, he divided the entire occupation of the site into three phases: "Bus Mordeh" (*c.*7500-6700 BCE), "Ali Kosh" (*c.* 6700-6300 BCE) and "Mohammad Jaffar" (*c.* 6300-6000 BCE). Of these, the latter has yielded Neolithic pottery, while other two earlier phases dated to pre-pottery Neolithic time. Thanks to Hole's investigations, Tapeh Ali Kosh has been well-documented and obviously contributed to the study of early agriculture and village life across the eastern Fertile Crescent. However, the site was excavated in a time when application of inter-disciplinary methods such as absolute dating, archaeobotany and archaeozoology were in their infancy. Moreover, some new methods, that were not available in the time, have been developed over the last several decades. This caused some ambiguities and questions remained to be answered. In particular, the available dates are contradicted and inconsistent. Hole placed the phases within variant time spans (*cf.* Hole

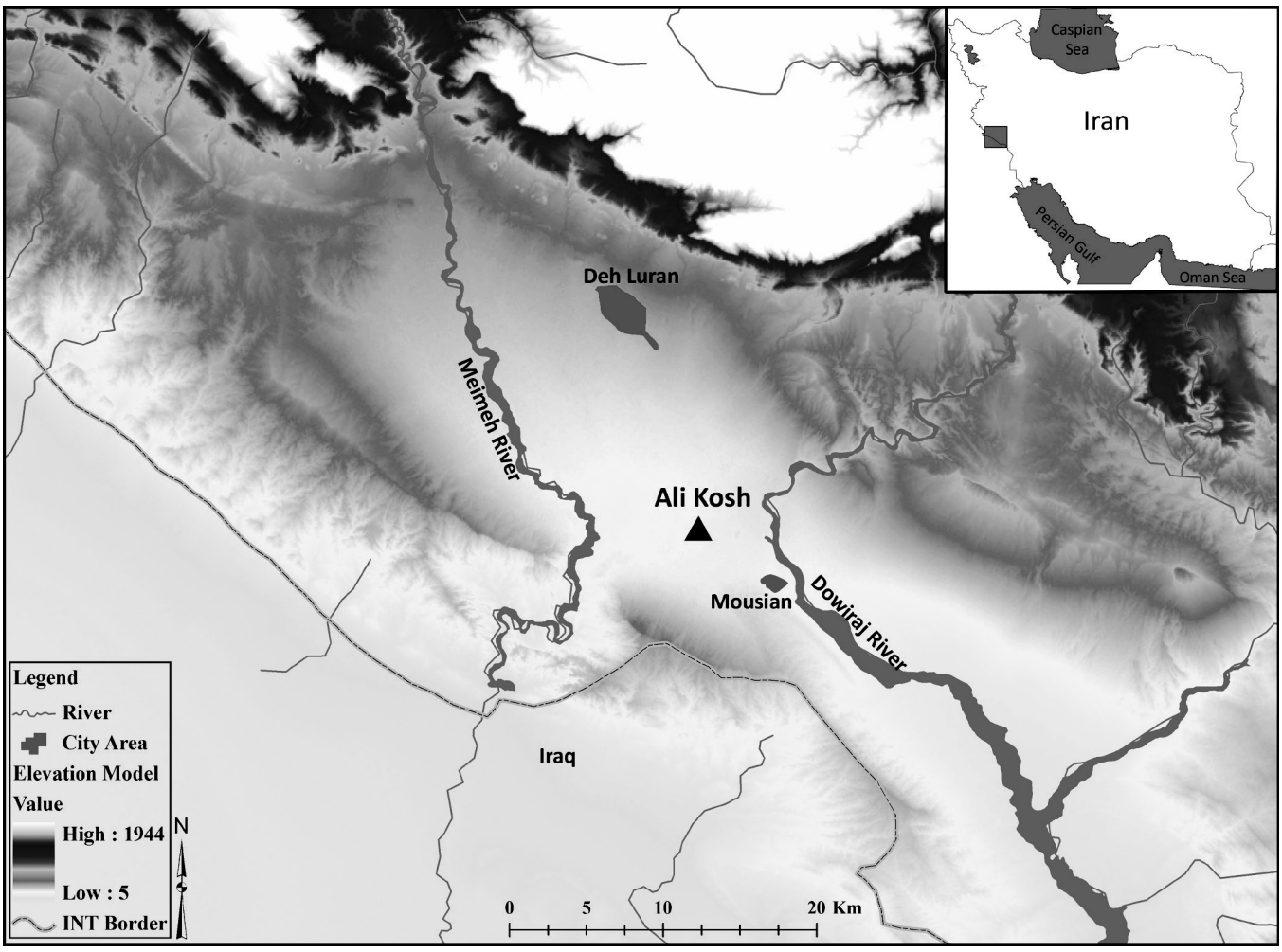


Fig. 1 Location of Tapeh Ali Kosh in the Deh Luran Plain. (Map: S. Bahramiyan)


Fig. 2 General view of Tapeh Ali Kosh, looking north. (Photo: H. Darabi)

*et al.* 1969: 331-341). More recent dates obtained from animal bones have suggested that Ali Kosh was under occupation during 500 years sometime between late 8th to early 7th millennium BCE (see Zeder 1999; Zeder and Hesse 2000). Chronological challenge, therefore, along with other issues (see following), made a reassessment of the site necessary. In this respect, a brief stratigraphic re-excavation was directed by H. Darabi in May-June 2017 (Darabi 2017).

## Stratigraphic Trench

The objectives of the 2017 excavation were generally to re-investigate the duration of occupations at the previously-distinguished phases and to provide new finds concerning animal and plant domestication at the site. Therefore, we first opened a 3×3 m trench to the immediate southeast of the area that had been already excavated by Hole (*cf.* Fig. 3). Since Hole never back-filled his excavations his exposed areas have been eroded and the remained baulks washed down during the last five decades. However, this issue provided us with a "predictive cut" during our stratigraphy in order to control and follow layer boundaries and also to set up adaptive excavation methods. We maintained and documented this cut from top to the virgin soil. Therefore, deposits were excavated in a stepped trench (Fig. 4). At the depth of 2 m our stratigraphic stepped trench reduced into 2×2 m, an area which maintained to the sterile soil at 7.1 m below the summit of the mound. At the end, a 1×1 m sondage was dug into under-laid alternate natural white to reddish brown beds down to 8.2 m in depth.

## Finds

New stratigraphic excavation yielded architectural traces, human burials, potsherds, chipped stone, ground stone, shell and stone beads, clay objects, stone vessels, stone and bone objects, animal bones and plant remains. Furthermore, as our main aim was to reassess the chronology of the site through new secured samples, a notable amount of samples was collected for AMS dating. Also, sediments were taken for phytolith, palynological and micromorphological analyses. The analysis of the finds and samples is in process. Architecture generally consisted of pisé and mud-brick walls and sometimes footed floors. In the so-called Ali Kosh phase, remains of 13 burials were discovered, mostly placed in seated position and covered by ochre. Most of the burials are

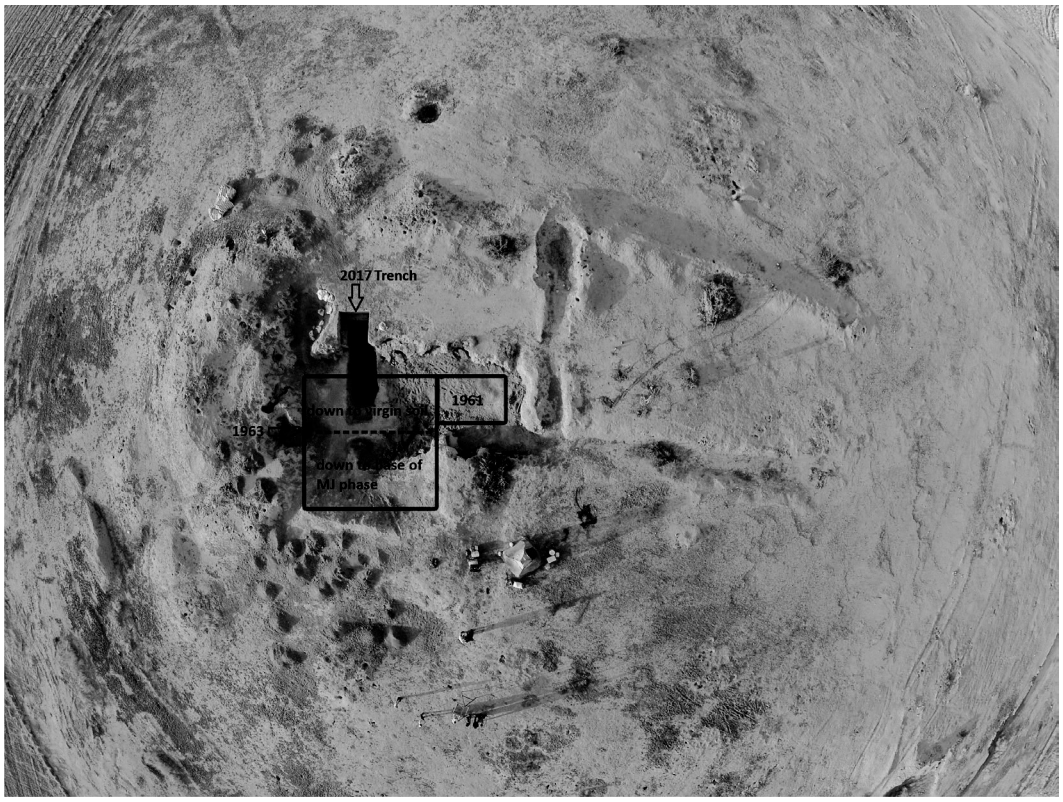


Fig. 3 Location of excavation areas in 1961, 1963 and 2017 on the site of Ali Kosh. (Photo: L. Ahmadzadeh)

Fig. 4 General view of the stratigraphic step trench. (Photo: L. Ahmadzadeh)

accompanied with beads made of stone and marine shells. In some cases skulls are intentionally deformed as already known from some other Neolithic sites such as Ganj Dareh as well. These individuals seem to have been buried in association with a "ritual area" which is shown by animal skulls and horn cores placed inside a space built of pisé and mud-brick wall colored with red ochre. This newly-found space and its unusual installations comparatively reminds upper Sheikh-e Abad and Ganj Dareh D that both yielded Neolithic ritual areas in western Iran. We collected more than 5000 pieces of chipped stones which should be analyzed in detail in future. Pottery styles, as previously known, consisted of the so-called Jaffar Painted, Khazineh Red and Jaffar Plain (for description *cf.* Hole *et al.* 1969: 113-123) (Fig. 5). Fragments of human and animal figurines (Fig. 6), chopping tools and one bone awl are other materials found from the excavation.

## Concluding Remarks

Judging from stratigraphic zones established by Hole *et al.* (1969: 27-28), we should consider the three main phases of the site as "cultural phases", not "occupational levels". According to their report, each phase was divided into two sub-phases. In this respect, this division was based on diachronic distribution of various finds, with special regard to subsistence strategies. Thus, architectural traces were not given attention in phasing the site. However, our stratigraphic levels are based upon traces of architecture, sometimes induced from densely horizontal distribution of various artifacts. Therefore, we distinguished 18 levels from top to virgin soil. In addition, unlike previous results, three gaps were recognized within the alternating layers. Although obsidian pieces already indicated an inter-regional trade (see Renfrew 1969), a large number of marine shell beads can add to our information on long-distance contact of the site's occupants. Concerning our objectives, consideration of the beginning of occupation at the site and the duration of each phase, along with nature of domestication and environmental setting of the time, should be awaited until samples are analyzed.

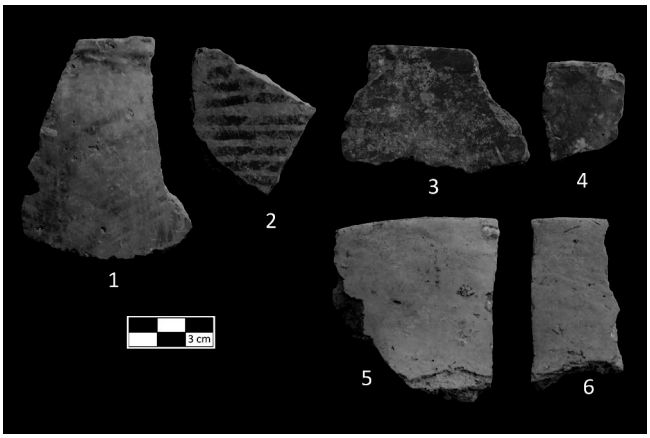


Fig. 5 Pottery samples found in the trench (1-2: Jaffar Painted; 3-4: Khazineh Red and 5-6: Jaffar Plain). (Photo: M. Khademi)

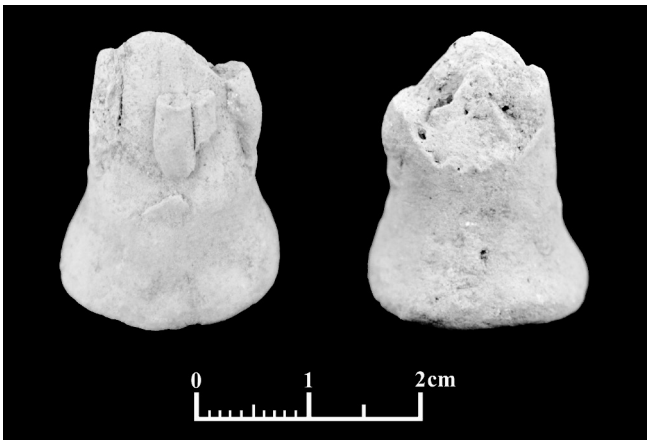


Fig. 6 Broken human clay figurine. (Photo: S. Bahramiyan)

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# The 2016 Excavation Season at the Late Neolithic Structure SS-1 on Mesa 7, Black Desert

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## Introduction

Excavations were resumed at Mesa 7 (M-7) in the Wadi al-Qattafi in Jordan's Black Desert (Figs. 1-2) in order to investigate the occupational history of structure SS-1 (Fig. 3) whose northern half was exposed in 2015 (Rollefson *et al.* 2016). The tentative sequence of habitation and associated alterations of the structure during its use was much more complex than first thought, and instead of three phases proposed in the 2015 preliminary report, they have been refined to produce six stratigraphic phases plus the isolated exterior surface deposits.

## Stratigraphy

*Phase 1*

Phase 1 is represented by the original circular wall (Wall 001) of the structure, comprised of large, flat rectangular basalt slabs laid horizontally. Although we have no direct dating evidence for Wall 001, it is older than Phase 2, which dates to c. 6400 to 6500 BCE (Table 1). The original building is PPNC, therefore, while Phase 2 changes took place near the PPNC/ "Pottery Neolithic" transition[1]. Wall 001 underwent at least one major alteration, but it is not clear if this happened during the Phase 1 occupation or if the modification was part of a major renovation in Phase 2. The change is clearly visible in Fig. 4. The original circular contour of Wall 001 was interrupted in the north sector (lower right in the Fig. 3 top plan), indicated by a dotted line. The chord may have been an opening that was blocked at a later time.

*Phase 2*

Phase 2 principally involved the removal of Phase 1 occupational sediments down to bedrock and the installation of Wall 002 inside Wall 001; the basalt slabs were placed on end. Pillars were raised in the center of the eastern and western walls, as well as a central pillar in the middle of the enclosure (Fig. 4). The pillars (N, C, and S in Fig. 4) ranged from 1.25-1.30 m in length and probably were associated with a roof that was present over the eastern half of the structure in both Phases 2 and 3, an interpretation based on the absence of paving stones in the western part of the structure. That the western area was unroofed is supported by the differences in the degree of patination on flint tools and debitage: in the roofed eastern section no patina was observed on 97% of the artifacts in Phase 2 and 96% in Phase 3; in the unroofed western area 64% of the artifacts were lightly to heavily patinated.

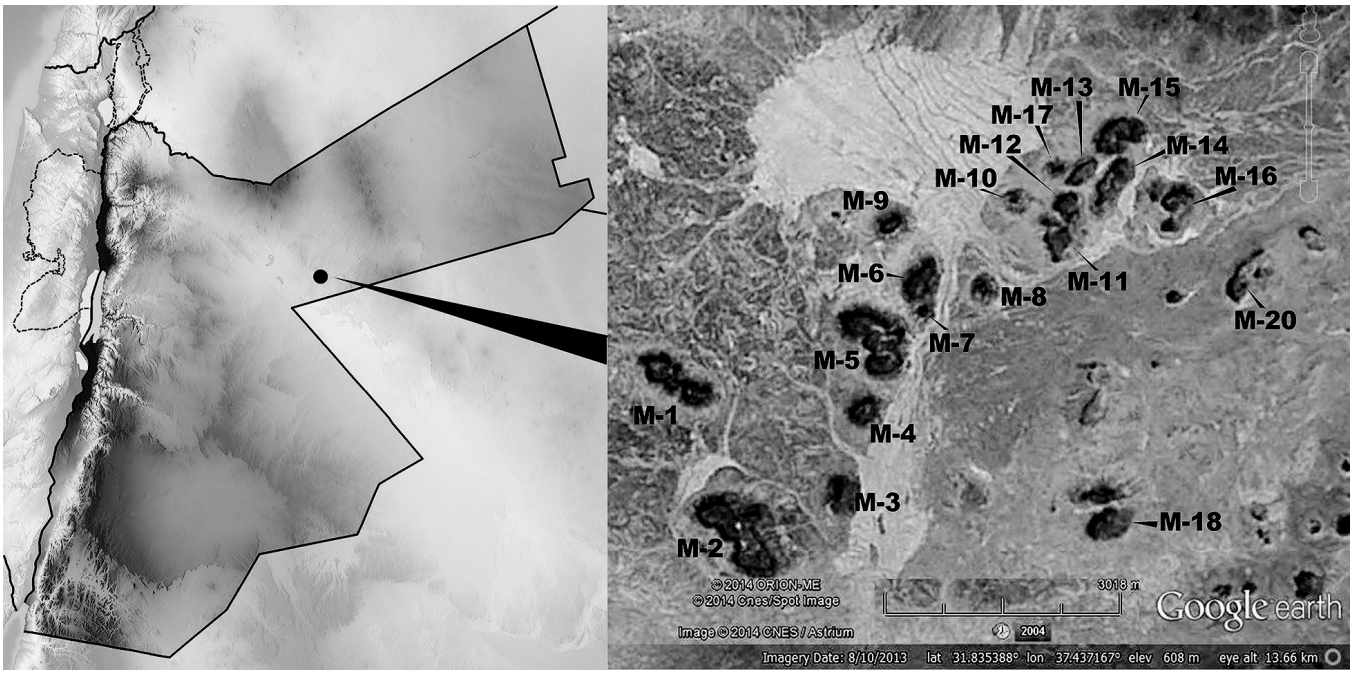


Fig. 1 Location of Mesa 7 in the eastern badia. (Map: G. Rollefson)

Fig. 2 Mesa 7 in the foreground (Mesas 6 and 9 beyond). The circle indicates structure SS-1. (Photo: A.C. Hill)

Fig. 3 Orthorectified overhead view of completely excavated SS 1. (Photo: Y. Rowan)

Several new features of SS-1 were discovered in 2016. The darkly shaded area in Fig. 4 represents an entry way with a threshold (Locus 024, Fig. 5). One of the most intriguing features from 2016 was a plaster-lined circular silo or reservoir (Locus 072; Fig. 6) cut 34 cm into bedrock about 75 cm west of the central pillar, in the open-air part of the building. Soil, dung, and plaster samples were taken, but the analyses have not yet been completed. The plaster was very hard, superficially resembling lime plaster rather than gypsum plaster.

*Phase 3*

The laying of basalt paving stones inside the roofed area defines the next phase of occupation in SS-1; the construction was unsystematic in that the basalt slabs covered no more than 40-50% at any one time. The depth of deposits above the pavement ranged from 28 cm at the eastern wall to the situation where pavers intermingled with those from a later pavement of Phase 4 about 50 cm west of the N-C-S pillar axis. Against

| Beta Sample | Season | Locus | Phase | BP | calBC (2 σ) |
|---|---|---|---|---|---|
| 464324 | 2016 | 063 | 3 | 7430 ± 30 | 6383-6236 |
| 464325 | 2016 | 073 | 3 | 7490 ± 30 | 6432-6336 (74%)<br>6315-6255 (25%) |
| 431871 | 2015 | 026 | 2 | 7550 ± 30 | 6455-6390 |
| 431872 | 2015 | 029 | 2 | 7620 ± 30 | 6490-6430 |

Table 1 Radiocarbon dates from M7 SS-1.

the eastern wall in the roofed section, a built hearth (Locus 061), was the scene of fires so intensive that the Wall 002 slab against which it was constructed was badly cracked. Hearth 061 contrasted with the Phase 2 simple fire pit Locus (032) dug 28 cm into the bedrock adjacent to the blocked opening of Wall 001 and fire pit Locus 037 excavated 12 cm into the bedrock next to the central pillar, both exposed in 2015.

*Phase 4*

A new paving episode marks the next phase of occupation. A pentagonally shaped hearth (*c.* 80 x 60 x 30 cm, lined with basalt slabs, was installed in the roofed section. It is possible that during Phase 4 exterior abutments on either side of the outer edge of the doorway (Loci 058 and 059) were erected to strengthen this uphill part of the structure, creating a "Georgian portico" arrangement, but because the addition to this part of the building is not bonded with the wall, it is possible that this feature may have been built in Phase 3.

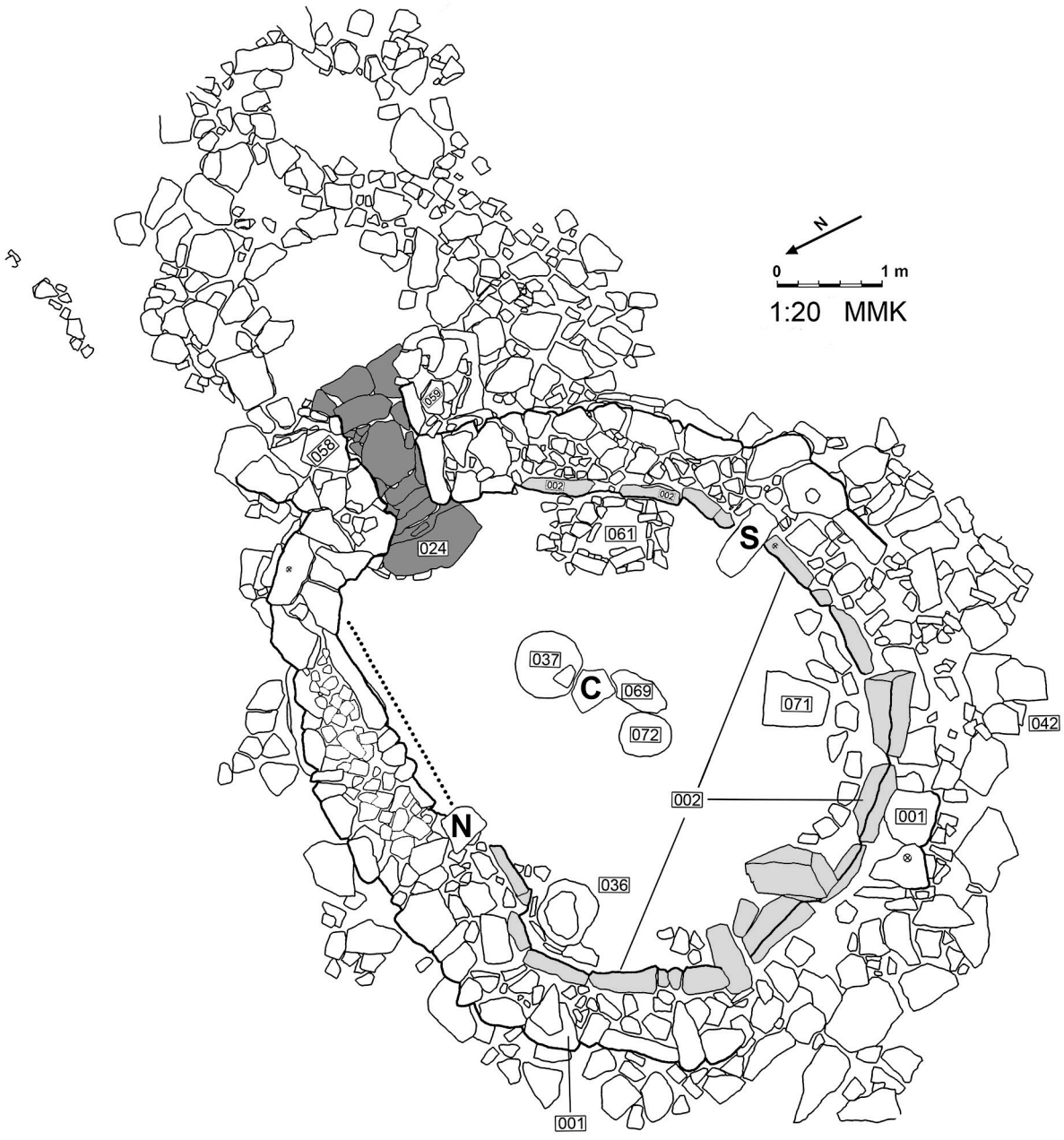


Fig. 4 SS-1 at the end of the 2016 season. The darker shading in the drawing indicates the entrance through the eastern wall; the lighter shading shows the upright slabs of Wall 002. N – northern pillar; C-central pillar; S-southern pillar. (Drawing: M. Kersel and G. Rollefson)

Fig. 5 Entry and threshold in the eastern wall of SS-1. (Photo: Y. Rowan)

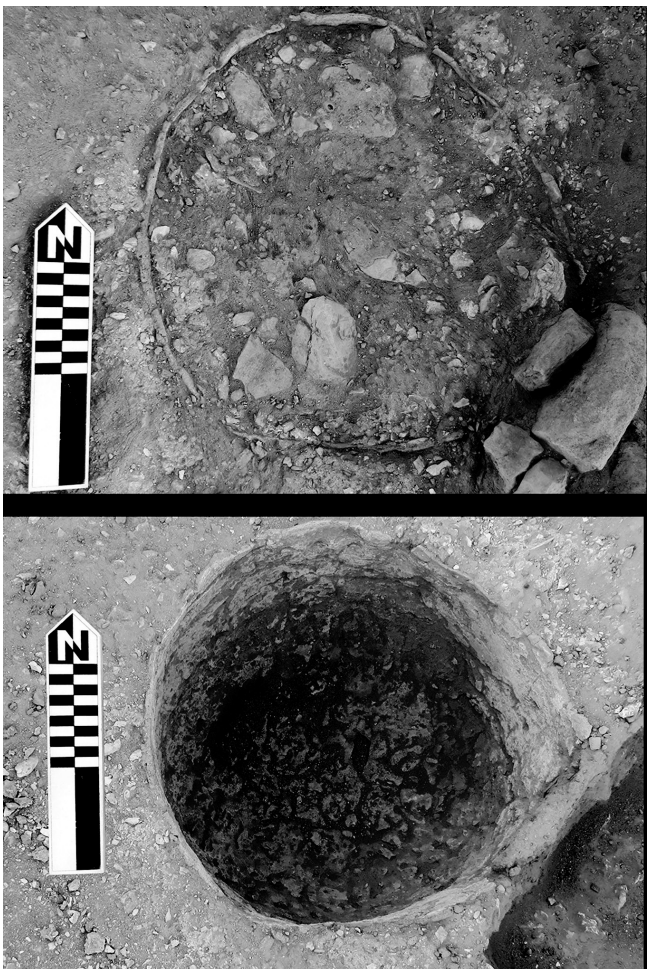

Fig. 6 Plaster-lined cylindrical pit 072 before and after excavation of the fill. (Photos: Y. Rowan)

*Phase 5*

A roughly paved "surface" represents the final use of the interior of SS-1. The pavers are not all flat and may, in fact, be the result of a collapse of a wall that is later than Wall 002. No remains of a hearth were found, and artifact and bone density was relatively limited. It seems certain that the roofed/unroofed configuration of the first four phases no longer pertained in Phase 5.

*Phase 6*

The change in character of SS-1 in Phase 5 signals the beginning of an abandonment of the building that was completed during Phase 6. All of the sediments in this phase are aeolian, and except for a poorly preserved burial cyst excavated in 2015, there are no notable features in the sporadic visit to the SS-1 area.

**Chipped Stone Artifacts**

Table 2 presents the absolute and relative frequencies of *in situ* formal and informal tools recovered in 2016 from SS-1. Burins comprised more than a quarter of the classifiable formal tools, considerably lower in importance than the 2015 inventory (Rollefson *et al.* 2016: 6); nevertheless, the burin classes were distributed in a similar fashion. Truncation burins accounted for well over half of the tool class (Table 3), with simple burins types making up 21% of the group, transverse types for 6%, and dihedral burins at 14%. Notches and denticulates were strongly represented at a combined total of 17.1%. The boring tools class was also strong, with drills (Fig. 7) the most frequent type in the class at 11.9%; notably, drill blanks on blades and bladelets far outnumbered flakes (59% *vs* 41%; Table 4).

Projectile points from 2016 were about as popular as in the 2015 season. The specific types in the collection also generally paralleled the 2015 distribution as well (Figs. 8, 9), with one notable difference. Comparison of point types at Wisad Pools versus the types at M4 SS-11 and M7 SS-1 revealed a stark contrast, namely that whereas transverse arrowheads accounted for more than 80% of the projectile points in the W-66 and W-80 excavations (Rollefson *et al.* 2012, 2013: 16; Wasse *et al.* 2012; Rowan *et al.* 2015), none had been found at the mesas in Wadi al-Qattafi. Two stemmed transverse arrowheads were recovered from SS-1 in 2016, but the execution was so clumsy that it appears the flint knappers had *heard* of such types, but they were not familiar with their production (Fig. 10a).

Heavy duty tools included two axes (one heavily damaged through use, (Fig. 11 a, b), three hammerstones, a pecking stone, and a large (140 x 172 x 20 mm) bifacially retouched limestone flake (Fig. 11c) that may have been used as a tool to dig into the lime-

| Type | n | % |
|---|---|---|
| Arrowheads | 68 | 10.3 |
| Sickle | 1 | 0.2 |
| Burins | 178 | 27.1 |
| Truncations | 36 | 5.5 |
| Scrapers | 45 | 6.8 |
| Tabular/ fan scrapers | 4 | 0.6 |
| Notches | 69 | 10.5 |
| Denticulates | 43 | 6.5 |
| Perforators | 5 | 0.8 |
| Awl | 1 | 0.2 |
| Borers | 16 | 2.4 |
| Drills | 78 | 11.9 |
| Bifaces | 8 | 1.2 |
| Axes/adzes | 2 | 0.3 |
| Picks | 2 | 0.3 |
| Choppers | 1 | 0.2 |
| Wedges | 10 | 1.5 |
| Unifacial knives | 33 | 5.0 |
| Bifacial knives | 14 | 2.1 |
| Seam knives | 10 | 1.5 |
| Backed elements | 5 | 0.8 |
| Tanged blades | 2 | 0.3 |
| Backed bladelets | 3 | 0.5 |
| Other | 24 | 3.6 |
| **Subtotal** | (658) | 100.0 |
| Retouched flakes | 37 | (4.0) |
| Retouched blades | 72 | (7.8) |
| Utilized pieces | 120 | (13.0) |
| Unclassifiable | 42 | (4.5) |
| **Total** | **929** | |

*Table 2* *In situ* tools from the 2016 season at M7 SS-1.

stone bedrock. Other heavy duty tools included two picks (one with a dark material adhering to the tip) and a chopper (Fig. 12). Among "other" light duty tools were two "strangulated" blades in flint resembling Çayönü tools and a "T"-shaped tool (Fig. 13). Various types of knives totaled 9.9% of the formal tools, and many displayed fine workmanship (Fig. 14).

## Cores

The distribution of core types recovered during 2016 is presented in Table 6 (Fig. 15). The forms of blade cores account for 32% of the total *in situ* classifiable cores (n=359), with the flake core categories more than double that number at 68%. At first glance the 2:1 ratio for flake cores *vs*. blade cores seems to be contradicted by the distribution of debitage types. Without considering cores, debris, and burin spall, the debitage in the 2016 sample is heavily dominated by blades (83%; for formal tools, blades constituted 73% of the blanks).

The disparity between core types and debitage production is probably related to the generally small size of the cores. Table 7 reflects the diminutive size of all *in situ* classifiable cores, which undoubtedly is a reflec-

| Class | n | % |
|---|---|---|
| Simple burins | 35 | 21.1 |
| Transverse burins | 10 | 6.0 |
| Dihedral burins | 23 | 13.9 |
| Truncation burins | 94 | 56.6 |
| Mixed truncation burins | 4 | 2.4 |
| Subtotal | (166) | 100.0 |
| Indeterminate | 11 | 6.2 |
| **Total** | **177** | **100.0** |

Table 3 Burin classes in the in situ material from the 2016 season at M7 SS-1.

| Type | n | % |
|---|---|---|
| Bladelet, symmetrical | 29 | 42.0 |
| Bladelet, asymmetrical | 12 | 17.4 |
| Burin spall, straight | 19 | 27.5 |
| Burin spall, curved | 9 | 13.0 |
| Subtotal | (69) | 100.0 |
| Mèche de foret | 0 | (0.0) |
| Double drill | 0 | (0.0) |
| Unclassifiable | 7 | 9.2 |
| **Total** | **76** | **100.0** |

Table 4 In situ drill types from the 2016 season at M7 SS-1.

| Type | n | % |
|---|---|---|
| Transverse. stemmed | 2 | 3.8 |
| Haparsa | 19 | 35.8 |
| Nizzanim | 12 | 22.6 |
| Herzliya | 9 | 17.0 |
| Byblos | 1 | 1.9 |
| Badia | 10 | 18.9 |
| Other | 0 | 00.0 |
| Subtotal | (53) | 100.0 |
| Pre-form | 3 | (4.4) |
| Unclassifiable | 12 | (17.6) |
| **Total** | **68** | |

*Table 5* *In situ* arrowheads by type from the 2016 season at M7 SS-1.

| Type | n | % |
|---|---|---|
| Bladelet core | 6 | 1.7 |
| Blade core | 4 | 1.1 |
| Blade + bladelet core | 1 | 0.3 |
| Opposed platform non-naviform blade core | 13 | 3.6 |
| Single platform single face blade core | 92 | 25.6 |
| Microflake core | 6 | 1.7 |
| Core on a flake | 32 | 8.9 |
| Single platform single face flake core | 93 | 25.9 |
| Single platform multiface flake core | 28 | 7.8 |
| Single face multiplatform flake core | 12 | 3.3 |
| Multiface multiplatform flake core | 35 | 9.7 |
| Radial core | 2 | 0.6 |
| Pyramidal | 1 | 0.3 |
| Semi-pyramidal | 1 | 0.3 |
| 90° change of orientation core | 31 | 8.6 |
| Other | 2 | 0.6 |
| Subtotal | (359) | 100.0 |
| "Casual" core, tested piece | 47 | (9.7) |
| Unclassifiable | 78 | (16.1) |
| **Total** | **484** | |

Table 6 Cores from the 2016 season at M7 SS-1.

| | n | Min. | Max. | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Length | 362 | 10 | 92 | 40.6 | 14.8 |
| Width | 362 | 11 | 77 | 36.1 | 11.9 |
| Thickness | 362 | 6 | 80 | 25.9 | 11.5 |

*Table 7* *In situ* classifiable core dimensions in the SS-1 2016 sample.

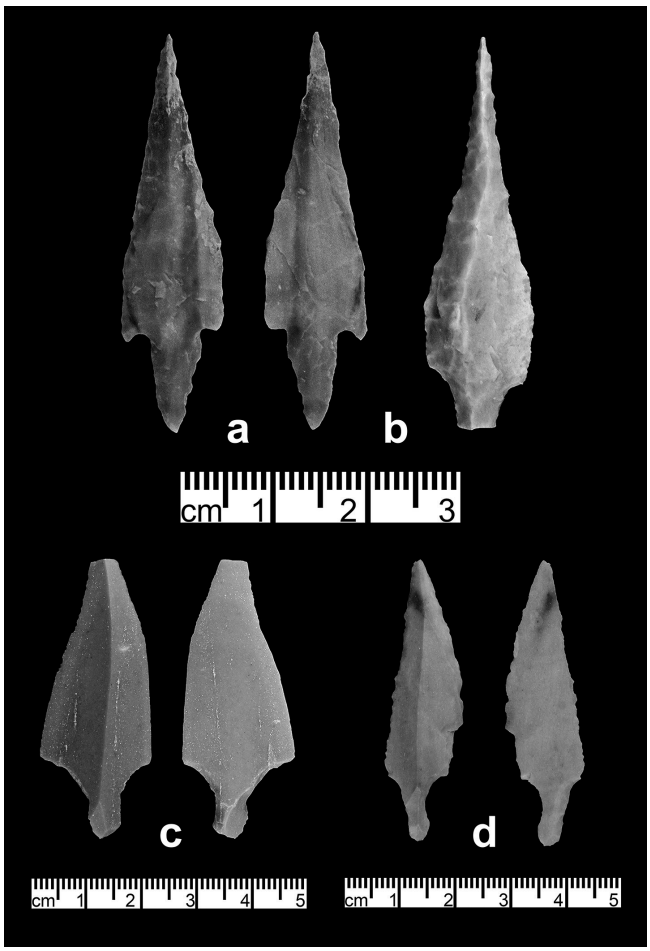


Fig. 7 Projectile points from SS-1. a: elongated Haparsa point; b: elongated Nizzanim point; c, d: Badia points. (Photo: G. Rollefson)

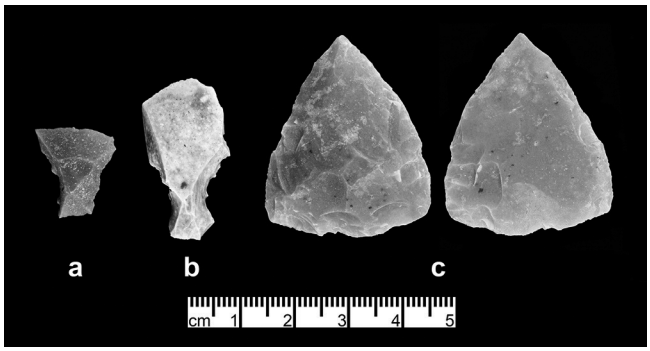


Fig. 9 Tools from SS-1. a, b: transverse arrowheads; c: biface or arrowhead pre-form. (Photo: G. Rollefson)

tion of the absence of nearby good quality flint sources. (The nearest outcrop to Mesa 7 is from two eroded hillocks across the Wadi al-Qattafi, 2 km to the south. It is of poor, generally coarse quality, although this material does show up in the debitage, albeit rarely. Other flint sources elsewhere in the Wadi al-Qattafi have not been identified, although medium to poor quality outcrops occur on eroded limestone hillocks 7-8 km southwest of Mesa 7).

The final stages of detaching blades and flakes from such small cores (Fig. 15: b, c) likely involved a great degree of hope and frustration. What may have once been a core with blade production characteristics – par-

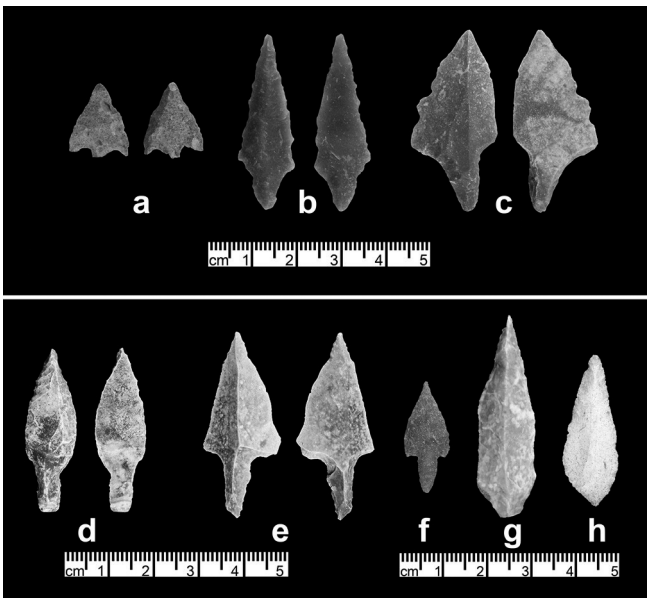


Fig. 8 Projectile points from SS-1. a, f: Haparsa points; b, d, g, h: Nizzanim points; c, e: Badia points. (Photo: G. Rollefson)

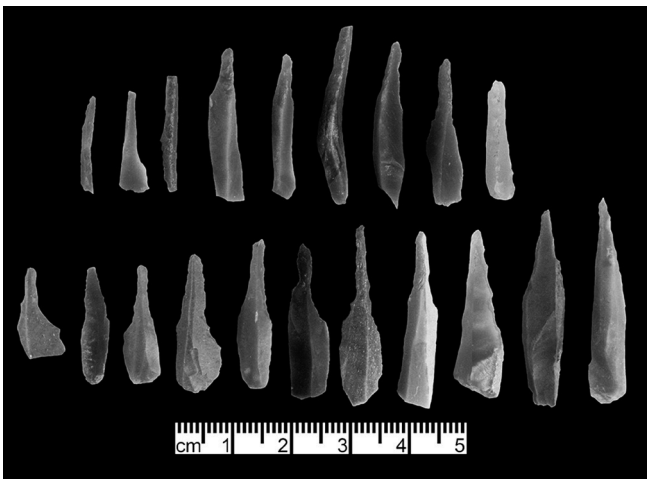


Fig. 10 Drills from SS-1. Upper row, on burin spalls; Lower row on bladelets. (Photo: G. Rollefson)

allel ridges on the working face(s) – could have been susceptible to defacing by a misplaced or poorly delivered blow that produced a flake, leaving little evidence of the previous history of blade production on the core. This appears to have been a frequent scenario on single face, single platform cores, for example.

## Groundstone

Groundstone artifacts were not particularly numerous at SS-1, and what was recovered was often fragmentary. A total of 13 handstones and one pestle were recovered, as well as nine grinding stones (several of which had been inverted and used as pavers for flooring in Phase 4); one grinding slab had a shallow cuphole. One "other" piece of groundstone was a basalt disc with bifacial flaking around the entire periphery (Fig 16b); its function is unknown.

## Small Finds

Beads and bead blanks dominated the small finds category (Table 8), although the total number (31, if the cockle shell fragments are included) is very low compared to the number of drills (78, *cf.* Table 2), possibly indicating that beads may have been traded out to other groups in the Near East. The stone used for bead production is locally available (although the source of carnelian has not been identified), but the shell beads demonstrate that long-distance exchange networks were present.

"Bracelet" fragments of limestone were rare. The shaft straightener was made on a broken fine-grained sandstone handstone, an exotic material whose source is unknown; a naturally tapered sandstone cylinder of unknown purpose was also imported to the site. An incised limestone cone whose apex was broken bears a smooth base, possibly the result of its use as an abrader (Fig. 16a). Gizzard stones from medium sized birds occurred in low numbers, as was the case for clinopyroxene ("false obsidian") spheres.

| Item | n |
|---|---|
| Carnelian bead | 1 |
| Carnelian bead blank | 1 |
| Carnelian fragments | 3 |
| Red stone bead | 6 |
| Red stone bead blank | 1 |
| Dabba marble bead | 3 |
| Dabba marble bead blank | 1 |
| White stone bead* | 1 |
| Quartz bead blank | 1 |
| Shell bead blank** | 1 |
| Shell (Conus) bead | 1 |
| Conus shell | 1 |
| Shell (Nerita) pendant | 1 |
| Dentalium bead | 1 |
| Cowrie shell | 1 |
| Cockle shell fragments | 10 |
| Stone 'bracelet' fragment | 2 |
| Shaft straightener (sandstone) | 1 |
| Sandstone object (cylinder) | 1 |
| Incised conical limestone fragment | 1 |
| Gizzard stones | 4 |
| Clinopyroxine spheres | 4 |

Table 8 Small finds from the 2016 season at M7 SS-1. * Two white disc beads were found in the backdirt of a looted tomb on the summit of Mesa 7. ** Lost during a sandstorm.

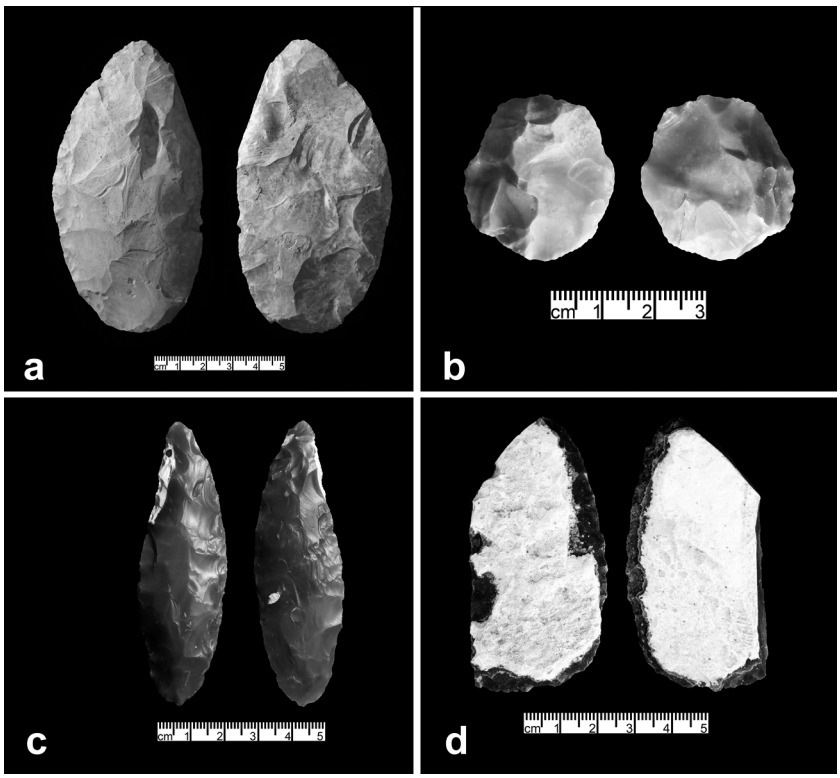


Fig. 11 Tools from SS-1. a: Polished axe; b: battered chipped stone axe; c: bifacial "chopper"; d: pecking stone. (Photo: G. Rollefson)

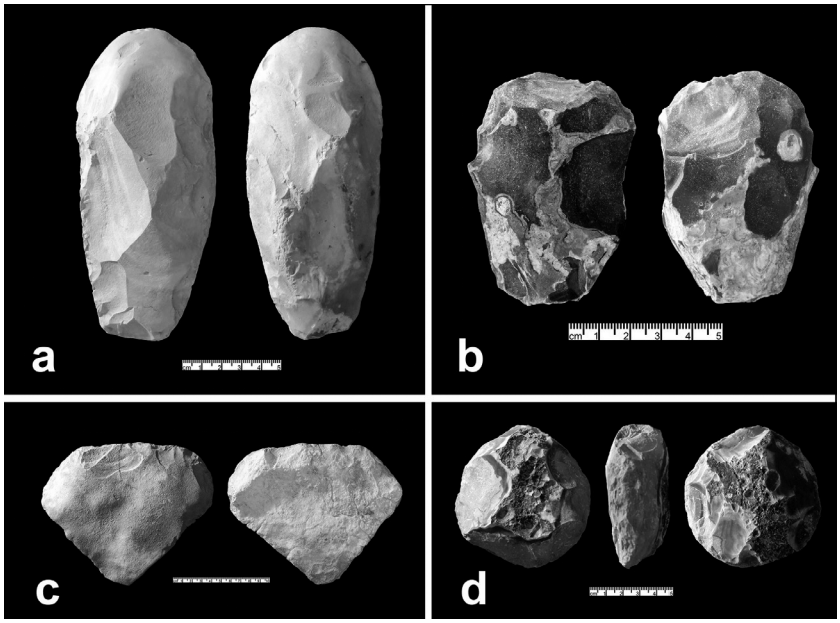


Fig. 12 Stone tools from SS-1. a: chopper; b: perforator/denticulate; c, d: picks. (Dark residue at tip of d). (Photo: G. Rollefson)

## SS-2

Several meters downslope (southwest) from SS-1 lay the remnants of a complex, possibly double-celled building. One cell had a curvilinear wall (Wall 303) 2.5 m long, 0.75 m thick, and preserved to a height of 1.0 m (Fig. 17b). The original wall was built of long, flat basalt slabs stacked horizontally; at some time an opening at least 70 cm wide existed, then blocked rather clumsily with less regular slabs (compare the right section of the wall in Fig. 17b with the left section).

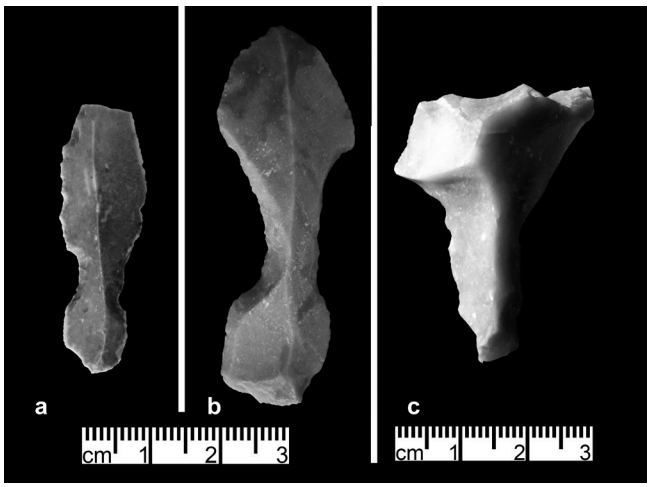


Fig. 13 "Other" tools from SS-1. a, b: "strangulated blades/ "Çayönü tools in flint; c: T-shaped tool (broken at upper left). (Photo: G. Rollefson)

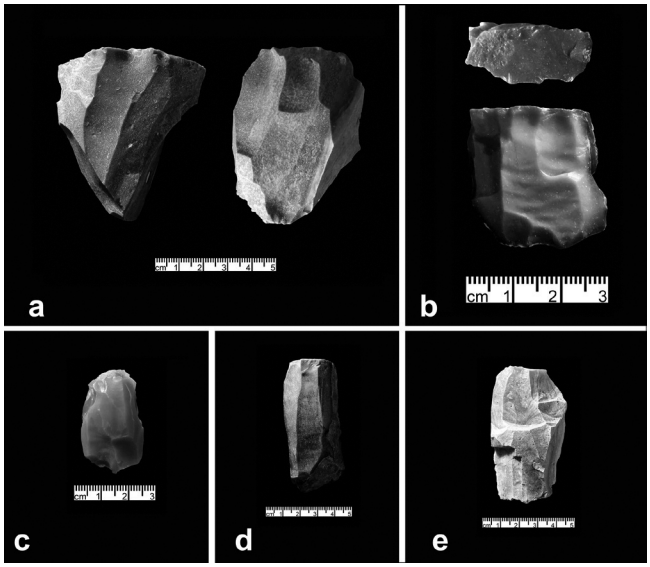


Fig. 15 Cores from SS-1. a: Opposed platform bidirectional blade core; b, c: bladelet cores; d: single platform unidirectional blade core; e: Opposed platform bidirectional blade core. (Photo: G. Rollefson).

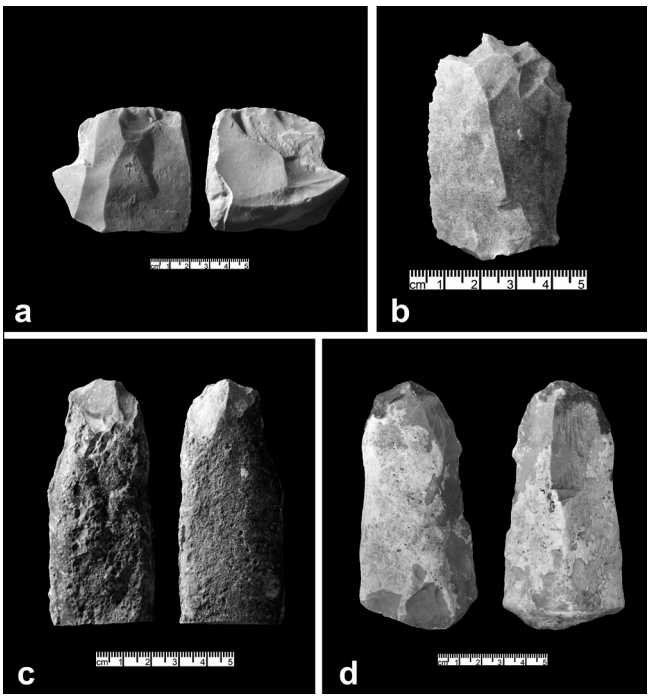


Fig. 14 Bifacial tools from SS-1. a, c: bifacial knives; b: circular biface; d: seam knife. (Photo: G. Rollefson)

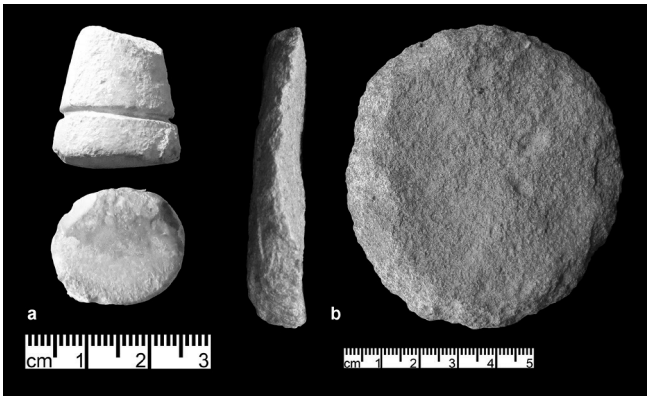


Fig. 16 a: Incised conical limestone object; b: Circumferentially retouched basalt disc. (Photos: G. Rollefson)

Floors were paved with large, flat slabs, preserved over 4.4 $m^2$ in the eastern cell and extending to the west another 5.4 $m^2$ (Fig. 17), and one huge slab may have been erected vertically at the lower edge of the curved cell.

Clearly the building had suffered major damage, and very little information on how the structure was used could be acquired. Artifacts were sparse: only 21 formal and informal tools were recovered as well as eight cores. Animal bone was also meager and poorly preserved. The close proximity of SS-1 and SS-2 suggests they may have been partly contemporaneous, at least, although there is no stratigraphic evidence to support this speculation.

## M7 Summit

The top of Mesa 7 had considerable architecture. Two tower tombs had been looted, as were numerous burials; Safaitic inscriptions and rock art were relatively numerous in the vicinity of the tower tombs, and while it hasn't been possible to determine when the tombs were originally constructed, it is likely that Safaitic people re-used them. A small "desert mosque" with wall lines only a single course high was made in the southern half of the summit.

Along the southern and southwestern edge of the summit were four or more low rectangular structures measuring about 1.5 x 3.5 m; the buildings were roofed by enormous basalt slabs. Burins were numerous across the northern and western section of the summit ("B" in Fig. 18). The entire northern half of the top of the mesa may have been a burin site, for burins were also


Fig. 17 a: overhead view of SS-2, north towards the top of the image. b: The curvilinear cell and pavement. (Photos: Y. Rowan)

frequent in the backdirt left by looters who vandalized two burial cairns (B1 and B2 in Fig. 18).

Fig. 18 shows the "entrance" to the summit. Although the entrance takes advantage of a natural cleft in the basalt, there are also low walls constructed of several courses of basalt slabs on either side of the passage; it is not possible to determine the age of this construction. The entire perimeter of the summit was cordoned off by vertically placed basalt slabs; once again, dating this kind of construction is not possible, but since the wall line runs across and on top of the burin concentrations, it is likely that the wall is post-Late Neolithic.

## Discussion

The configuration of the interior of SS-1 is unlike any of the structures excavated at Wisad Pools, nor does it resemble any of the PPNC/LN structures exposed by Betts (1998; 2010) or Garrard *et al.* (1994). SS-1 might be a dwelling style unique to the Wadi al-Qattafi during the Late Neolithic. But there is another possibility.

In view of the size and distribution of hearths and crude fire pits, it might be that the building was a workplace. SS-1

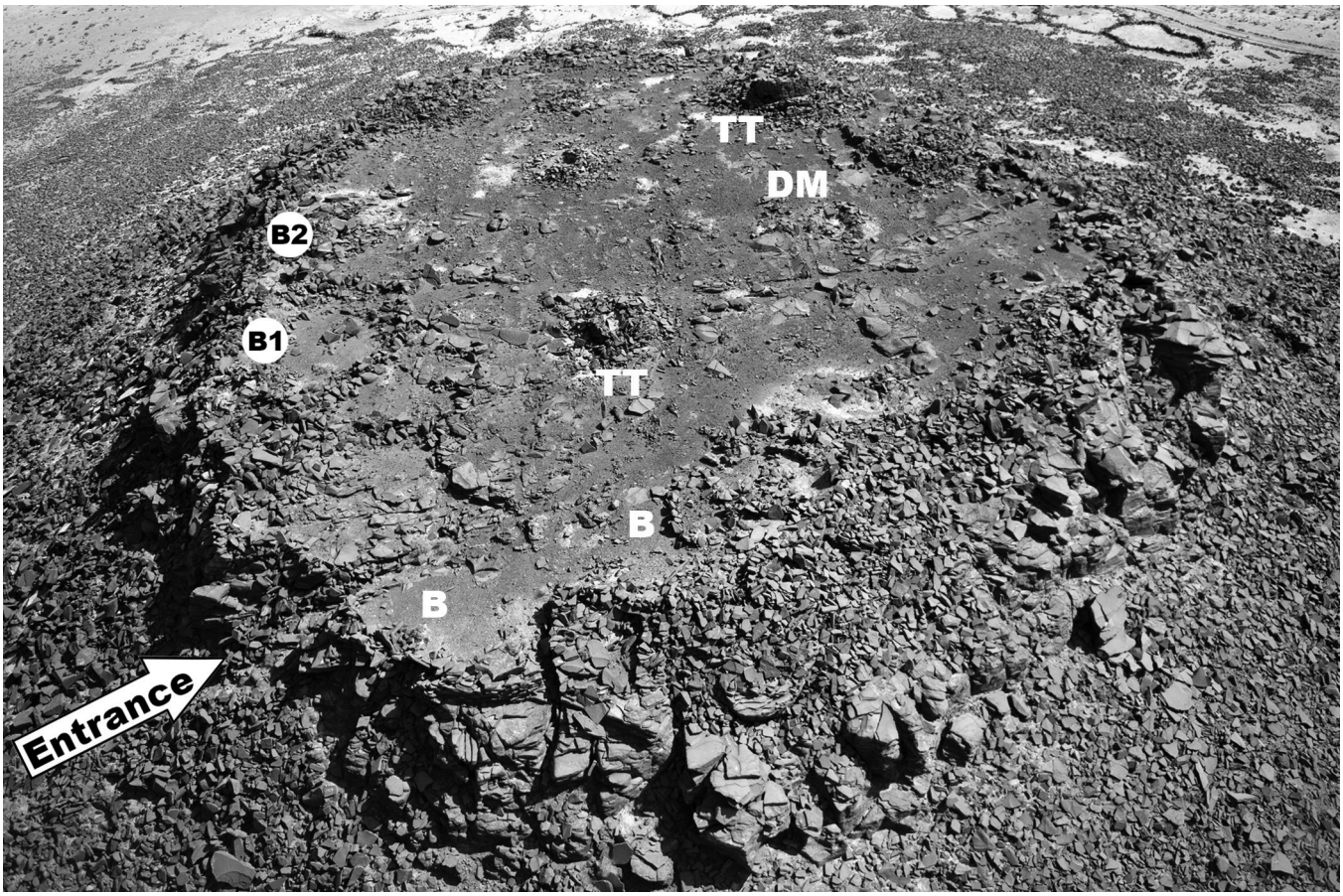


Fig. 18 View towards the southeast of the summit of Mesa 7. B-B: burin scatter; B1, B2: burin collections from looters' backdirt; TT: tower tombs (looted); DM: desert mosque. North is towards the lower left corner of the photo. (Photo APAAME_20111027_DDM_0588; with permission).

is almost surrounded by six smaller structures. Two of these were vandalized by looters after the 2016 season closed, and they appear to be oval in shape and measure approximately 1.5-2.0 x 3.0-4.0 m in size. The buildings generally resemble the dwelling SS-11 on the southern slope of Mesa 4 ("Maitland's Mesa") in size and shape, so it might be the case that the six buildings near SS-1 were dwellings of a group of hunter-herders who communally used SS-1 as their atelier.

There are notable differences in the results of the excavation of SS-1 and the artifact inventory at Wisad Pools. AT SS-1 burins made up 41% of the formal tool inventory, while at W-80 at Wisad Pools, burins didn't even amount to 3% (Rollefson *et al.* n.d.). Mention has already been made of the major discrepancy between the two sites in terms of transverse arrowheads, but in addition, arrowheads are more than four times as frequent at W-80 (27%) than at SS-1 (combined total of 7%). Another major distinction between the two artifact collections is shown by the core frequencies. Microflake cores, defined as a core whose maximum dimension is less than 2.5 mm, account for 3% at SS-1, while at W-80 microflake cores are more than five times as frequent (16.2%).

SS-1 and W-80 are contemporaneous, so these differences are intriguing. Both groups relied on hunting and herding, and both groups may have used kites to maximize the harvest of gazelle, which constitute the majority of animals in both faunal assemblages. While there are some environmental differences, it is uncertain how this might account for the dissimilarities in the artifacts the people were using. The two areas are separated by 47 km, a distance that is not forbidding if a group of hunter-herders stayed at the mesas for a certain amount of time, then moved to Wisad Pools for a different part of the year, employing different strategies for hunting-herding and botanical exploitation. But it is also possible that despite the closeness of the two areas, the architecture and artifacts could represent two distinctive cultural groups that remained, in the main, isolated from each other. Additional research will shed a brighter light on these considerations.

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**Endnote**

[1] There is no true "Pottery Neolithic" in the badia since conditions made ceramic production difficult if not outright impossible. The dates of the PPNC and Yarmoukian sections of the Late Neolithic indicate that the transition in the western highlands took place around 6,400 cal BCE (*cf.* Garfinkel and Ben-Shlomo 2009: Table 1).

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# Two Cortical Daggers from Mushash 163

Dörte Rokitta-Krumnow

## Introduction

The late Pre-Pottery Neolithic A / Early Pre-Pottery Neolithic B (PPNA/EPPNB) site of Mushash 163 is located in the semi-arid steppe in the western Badia, some 40 km southeast of the Jordanian capital Amman. The site is visible on the surface by a dense lithic scatter of *c.* 60 m x 45 m in area and was discovered during the Qasr Mushash survey in 2012 as part of a joint-project of the Orient Department of the German Archaeological Institute and the Jordanian Department of Antiquities. It was directed by Karin Bartl and Ghazi Bisheh (Bartl *et al.* 2014). The project investigated the vicinity of the Early Islamic desert castle of Qasr Mushash (Bartl *et al.* 2014). Five seasons of excavations were conducted from 2014 to 2017 (Bartl and Rokitta-Krumnow 2017).

The excavated architecture is characterized by semi-subterranean circular buildings of at least two different phases. Thirteen radiocarbon dates suggest a Late PPNA-Early PPNB occupation at Mushash 163 (*c.* 8,900/8,800-8,600/8,500 BCE; Lelek Tvetmarken and Bartl 2015: 40, fig. 10).

However, the site also exhibits traits of probable PPNC or Late Neolithic origin that has been attested only at the surface until now. In spring 2017 two cortical flint daggers were found next to each other on the surface at the south-western edge of the site.

## The Bifacial Daggers of Mushash 163

The first dagger, MUS17-001 (Fig. 1; L: 21 cm, W: 5.3 cm, Th: 2 cm), is made of locally available tabular dark brown fine-grained Eocene flint displaying cortical remains on both sides. At one side the cortex as well as the middle part of the dagger has been abraded whereas the other side's cortex has been left unworked. Pressure retouch covering the surface forms bilateral cutting edges. One lateral notch at the lower part of the item may hint at the hafting of the piece and shows the supposed handheld-position. This dagger is somewhat asymmetrical and curves slightly.

The second dagger, MUS17-002 (Fig. 2; L: 19.8, W: 5.7, Th: 1.3 cm), is of locally available tabular dark brown fine-grained Eocene flint exhibiting cortical remains on both sides whereas cortex at one side seems to be abraded/thinned as well as parts of the flint. Pressure retouch covers the entire surface and forms bilateral cutting edges. One lateral notch may be interpreted as part of the haft as is the case with the other dagger. Whether the dagger had been hafted cannot be answered. A burin-like facet at the distal end is worth mentioning, but it does not seem to be the result of use but of preparation. (At Ba'ja an "impact burination" on the tip of a pressure-flaked flint dagger from a single burial has been associated with a probable burial ritual, Gebel *et al.* 2017: 23, fig. 8). Macroscopically, both items show resharpening but there is no visible use-wear.

## Flint Daggers in the Levant

Flint daggers of this kind have been already described by Crowfoot Payne in 1978, attributing three surface finds from Beer Osnat (near Tell Tuwail) as probably Egyptian Chalcolithic. Later discussed by Goring-Morris (1993) and Goring-Morris *et al.* (1994) in comparison to surface finds from nearby Negev sites Hamifgash III and V, Har Qeren V and XIV, Shunera XXIII, and Qadesh Barnea 31, the Beer Osnat items had been attributed to the Late Neolithic Tuwailan industry.

Bifacial flint daggers from stratified contexts are known from, for example, LPPNB burials in Ba'ja (Gebel *et al.* 2006: 16, fig. 6; Gebel *et al.* 2017). They are also reported from LPPNB layers at el-Hemmeh (Makarewicz *et al.* 2006: 200, fig. 11.4) and LPPNB Mesad Mesal (Taute 1981), LPPNB/PPNC layers at eh-Sayyeh (pers. obs.), PPNC Ashkelon (Dag 2008: fig. 51), and PN layers at Ziqim (Garfinkel *et al.* 2002: fig. 29). Tile knives and bifacial daggers first occur in LPPNB layers in 'Ain Ghazal but increase in number during the PPNC and Yarmoukian period (Rollefson *et al.* 1994: fig. 5, K-2b). Several foliate flint daggers and tile knives have been recently found in the eastern Badia (Jibal al-Khashabiyeh) and were also attributed to the Tuwailan industry (Abu-Azizeh and Tarawneh 2015: 112).

Roughouts and production waste of cortical knives have been found at the Negev sites at Hamifgash III and V, and Har Qeren XIV (Goring-Morris 1993; Goring-Morris *et al.* 1994) and are interpreted as workshops. Extensive research on the *chaîne opératoire* of large cortical knives has been conducted at Har Qeren XIV (Sharon and Goring-Morris 2004). Other sites lack production waste (*e.g.* Ba'ja, Purschwitz 2017: 265; eh-Sayyeh, pers. observ.). This may hint at production and consumer sites, but to make this determination the analyses of raw material (local or non-local) and production waste are needed.

The understanding of the temporal and spatial distribution of flint daggers in the Levant is also connected with the question of use. Re-interpretations of Scandinavian Neolithic flint daggers – usually seen as weapons worn by warriors – suggest that many of them have a more practical function, the killing of livestock and the use in sacrifice (Skak-Nielsen 2009). Rosen (1997: 81) also states that "certainly not all those tools were ritual in use". The Mushash 163 daggers are probably better seen in a practical rather than a ritual use, although their deposition raises questions. However,

daggers from burial contexts and with delicate retouch as found, for example, at Ba'ja (Gebel *et al.* 2006: 16, fig. 6) do probably have a different purpose (or value) as a symbol of status or ritual function. Use-wear analyses are needed to resolve the question of function.

## Conclusion

Mushash 163 exhibits architecture and chipped lithics diagnostic for the transition of the PPNA to the EPPNB. Already during the first time visit to the site, surface finds were interpreted as possibly PPNC or Late Neolithic origin. The two daggers found in 2017 substantiate this assumption of a later settlement history of the site that has not yet been found in excavation.

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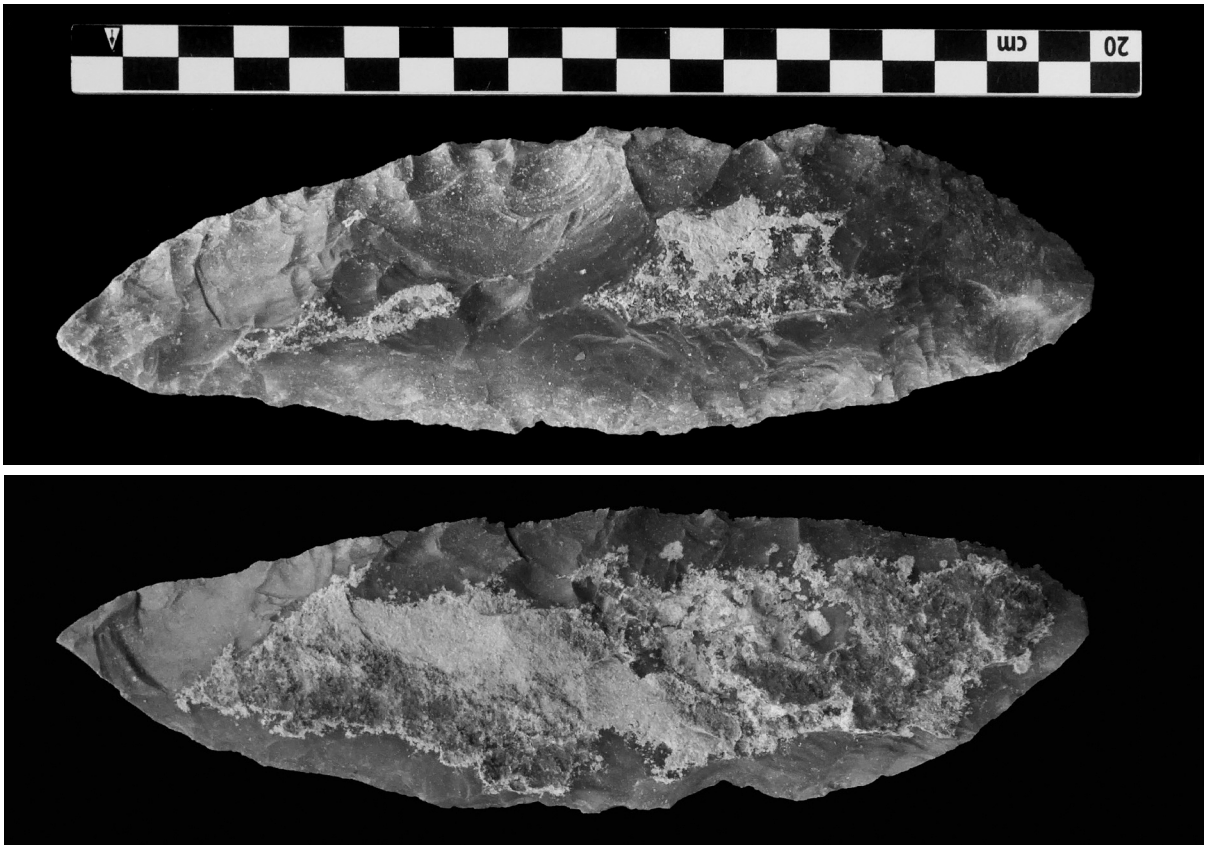


Fig. 2 Flint dagger (MUS17-002). (Photo: K. Bartl)

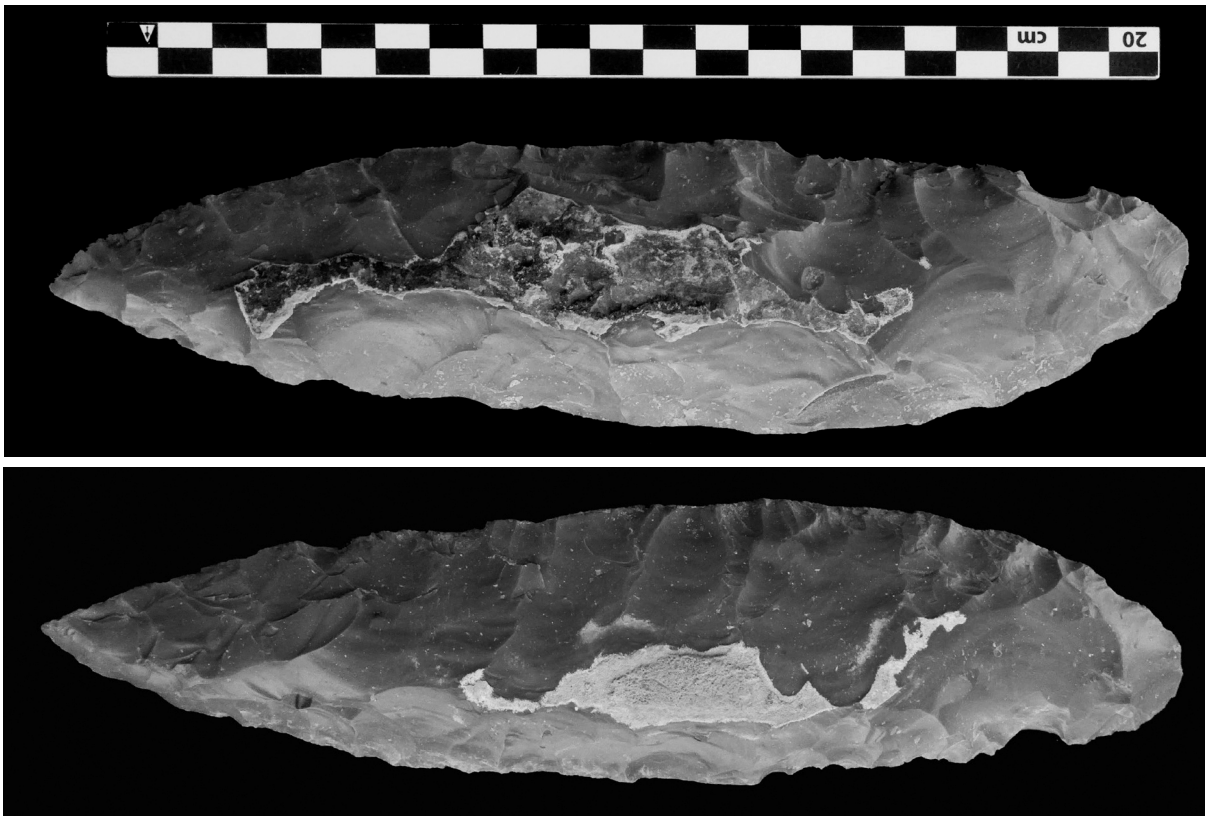


Fig. 1 Flint dagger (MUS17-001). (Photo: K. Bartl)

# Corporate Identity in the Cypriot Neolithic – Transitions to a Unique Island Persona?

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## Introduction

As we learn more about the complexities of the Neolithic, more and more research attention is being directed towards both social issues and colonization strategies (*e.g.* Pinhasi and Pluciennik 2004; Colledge and Conolly 2007). Current research has revealed a much earlier than expected Neolithic presence on some of the Mediterranean islands, especially Cyprus (Simmons 2014: 175-181). These investigations are coupled with new approaches to examining early Mediterranean island adaptations (*cf.* Phoca-Cosmetatou 2011; Dawson 2013). Can this new research be related to the emerging interest in Neolithic identity?

There are, of course, many ways to talk about "identity." This dialogue, however, becomes difficult when extending the term back into the prehistoric past, and the concept of "identity" becomes challenging to define in this context. But, examining "identity" in the Near Eastern Neolithic is a topic of considerable interest. Benz *et al.* (2017) recently have addressed the issue of constructing Neolithic "corporate identities." They examine the concept within an evolutionary context and talk about identity from several perspectives, including its relationship to socioeconomy, the relational self, ideologies, and symbolism. Based on recent research on Neolithic Cyprus, another perspective might be added, that of island identities. Here, I wish to look at the initial colonization of Cyprus, and if this can be linked to a Cypriot corporate identity, or to any "sub-identities."

## Island Identities and Theory

Islands are well known for having unique identities. There is an enormous archaeological literature on both island colonization and island identities and the theories behind them, and it is not my intent to summarize these. Certainly more attention has focused on colonization as opposed to identity and archaeologists have long been interested in how and when humans colonized islands (*e.g.* Terrell 1986; Keegan and Diamond 1987; Patton 1996). Many of the early theories were based on MacArthur and Wilson's (1967) important discussions on island biogeography. A central paradigm relating insularity to archaeological theory often revolved around the concept that islands were pristine laboratories for studying cultural processes due to their isolation. These

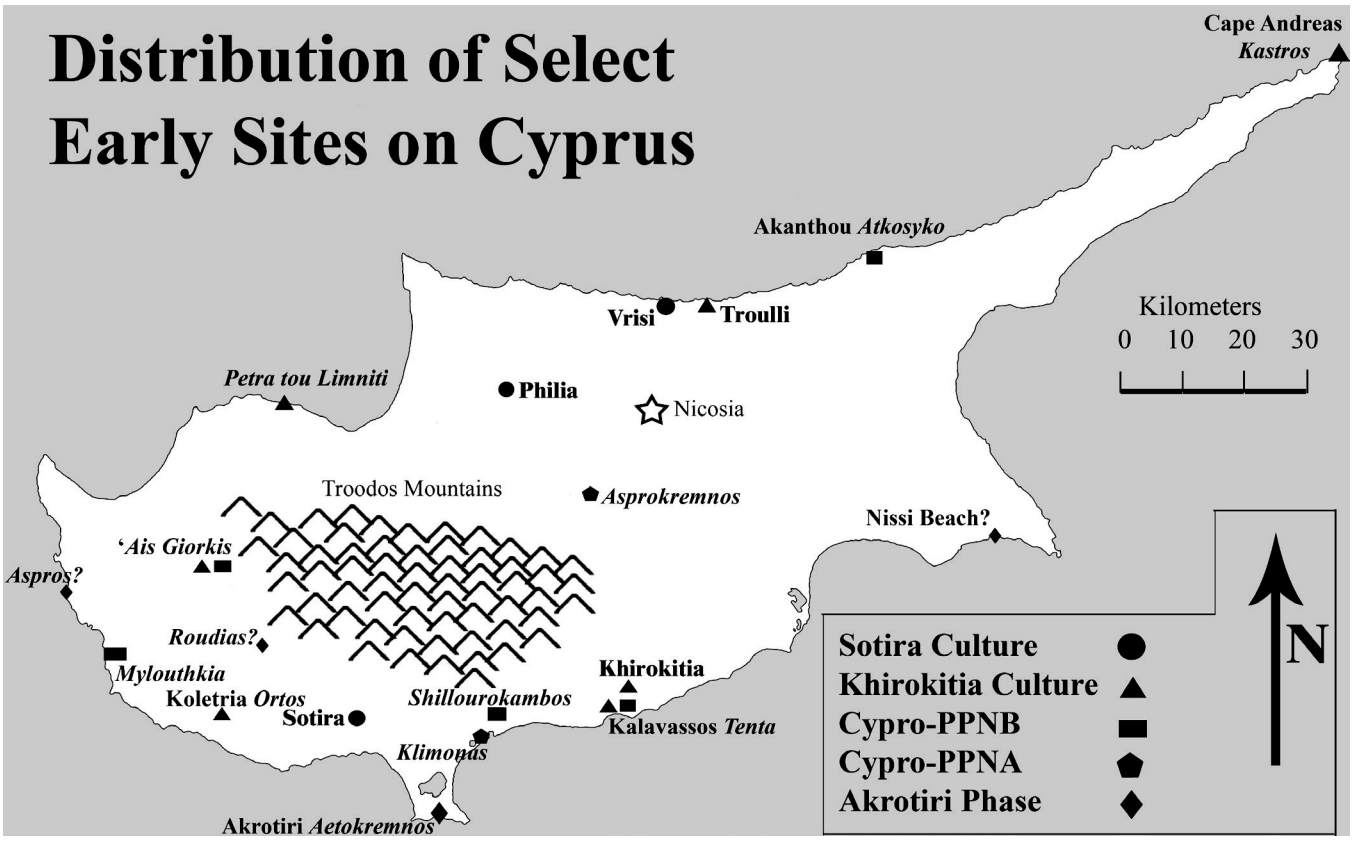


Fig. 1 Map of Cyprus, showing some of the early sites mentioned in the text. (From Simmons 2014: Fig. 7.1)

ideas on colonization have now evolved (see later discussion), but "identity," especially for early prehistoric periods on the islands, is still infrequently addressed.

Identity is a perspective of considerable current interest in archaeology (*e.g.* Ruiz *et al.* 2005; Insoll 2006; Harrison-Buck 2012), and is relevant in that it often incorporates multiple perspectives and topics, such as gender, race, ethnicity, and status. This also is important research since it has relevance not only to the past, but also to contemporary political spheres that can and do influence the practice of archaeology, including the Mediterranean (*cf.* Meskell 1998, 2001, 2002).

In terms of island identity specifically, much discussion is derived from ethnographic or modern data; direct archaeological evidence is rarer, particularly for prehistoric periods. Despite this, aspects of Mediterranean and Cypriot identity have certainly been discussed by numerous scholars. Knapp (2007), for example, examines in broad perspective the social identity of prehistoric Mediterranean islanders. By invoking topics such as insularity, connectivity and materiality, he points out different ways of thinking about islands and how islanders identify themselves. Also important here is Broodbank's (2000: 21-23) concept of "islandscapes" that provide opportunities for the development of unique social identities. Knapp (2007: 43-44) observes that "Broodbank (2000: 20) has emphasised that island identities are fashioned at times by people who are well aware of others' ideas, customs, languages and foodstuffs, but who chose to *deviate* from, *lose* entirely or *preserve* certain of these features as it suits them or their environmental niche." Aspects of these three components are likely represented in the early Cypriot Neolithic as well as in later periods.

While scholars such as Knapp (2007, 2010), Broodbank (2002, 2013), and others include discussion of the Neolithic, in general, issues of identity on the Mediterranean islands tend to focus on periods later than the Neolithic. Thus I would like to address Neolithic identity in some more specific terms. What I want to examine is how over time identity in the Cypriot Neolithic transformed itself from a "traditional" mainland related persona to one reflecting a unique island identity. Much of this discussion is admittedly speculative, since the data base for the early Cypriot Neolithic is still emerging. My intent, however, is to provide some fodder for further discussion.

In the context of this discussion, I examine the early Cypriot Neolithic to determine if there are clues to an emerging identity on this "oceanic" island. Or, are the data presently at hand simply too limited to positively address this issue? The concept of an "oceanic" island is important here, as opposed to other islands that are closer to the mainland, where more frequent contact might be expected, resulting in more parallel mainland-island identities. While the existing literature has paid considerable attention to "island identities" in the Mediterranean island archaeological record, I wish to go beyond this generalization and propose some interlinked and specific identity groups that may have characterized the Cypriot Neolithic.

**Research Context**

The first task is a brief review of the current situation of the Cypriot Neolithic, since recent years have dramatically changed earlier perceptions. While the Mediterranean islands had some of the most unique cultural systems of the ancient world (Patton 1996), they were until recently considered peripheral to the Neolithic. Traditionally, it was believed that colonization of many of the Mediterranean islands occurred during the late, ceramic Neolithic (*c.* 5,000 BCE). Once established on the islands, the Neolithic did little to distinguish itself, showing few mainland parallels and contacts, and rapidly developing into isolated, idiosyncratic island-adapted entities. Where Cyprus differed, however, was in having a longer occupation sequence that started with the Late Epipaleolithic (the Akrotiri Phase, *c*. 10,000 BCE). Even without this early occupation, Cyprus had the oldest Neolithic on any of the Mediterranean islands, the pre-pottery Khirokitia Culture, commencing at *c*. 7,000 BCE. The Khirokitia Culture displayed only limited material similarities with the contemporary mainland Pre-Pottery Neolithic B [PPNB]. It is followed by the Ceramic (Sotira) Neolithic (Knapp *et al.* 1994; Steel 2004: 45-82). Overall, the Neolithic seemed less sophisticated than its continental counterparts (LeBrun *et al.* 1987). In many ways, then, the Neolithic on Cyprus, and other islands, appeared to be something of a cultural anachronism that contributed little to the dramatic impacts that had already occurred within the broader Neolithic world. This often is attributed to the Khirokitia Culture having an identity that was distinct from and showed few material parallels to the mainland.

The past 20 years, however, have demolished this view, especially with research on Cyprus that has now demonstrated a very early Neolithic that is roughly contemporary with the mainland. While the number of sites is still limited and published detailed reports are still rare, it is clear that the island was visited frequently and fully colonized earlier than previously believed. First documented was the Cypro-PPNB ("Pre-Pottery Neolithic B"), commencing around 8,400 BCE (Peltenburg *et al.* 2000, 2001; Simmons 2007: 229-263, 2008). Even newer investigations have shown an earlier PPNA phase (Fig. 1) as well. Both of these phases show more mainland similarities than does the Khirokitia Culture.

Thus far, only two (and possibly three) PPNA sites are documented. One, *Asprokremnos* (Manning *et al.* 2010), is an inland community with limited architecture that dates to *c.* 9,000 cal. BCE. The other site, *Klimonas*, is a more substantial coastal community with similar dates. The third site, not yet excavated, is nearby (Vigne *et al.* 2011, 2012). As with the mainland, there are no domesticated resources. Similarities to the mainland are clear in the microlithic chipped stone technology in in circular architectural features.

The Cypro-PPNB has a larger data base, with at least five sites identified. Currently, most excavated Cypro-PPNB sites are near the coast and are "villages" distinct

from one another but that exhibit some mainland PPNB parallels, such as in chipped stone technology and in having a range of domesticates, including cattle (Simmons 2007: 232-262, 2008). The presence of cattle, in fact, is of considerable interest, since these animals disappear by the Khirokitia Culture, not to remerge until the much later Bronze Age (Croft 1991; Simmons 2009b). One site, *'Ais Giorkis* (Simmons 2012), differs from other Cypro-PPNB sites in several ways, primarily due to its interior location and huge chipped stone and faunal assemblages.

Given these developments, it is not surprising that theoretical perspectives on early colonization have changed. A central paradigm relating insularity to archaeological theory often revolved around the concept that islands were pristine laboratories for studying cultural processes due to their isolation. Many of the early theories were based on MacArthur and Wilson's (1967) significant ideas on island biogeography. Embedded in this perspective was the view that water was a barrier to consistent communication. This stereotype was prevalent in the Mediterranean, where until recently the colonization model was that the islands were closed systems too impoverished to have supported foragers, and that substantial settlement did not occur until the advent of farming (*e.g.* Evans 1973, 1977; Cherry 1981, 1990, and, for Cyprus specifically, Knapp *et al.* 1994). This model, however, has come under criticism. While not diminishing the important research of these scholars, who were amongst the first began to systematically examination human usage of the Mediterranean islands, theoretical perspectives have evolved, as exemplified in the important recent and very detailed works of Broodbank (2013) and Dawson (2013). While Broodbank concentrates primarily on later Mediterranean developments, Dawson focused on early colonization, and also adds important discussion to abandonment of islands as well.

It is worth noting that the earlier views still have considerable validity in that "substantial" occupation appears to have occurred only during the Neolithic. What new research has demonstrated, however, is that this Neolithic was far more pervasive and complex than originally viewed, and also that some of the islands did, indeed, have a pre-Neolithic presence. Additionally, many now question if the Mediterranean Sea was a barrier at all (*e.g.* Rainbird 1999; Finlayson 2004; Phoca-Cosmetatou 2011; Simmons 2014). Despite this, however, true colonization is still felt by many to have only begun with permanent farming communities who immigrated from the mainland. For Cyprus, this model continues to view the island as an isolated environment in which colonizing farmers established permanent "founder" communities (see McCartney *et al.* 2010). This likely occurred during the Cypro-PPNB. The challenge now is to examine if Neolithic island identities can be documented in the record.

Even newer investigations have required revision to such models. Simmons (2011), for example, proposes a two stage migration/colonization model for Cyprus. Episode 1 represents an initial occupation in which "explorers" or "scouts" assessed the suitability of colonizing an unfamiliar landscape (*cf.* Rockman and Steele 2003). During Episode 2, more permanent settlement by a wider range of people occurred. Along similar lines, based on new non-agricultural PPNA discoveries, McCartney *et al.* (2010) avoid linking sedentism and farming with permanent colonization. They dispel earlier ideas of island marginality and view Cyprus as a landscape occupied by foragers, herder-hunters, and farmers who practiced subsistence and settlement flexibility. They view the sea as a "highway" that joined the island to the mainland to maintain social relationships, periodically re-stock supplies, and gain access to resources and new technologies. As such, they maintain that early Holocene Cyprus can only be understood as part of a wider Mediterranean landscape rather than an isolated one. These new investigations have radically challenged conventional wisdom, and have rewritten the island's earliest prehistory. They also have wider-ranging implications throughout the Near East regarding early seafaring technology and the transmission of "Neolithic Packages" from their continental cores to new frontiers. But, is there anything we can formulate regarding a Cypriot Neolithic identity in this context? And if so, was this different during the earlier Neolithic as opposed to the later Khirokitia and Sotira Neolithic "cultures"?

## Emerging Island Identities?

Much of the current Cypriot Neolithic research is now focused on how these initial settlers adapted to a new, uninhabited landscape that allowed for farming, herding, and hunting adaptations to emerge as the island was enveloped within a successful Neolithic colonization strategy. From a broader Near Eastern perspective, there also is interest in examining Neolithic expansions using strategies designed to maximize new exploitable regions while maintaining mainland connections. It is within this context that one might most profitably also examine identity – was there a "corporate identity" to these early colonizers that was tied to their mainland points of origin, or did an island identify rapidly develop?

The point of origin issue is of considerable interest in relating to identity. Cyprus likely witnessed multiple mainland contacts. Specialized analyses, such as genetic "fingerprinting" to distinctive "homelands" (*cf.* Bradley *et al.* 1996; Jones *et al.* 1996) may show that the island had populations and resources from a variety of geographic areas, which would support multiple and continuous contacts between the island and various mainland locales, including the "Golden Triangle" of domestication (Kozlowski and Aurenche 2005) as well as other core zones, rather than relying primarily on the Levantine primacy model (justifiably criticized by Watkins [2008, 2010a,b]). The early Neolithic populations of Cyprus could represent a pan-Near Eastern "melting pot" or cross-roads, with several "ethnicities"

reflected (*cf.* Bar-Yosef 2004). This could account for the diversity of Cypro-PPNB site types until a unified island identity was forged during the later Khirokitia Culture, where sites show few mainland parallels and are relatively similar to one another.

I would suggest that these early colonists may well have established some type of corporate "islander" identity that made them distinct from mainland Neolithic communities. This identity may have been distinct from the mainland for several reasons, including the merging of several ethnicities who arrived on the island from different mainland sources. Additionally, the presumed low population density reflected on Cyprus throughout the Neolithic may have eliminated the need for the elaborate memorials, ceremonies and collective rituals that can be seen on the mainland. In their innovative application of cognitive niche construction theory to the mainland Neolithic, Sterelny and Watkins (2015: 681-682) argue that such symbols of place and status would have functioned for building and maintaining community identity. What is more likely on Cyprus, and other islands (excepting Malta – see below), however, was a limited need for elaborate ritual behavior due to fewer people and a presumed lack of conflict caused by higher populations. This does not, however, mean that there was a homogenous island identity. What we can propose, instead, was the development of several "sub-identities". These are hypothetical constructs thus far, and have not been fully tested…thus, they are proposed within a speculative framework, given our still limited understanding of the early Neolithic in Cyprus.

First of all, it is important to realize that these colonists likely came from several points of origin on the mainland. Thus, a group of immigrants coming from many places would have resulted in a mixture, and ultimate merging, of mainland identities. Research has suggests that island populations need to maintain some sort of connectivity to their "parent" mainland groups, and that this was likely even more important during early periods of colonization (Boomert and Bright 2007). Thus, as Moss (2004) has put it, island societies were not necessarily always insular. Additionally, Rainbird (2007) notes that while "cultural islands" were being formed, these groups would not have been entirely separated from other places. They would, however, likely have chosen to maintain their own identities despite outside social connections. Thus, we can see in the early colonization of an island such as Cyprus an initial connection with mainland identities, but as they "settled in" to their new environments, the formation of distinctive island identities.

This does not, however, mean that there was a singular identity within the island. There could have been at least two principal types of identities. First, a collective, or perhaps "corporate", island identity would have emerged in which Neolithic peoples from various points of the mainland shared some commonalities from their original homelands. Given the diversity of the Neolithic on the mainland, these new "islanders" would have possessed a striking range of cultural, and perhaps linguistic, diversity. But to survive in a new, unknown landscape, they also would have rapidly had to have formed a cooperative adaptive strategy. In this context, an emerging island identity may well have developed, and it would have encompassed increasing numbers of immigrants.

Second, in spite of sharing a corporate island identity, it likely would be a mistake to assume that this was homogeneous. Rainbird (2007), for example, notes that new islanders would have moved and interacted on their new homes without major physical barriers, but that members of any given village would have sequentially occupied coastal, inland, and marine regions (off-shore), such that any one groups' owned space encompassed multiple areas. This may well also have extended to areas of multiple islands and portions of the seas between them, although currently evidence for this type of early Neolithic multi-island interaction is lacking. But, from the initial PPNA use of Cyprus, we do see multiple landscapes in use. This is in contrast to what used to be considered primarily a coastal Neolithic adaptation. Recall that *Asprokremnos* is inland, while *Klimonas* is coastal. Likewise, during the Cypro-PPNB, *'Ais Giorkis* is an elaborate inland site with evidence for interaction with contemporary coastal communities.

We have suggested *'Ais Giorkis* may have served a buffering role (*cf.* Button 2010), perhaps providing upland provisions and expanded exploitation territories. As such, it could represent a hinterland economic zone that supplemented coastal terrestrial and aquatic resources. By admittedly speculative analogy, in much later (Roman) times, Strabo noted the existence of fairs and markets associated with pilgrimages and the exchange of upland food resources provided by hill villages (Peltenburg 1991: 108). Did this pattern begin much earlier, during the Neolithic? And if it did, did highland people have a different identity than coastal dwellers? In this context, it also is interesting to note Peltenburg's (1991: 107) observations, in citing historic sources, that even in more recent times, the severe topography of much of Cyprus was a barrier to much interaction and that in some cases, some village groups may have lived and died in their remote villages without seeing anything else. Could such people not even have realized that they were on an island? If this were the case, it certainly would point to an extreme isolated hill-dweller identity. For the Neolithic, however, we do not believe that such a scenario can be supported, since upland sites such as *'Ais Giorkis* clearly interacted with coastal areas, as reflected by economy and trade items (such as obsidian).

It is important to remember that we are speaking of only a few, relatively small, settlements during the earliest Neolithic on Cyprus. Certainly large communities such as Khirokitia, were not yet present (although re-evaluation of Kalavasos *Tenta* may suggest that part of its substantial occupation occurred prior to the Khirokitia Culture). Thus, population levels would have been relatively low. This, in fact, also may account for

the lack of substantial ecological impacts documented on the Neolithic of Cyprus, in contrast to the mainland (Simmons 2009a). In this sense, there was yet the opportunity for the establishment of another identity, that of early conservationists. Whether or not this was an intentional conservation attempt, or just a reflection of low population density, cannot presently be determined with the data at hand.

While it is always dangerous to estimate population levels, based on excavated and survey data, it is unlikely that more than a few thousand individuals might have been on the island during the Cypro-PPNB. Admittedly this is speculative, but the limited number of sites, which are small to begin with, supports this idea. Thus, interaction could have been relatively rare. And yet, it is likely not the case, since imported obsidian occurs at the sites and there are commonalities in items like ornamentation, as seen primarily in incised picrolite (a soft local green soap amenable to carving).

Thus, within this context, what can we say of Cypriot Neolithic identities? Even with relatively low populations, there likely were several overlapping subgroups, or sub-identities. Sterelny and Watkins (2015: 682) note that guilds or clans (what I have termed sub-identities here) can benefit by investments in time, effort and materials that reinforce trust within groups. This might have been particularly important in establishing permanent settlement on a relatively unknown landscape such as Cyprus.

Certainly the spread of the Neolithic to Cyprus, as well as other islands, would have created a new identity category, that of "maritimers". This in itself would have been composed of sub-groups, each with separate identities. At least four of these can be proposed. First, certainly there would have had to have been specialists who were able to construct sea-worthy vessels (Fig. 2) capable of transporting not only humans but also animals (see Vigne 2001: 57; Simmons 2014: 180). These skilled builders would not only have been mainlanders. Given that there likely were frequent voyages, island boat builders also would have been necessary to refurbished vessels. Indeed, some of the forests of Cyprus might have provided superior woods, and may be one reason that sites such as *'Ais Giorkis* are located in the uplands, adjacent to pristine forests. A second group of maritimers would have essentially been "sailors" individuals capable of navigating these vessels across considerable spans of water. These voyages could have taken over a day and required many levels of sea-faring skill (see Simmons 2014: 73-74 for more detail). Galili *et al.* (2004) suggested that the Cypriot evidence points a new "class" "ferry-men". A third maritimer group would may have been a more economically based class, that of fishermen. Based on what we know of these early Cypriot sites, however, fishing does not appear to have been an important economic focus. Finally, a fourth group would have been organizers, who would have had to plan what were relatively short, but not easy (*cf.* Simmons 2014: 203-206) voyages.

Embedded within these identities, I have not yet mentioned another crucial variable, that of gender. Certainly we know that gender was very important in post-Neolithic Cyprus (*e.g.* Bolger and Serwint 2002; Knapp 2007: 44-45). As described above, many of these maritimer identities likely were male-oriented, at least based on contemporary evidence. But surely women would have played a major role in the emerging Cypriot Neolithic identity. What this role was is at present unknown, but based on mainland analogies, women likely were involved with aspects of agriculture and food production (*e.g.* Simmons 2007: 267). This likely is too simplistic a dichotomy, and I am certain that the role of women in Cypriot Neolithic identities was complex and nuanced. But that discussion must remain for another time. Additionally, as populations grew, albeit slowly, other sub-identities, more focused on terrestrial activities (*e.g.* farmers, herders, hunters) also would have emerged.

In any event, those well versed in maritime technology, whether it be in the building of vessels, or in the navigation of open water, likely would have been a tight knit group, people linked not only by occupation but who viewed the sea as

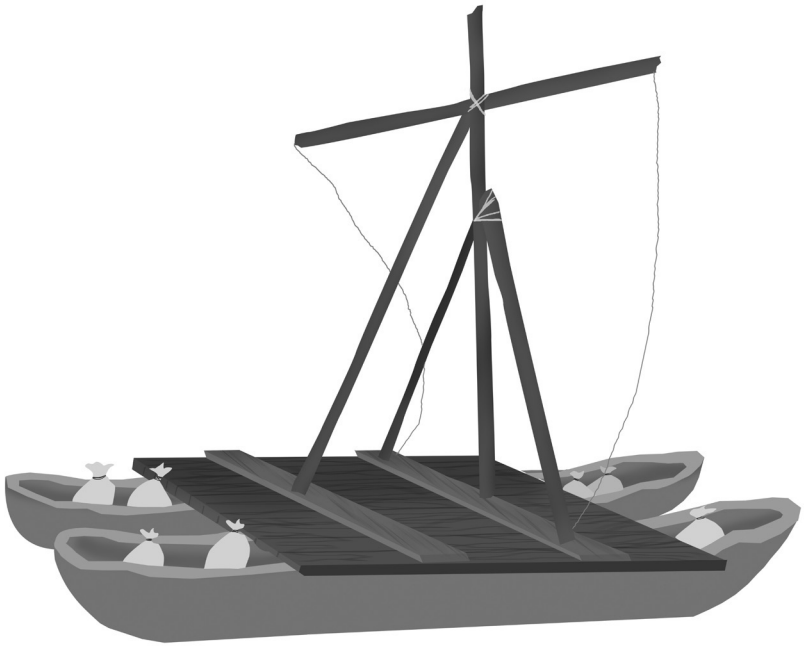

Fig. 2 Reconstruction of a Neolithic boat. (from Simmons 2014: Fig. 4.2, adapted from Vigne 2009: Fig. 7c)

a way of life, at least based on modern analogies (*e.g.* Sideris 2012; Stewart 2011; Van Ginkel 2001). In that sense, they would have shared a maritime identity distinct from their counterparts. Stewart identifies sailors and their relations as a "folk group," people linked by a common work who share customs. I believe that such analogies can be extended back to the Neolithic.

## Problems and Prospects

The above discussion has focused on potential early Cypriot island identities or sub-identities, and has suggested that there could have been several of these. Much of what has been presented is in the realm of informed speculation or "high" theory on how identities are formed on islands. What is presently lacking, however, are the data with which to test these ideas. In what might be called "middle range" theory, the question has to be asked: "how are these theories about early island identity articulated with on the ground data?" Given that the presence of an early Neolithic on Cyprus is a relatively new research finding, much of what has been published is thus far very descriptive, and so specific elements that might aid in determining identity are limited. What, then, are some of the ways in which concepts presented above might be tested with actual data? The following are some thoughts on this important issue.

If Cyprus was in relatively frequent contact with the mainland from as early as the Late Epipalaeolithic and through the entire Neolithic, what are some of the commonalities that might have been shared, and can these inform us on issues related to identity? Certainly there must have been many interactions, and these should be reflected in the archaeological record. Once again, the data base is relatively limited, so detailed comparisons are difficult. But, some patterns are already apparent, as discussed below.

During the Late Epipalaeolithic, as exemplified by the Akrotiri Phase (Simmons 1999), there are some similarities in material culture between the island and mainland groups, especially the Natufian. But, only one Late Epipaleolithic site is well-documented in Cyprus, that of Akrotiri *Aetokremnos* (Simmons 1999). Other sites have been claimed to be contemporary (*e.g.* Ammerman 2013), but this has been disputed (Simmons 2014: 159-175). Only Roodias (Efstratiou *et al.*) appears to be a well-documented site. So, it is somewhat difficult to make comparisons with the mainland based on the scarcity of Cypriot sites. But, realizing this, there are similarities, primarily in chipped stone technology and typology, and in the use of shells (such as dentalium) for ornamentation. But these are very general similarities, and while the chipped stone assemblages from Epipaleolithic Cyprus share some commonalities with mainland, especially the Natufian, they also are distinct in that the former are in many ways poor copies of the latter. That is to say, the assemblage from Akrotiri *Aetokremnos* (Simmons 1999), for example, is clearly microlithic, but the finely made microlithic tools common to the Natufian are generally lacking on Cyprus. About the only thing that really can be said that even hints of identity might come from the presence of "jewelry" (primarily beads) from both Cyprus and the mainland, and this is a fairly generic linkage.

Turning to the Neolithic, the issue is somewhat improved, but the lack of sites remains an issue. All available evidence now points to multiple and consistent patterns of island-mainland interactions (*cf.* Simmons 2014: 175-181), rather than the previously held "Noah's Ark" theory of colonization, in which only a few voyages were made. Given that interaction was more common than previously believed, and likely came from multiple mainland sources, one immediate question relating to identify is: "can we identify specific 'points of origin' for these early Cypriot colonizers?" If we could, regional mainland donor identities might be documented. This, however, is a difficult task, because even on the mainland, the issue of Neolithic identities still is not well established or agreed upon.

However, a first step would be in comparing material culture on early Cypriot Neolithic sites with similarities from the mainland. At this point, though, resolution is not very fine-grained. The early Cypriot Neolithic has material similarities in chipped stone to the mainland, but these are difficult to address down to the regional scale. For example, naviform cores are now documented in the Cypro-PPNB (Simmons 2007: 234-236, 240-242). These are a major technological marker of the mainland PPNB, but are not really specifically tied to one particular region. As another example, the generally limited presence of obsidian artifacts from Cypriot has been sourced to Anatolia. This is perhaps a stronger linkage to that region. On the other hand, some scholars (*e.g.* Peltenburg 2004, Peltenburg *et al.* 2000, 2001) have suggested that the early Neolithic in Cyprus may be sourced to the central Euphrates or Syro-Cilician regions. My thinking on this is that, once Cyprus was discovered to be an alternative to the often tumultuous events that were occurring on the mainland during the Neolithic, there likely were several regions that provided source populations. As such, the island could have served as a true "melting pot" of numerous identities, as suggested above. The challenge, however, remains in developing methods that will allow a more fine-tuned determination of identity.

## Conclusions

Why Neolithic people initially came to Cyprus is still unknown (Simmons 2007: 253-255) – maybe the ideological allure of an island attracted a certain type of Neolithic "nomad", conservative people (*cf.* Ronen 1995) who chose to escape the tumultuous early Neolithic social developments occurring on the mainland. Or, perhaps there are more functional explanations such as mainland resource depletion (*cf.* Peltenburg 2003)

or the desire to avoid conflict. Maybe there also were less tangible reasons, including the urge to explore. There also might have been a psychological "reward" for the island's settlement. Carter and Crawford (2010: 211) note that seafaring and long-distance exchange is not only related to trade but also to the acquisition of knowledge, prestige, and power. That much of this exchange was accomplished across water rather than land adds a new dimension to the social complexity of Neolithic peoples. Likely the colonization of Cyprus was a result of all of these variables.

Somewhat curiously, however, as noted earlier in this essay, Cyprus gradually dropped out of the Levantine interaction sphere during the Khirokitia Culture. Peltenburg (2003: 103, 2004) believes that the islanders preferred to emphasize their own material culture as an expression of their uniquely developing Cypriot identity. One thing that is clear, however, is that earlier characterizations of the Cypriot Neolithic as "... a bizarre and insular anachronism" (Watkins 1980: 139) or even as "retarded" (Held 1990: 24) (all citing then common opinion) have been radically repudiated. Rather, the earliest settlement of Cyprus, should now be viewed as a complex function of at least two, perhaps competing, ideologies: 1. The ethos of seafaring fishers-foragers-farmers and 2. The spread and exploratory activities of mainland Neolithic people in search of new lands to settle (Broodbank 2006: 26; Knapp 2010: 110). Both of these scenarios would have posed unique opportunities for the development of a corporate identity that was, on one hand, recognizably Neolithic, but on the other hand, also was uniquely and increasingly island-oriented. But, there is no denying that by the Khirokitia Culture, Cyprus had few mainland parallels and, perhaps, less contact. In this sense, the pre-Khirokitia Culture Cypriot Neolithic can be seen as not only a colonization phase, but also a transition to a distinct island identity.

Earlier, we cited Broodbank's (2000: 20) notion that islanders can *deviate*, *lose*, or *preserve* certain cultural features that they are aware of from other cultures. As Knapp (2007: 43-44) has pointed out, in the context of the Neolithic, this model can be applied to the host cultures for the initial colonization of Cyprus. Thus, in an admittedly speculative model, we can elaborate on Knapp's views, and pose that during the earliest explorations, Neolithic Cypriotes *preserved* many elements from their mainland homes. This of course is most clearly reflected in their importation of regional "Neolithic packages", or at least the economic aspects of these. Thus, they preserved what they needed most: domesticates. As they became more familiar with their new island homelands, they gradually *deviated* from some of their mainland customs. Thus, for example, cattle were no longer a part of the Neolithic enterprise on the island….this may have been due to changing notions of ritual or ceremonial use of these animals, or to ecological variables in which cattle were simply too "expensive" to maintain. For whatever reason, however, these animals disappeared by the Khirokitia Culture. Another point of deviation from mainland norms may have been the relative lack of ritual behavior seen during the Cypriot Neolithic. Finally, by the Khirokitia Culture, most mainland features were *lost* entirely as Cyprus developed its own unique identity.

Thus, Cyprus contributes to current theory on island and "unfamiliar landscape" colonization processes that examine the relationship of insularity with mainland interactions and connectivity (*cf.* Patton 1996; Rainbird 1999, 2007; Rockman and Steele 2003; Knapp 2008, 2013). Patton (1996: 182-187) has distinguished two types of Mediterranean island societies: monument oriented and exchange oriented. For the Neolithic, the impressive "temples" of Malta may represent the former (Robb 2001), but for Cyprus, where monumental Neolithic structures are largely lacking, the latter scenario appears much more likely.

While Malta's Neolithic megalithic temples are unique in the Mediterranean, large structures with likely symbolic or ritual significance occur on the mainland with some frequency. The impressive remains of PPNA and PPNB Göbekli Tepe come immediately to mind, as does the tower of PPNA Jericho. Sterelny and Watkins (2015: 682) note that were "costly signals" of a commitment to community identity. More prosaic exchange oriented societies, however, likely are what characterized Cyprus, as well as most Neolithic island communities, excepting Malta .

But, these two types of societies are not mutually exclusive, and Robb (2001) has presented more nuanced arguments for Malta, suggesting that the temples there emphasized local origins and identity, but that even in periods of greatest cultural difference, the Maltese had contacts with nearby societies, and probably recognized cultural differences in important ritual practices. He further posits that when ritual practitioners began reinterpreting a common heritage, they also created a new island identity. He notes that: "In effect, after two millennia of cultural similarity to their neighbors, the Neolithic Maltese created a cultural island, perhaps in reaction to changes in the constitution of society sweeping Europe in the fourth millennium BC. The result was an island of cultural difference…" (Robb 2001: 175).

Could the same thing have happened on Cyprus? The first colonizers maintained many ties with their respective mainland origins, but gradually many of these disappeared. Certainly by the ceramic Khirokitia Culture, and the subsequent ceramic Sotira Culture, Cyprus shows few remaining mainland linkages. By this time, and for whatever reasons, communications with the mainland were severed, or at least seriously compromised, and Cyprus was well on its way to forging its own unique island identity, one that persists to today.

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# Environmental and Subsistance Changes from the Younger Dryas to the Early Holocene: Archaeobotanical Evidences from Körtik Tepe, Southeastern Anatolia

Corinna Rössner and Katleen Deckers

The following report summarizes the results of the archaeobotanical investigations from the site of Körtik Tepe, which have been published in full length in *Vegetation History and Archaeobotany* in 2017 (DOI: 10.1007/s00334-017-0641-z ). It represents the first part of the PhD-thesis of Corinna Rössner (supervised by Simone Riehl), who has been member of the project "Mutual interrelations of social differentiation, ecological and economic changes at the beginning of the Neolithic. Körtik Tepe (southeastern Turkey) as a keysite." (PI: Kurt W. Alt and M. Benz). Corinna Rössner participated in the excavations of 2012, which were directed by Vecihi Özkaya. Her results are completed by the anthracological analyses of Katleen Deckers, Institute for Archaeological Sciences of the University of Tübingen.

## Introduction

Körtik Tepe is one of several early Holocene sites, which have been excavated during the last decades in the Upper Tigris region, before the Ilisu dam reservoir will be flooded (for an overview see Özkaya and Coşkun 2011). In contrast to other sites like Gusir (Karul 2011) and Hasankeyf Höyük (Miyake *et al.* 2012), excavations of deep trenches at Körtik Tepe provided evidence that the site had been occupied from the Younger Dryas to the early Holocene (10,400-9200 BCE).[1] It thus offers the unique possibility to study the local vegetation and subsistence during the major global climate change from the Late Pleistocene to the early Holocene during the 10th millennium BCE.

The site is a small (1.5 ha), low mound, located at the confluence of the Batman Creek and Tigris River (37°48'51.90" N; 40°59'02.02" E). The setting provides excellent resource conditions like fresh water for fish supply and watering places for prey animals, and a large variety of plant species growing on the river banks and in the fertile hinterland (Benz *et al.* 2015). Geo-electric measurements and the study of satellite images allowed the reconstruction of the former river course and indicated that the Neolithic settlement was nearer to the two rivers than it is today.

Stone and mud architecture, more than 800 burials, with about a third of them containing a lot of grave goods, multiple occupation layers, as well as many large heavy grinding stones and mortars and – last but not least – local Sr-isotope signals of the human remains, indicate a permanent occupation of the site (Özkaya and Coşkun 2011; Benz *et al.* 2016).

## Sampling and Preservation of the Plant Remains

Systematic archaeobotanical sampling of the whole site was possible and judgmental sampling of extraordinary objects or features, such as houses, fireplaces, storage facilities, floors and graves, was applied. The sampling was undertaken with machine flotation (mesh size of 0.2 mm) and resulted in a total of 347 analyzed samples from a sediment volume of 2252 litres. After establishing the stratigraphic contexts (Benz 2014), it was possible to separate the samples from the Younger Dryas sediments from those of early Holocene layers. This made a comparison between these two periods possible and gives Körtik Tepe a rather unique position within the archaeobotanically investigated sites of the Northern Fertile Crescent, comparable to Abu Hureyra on the Middle Euphrates (Hillman *et al.* 1989; Hillman 1996, 2001).

## Results

In total, from the 347 samples 34,540 seeds and fruits within 141 taxa were identified. 26 of these samples have been anthracologically investigated so far. In total, 1927 charcoal fragments have been identified from nine early Holocene samples and 1467 from 17 Younger Dryas occupation samples, resulting in a total of 16 taxa.

The assemblage of the seeds and fruits is characterized by a large diversity of plants. Using contemporary botanical data (Royal Botanic Gardens, Kew [1999]; Survey of Economic Plants for Arid and Semi-Arid Lands [SEPASAL] database), the seeds and fruits were classified into groups on the basis of their probable use: grasses with large seeds as possible progenitors of cereals, grasses with medium and small seeds and legumes with large, medium or small seeds as possible food plants, nuts, seeds of plants with ethnographically known use and other taxa of possible nutritious plants (Savard *et al.* 2006).

The seed and fruit assemblage of the Younger Dryas is characterized by a clear dominance (71%) of small-seeded grasses (Fig.1). Beside other plants which were brought into the settlement for various purposes or grew nearby, the riverine vegetation is also well presented. The latter applies also for the early Holocene layers. But in terms of proportion, absolute counts and ubiquity, small-seeded grasses decreased considerably whereas large-seeded grasses increased in the early Holocene layers. Large- and small seeded legumes as well as nuts also show a considerable augmentation.

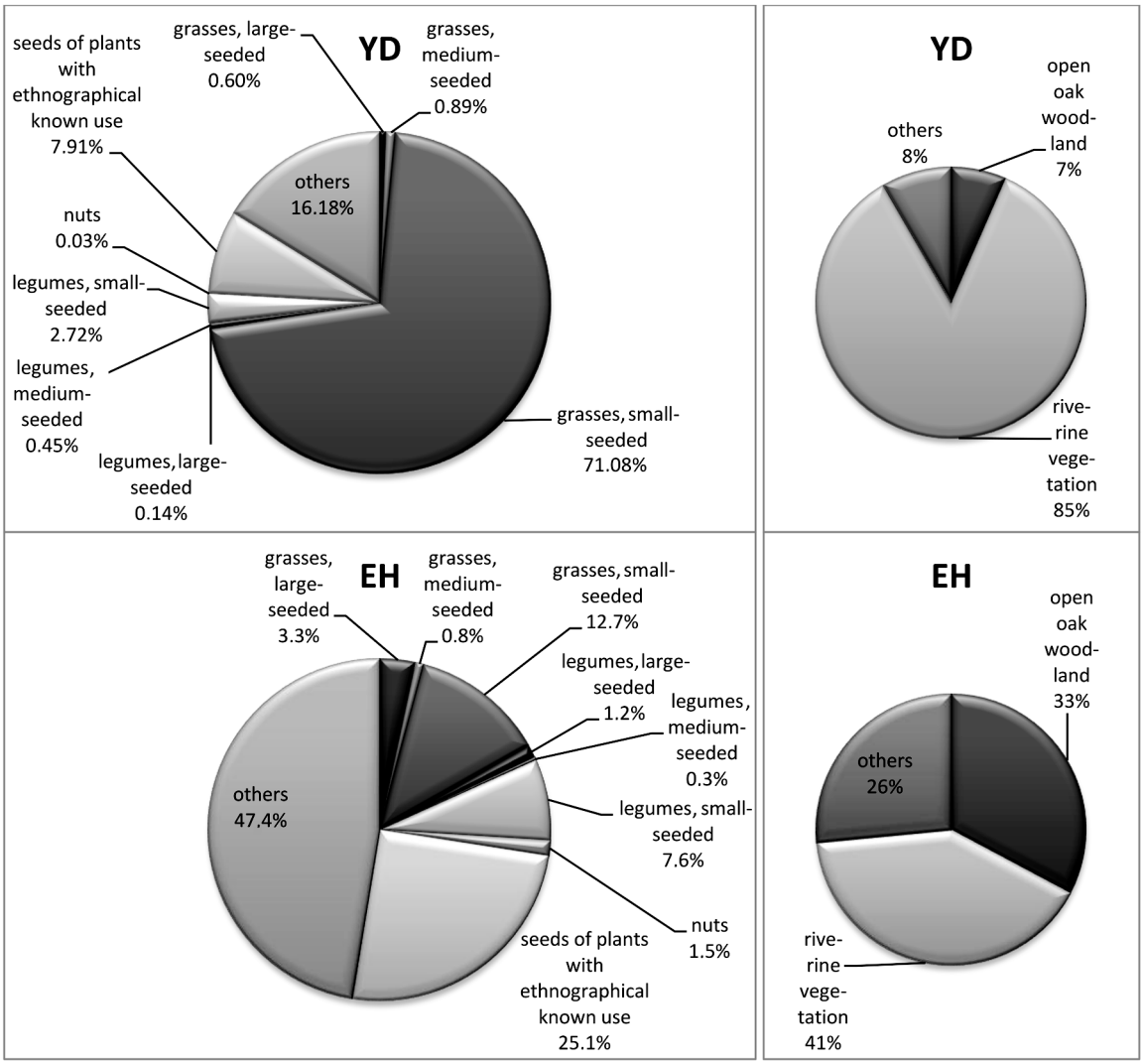


Fig. 1 Proportions of the different plant categories in the seed and fruit (left) and charcoal (right) assemblages of the Younger Dryas (YD) and early Holocene (EH).

The 16 charcoal taxa can be roughly grouped into two vegetation units: oak woodland (steppe) and riverine vegetation. In the Holocene samples, (open) oak woodland (steppe) and associated vegetation is proportionally about ten times more represented than in the Younger Dryas (Fig. 1).

## Discussion

The taxa of the riverine vegetation were probably used for nutrition in both periods, similarly as has been suggested for Hallan Çemi (Savard *et al.* 2006). This ensured a stable subsistence basis independent from climatic changes. But the strong decrease of the small-seeded grasses and increase of larger-seeded grasses and legumes in the early Holocene is striking.

The observed developments were probably due to vegetation changes at the start of the Holocene, since the changes are paralleled by alterations in the proportions and ubiquity of the charcoal assemblages. The opening up of the open oak woodland during the Younger Dryas may have provided widespread dense stands of annual grasses and riverine taxa to be used as staple foods by the inhabitants of Körtik Tepe. Towards the early Holocene, these dense stands of small seeded-grasses decreased to the benefit of the re-expansion of the open oak woodland. The inhabitants then seem to have started focusing on a selection of higher-ranked plants, such as large-seeded grasses, legumes and nuts. Riverine taxa and a large diversity of edible plants were used for subsistence.

The high diversity of ecological environment at Körtik Tepe permitted a sedentary lifestyle from the Younger Dryas to the early Holocene, despite major climatic changes. Hardly any other site which covers both periods has been investigated for its botanical remains in this region so far.

## Outlook

Our results show the need for more local on-site and off-site data from combined anthracological-seed/fruit analysis for this period, to understand the developments in the different vegetation zones of the Northern

Fertile Crescent. Only then, it will be possible to search for patterns of human behavior over the larger region. The next step for the investigation of the archaeobotanical material of Körtik Tepe on the one hand will be the analysis of special features within the site: such as hearth, graves and dwellings compared to midden areas and fringes of the settlement, to investigate possible spatial patterns. Such a contextual analysis might provide more information about the subsistence strategies and food processing. On the other hand there are some very interesting investigations within the plant taxa, which should be analysed closer: charred seeds of possible buckwheat or domesticated looking rye.

The next step for the charcoal analysis will be to finish the analysis of all the samples, investigate the woodland management by undertaking diameter measurements and investigate changes in climate through time by dendro-measurements in combination with stable isotopic measurements.

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## Endnote

[1] For all radiocarbon dates s. www.exoriente.org/associated_projects/ppnd.php.

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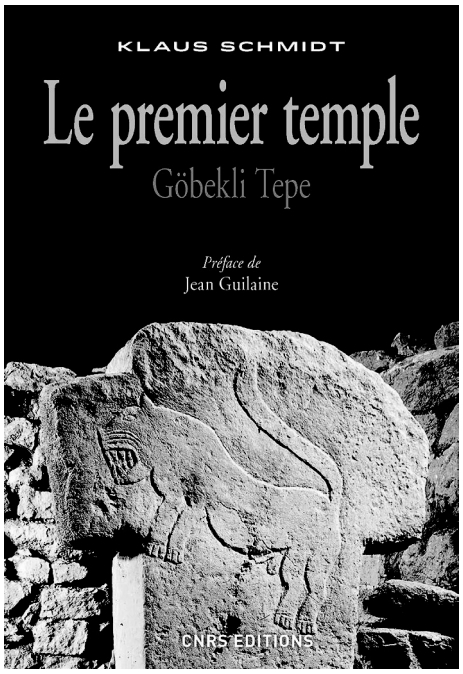
Preface by Jean Guilaine:
Paradis perdu au sud-est de la Turquie? Stonehenge en Haute-Mésopotamie? Depuis sa découverte en 1995, Göbekli Tepe déchaîne les passions. Fouillé sur une infime partie, le site néolithique a livré des bâtiments exceptionnels structurés par des centaines de piliers mégalithiques colossaux en forme de « T ». Élevés il y a 12 000 ans, 5 000 ans avant les menhirs de Carnac, 7 000 ans avant les pyramides, ces piliers sont presque tous couverts de fascinants bas-reliefs animaliers (fauves, renards, sangliers, grues, serpents…). Ce gigantesque ensemble bâti par des chasseurs-cueilleurs reste une énigme.

Klaus Schmidt, le fouilleur de Göbekli Tepe décédé récemment, nous a laissé ici le passionnant et vivant récit de sa découverte et de son dégagement. Pour lui, après vingt ans de fouilles et d'études, ces enceintes de pierre constituent un « temple », un grand centre cultuel révélateur d'une révolution religieuse qui aurait précédé la révolution agricole.

Abondamment illustré, cet ouvrage plonge dans l'imaginaire des bâtisseurs à un moment charnière de l'histoire de l'humanité et à l'endroit même où le monde des chasseurs-cueilleurs bascula pour engendrer celui des agriculteurs-éleveurs. Une introduction vivante et documentée à l'histoire et à l'art du Néolithique au Proche-Orient.



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