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Körtik Tepe

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 Editorial

During the past months, we co-editors of *Neo-Lithics*, together with our senior co-editor Gary Rollefson, were approaching the readers of *Neo-Lithics* for their advice and suggestions on the future format of the newsletter. By carefully evaluating responses, we were able to take decisions matching well with one of your mottoes: *If it's not broken, don't fix it.*

We thank the readers for their advisory engagement and appreciate the many good arguments, and are especially grateful for the personal and esteeming feedback we received for our work; we are happy for the vivid, devoted and positive reactions.

Reactions were divided on the issue becoming peer-reviewed while mostly positive for going online. While we understand the strong arguments for becoming peer-reviewed since this way of handling quality simply is a standard and a need for planning careers, we should obey the wisely posed arguments against sharing this trend. The latter not only referred to the special character of *Neo-Lithics* and the alternatives and chances this provides in a landscape of peer-reviewed publications, they also questioned the need for another peer-reviewed publication. One colleague explicitly asked to protect *Neo-Lithics* against changes.

Nevertheless, we weighed all arguments and found among them – together with ours – reasons for changes in *Neo-Lithics'* 25th year (from 2018):

1) *Neo-Lithics* continues to be non-peer-reviewed (in the common sense of peer-reviewed) while enforcing a more substantial editor-/ board-based review process as well as non-anonymous peer-coaching. Individual members of an enlarged *Neo-Lithics* board will coach individual contributions by either supporting discussion of high-profile submissions or helping the publishing of important contributions from younger colleagues. Statements and points of discussion during peer-coaching may be published with a contribution if it is for the benefit of research.

2) *Neo-Lithics* will appear online from 2018 (free open access, details to be announced). No new or renewed subscriptions for print versions will be accepted from now on. Subscribers will receive printed versions until their last subscription period ends, while members of *ex oriente* will always receive print versions. 3) We co-editors of *Neo-Lithics* will approach further potential peer-coaches to join the permanent board of *Neo-Lithics*. Present board members should expect to be asked for peer-coaching occasionally as we also intend to ask other scholars to help case-by-case.

We hope that these decisions respect as many of the users' interests as possible, will help Neolithic research and future *Neo-Lithics*, and will serve our Neolithic research family in the best way,

Hans Georg K. Gebel, Marion Benz, Dörte Rokitta-Krumnow, and Gary Rollefson

A Burnt Pit House, Large Scale Roasting, and Enigmatic Epipaleolithic Structures at Körtik Tepe, Southeastern Turkey

Marion Benz, Andreas Willmy, Filiz Doğan, Ferdun Suha Şahin, and Vecihi Özkaya

The prehistoric site of Körtik Tepe has been the subject in *Neo-Lithics* several times for its early Holocene stone buildings, its variety of burial types and the extraordinary amount of decorated objects (Özkaya 2009; Coşkun et al. 2010; Schreiber et al. 2014). Since 2010, in several deep trenches, remains of a much older occupation phase have been documented. A series of radiocarbon dates confirmed the Younger Dryas dating of these earliest occupation phases (Benz et al. 2015). However, in 2012, all the trenches had to be backfilled because of the planned flooding of the dam. Preliminary reports about the Younger Dryas occupation were published (Coşkun et al. 2012, Benz et al. 2012, 2015), but up until 2014, it had remained an open question whether the complete site had been occupied from its beginnings. In 2014, excavations started anew and are still on-going under the direction of Vecihi Özkaya.

Thanks to a grant from the John Templeton Foundation, it was possible to date some new charcoal samples which had been taken from deep trenches in 2014 (Benz et al. 2015) (Fig. 1). Further samples were taken in 2015. All data confirm the observations of the stratigraphy: The data of the filling of Buildings 1 and 2 (see below) in Trench A141 range between 10,100-9,800 cal BC (Tab. 1). Charcoal from the earliest occupation

in Trench A142 is also in line with the dating to the second phase of the Younger Dryas (10,192-9,879 cal BC). Data from the destruction of these remains range between 10,000 and 9,400 cal BC.

A grant from the Eva-und-Franz-Rutzen Stiftung gave the German team the possibility to participate again in the excavation in May and June 2015. The aim of this season was to document the excavated stratigraphy and to enlarge the excavated surfaces in Trenches A141 and A142. The team also tried to find out more about the duration how long the houses were occupied. Unexpected discoveries of an accumulation of fire cracked stones, probably for large scale roasting, and of four possible clay-lined pits, provide further insights into subsistence activities taking place outside of houses.

Trench A141

In Trench A141, the north-eastern part of a semi-subterranean building was discovered in 2014. The lower filling of this construction was radiocarbon dated to the Younger Dryas (MAMS 23130). In 2015, the remaining part of this dwelling was excavated in detail.

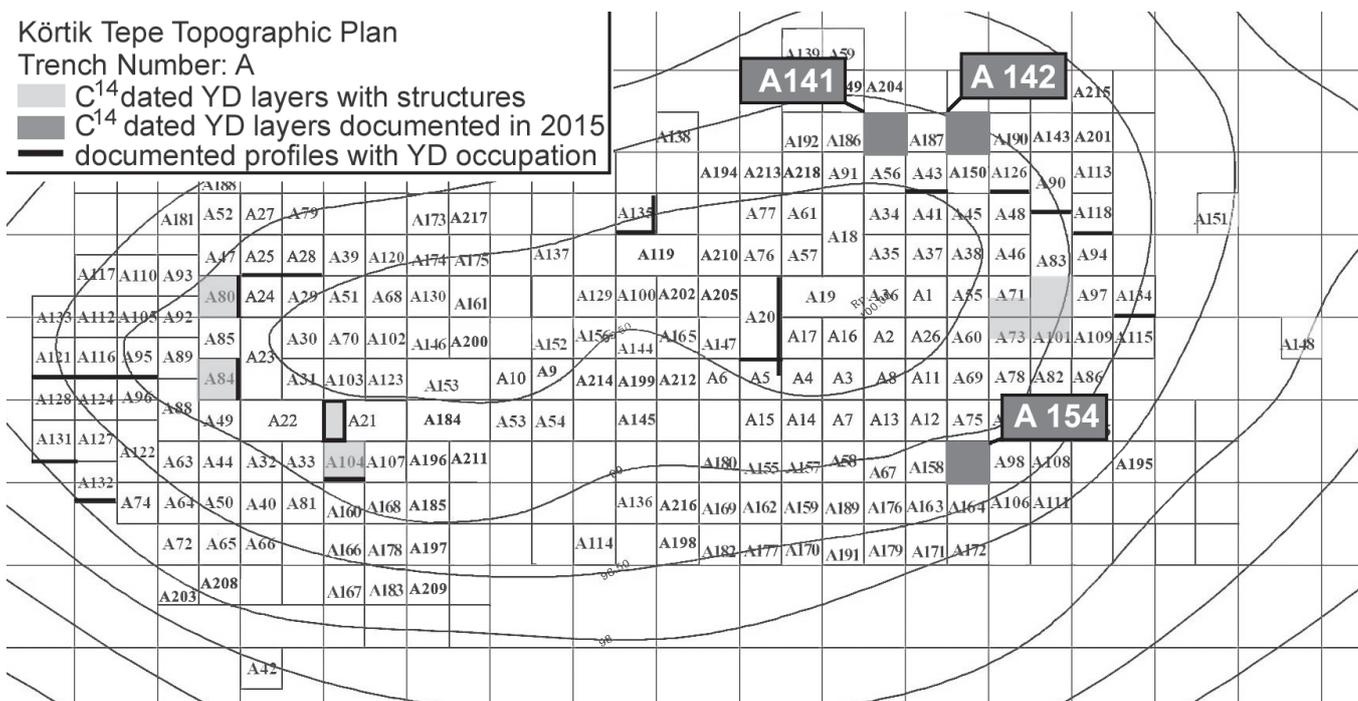


Fig. 1 Topographic plan of Körtik Tepe (2015). Modified after Körtik Tepe Archive.

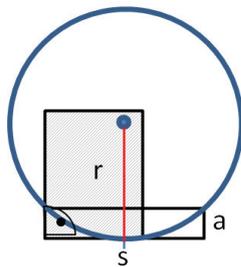
Lab Code	14C age BP	δ13C (‰)	cal. BC 2σ	Species	Location/Trench	Sample ID	Depth (cm)
MAMS 23130	10205±33	-31.5±2	10099-9819	Populus/Salix, ch	A141, E1, Lower filling of Building 1	CH 130	-478
MAMS 27149	10197±32	-22.1±2	10090-9816	Populus/Salix, ch	A141; A5; Building 2; east profile;	CH 158	-437
MAMS 23134	10084±35	-30.3±2	10005-9452	Populus/Salix, ch	A141, E1 Destruction layer	CH 132	-350
MAMS 27150	10265±32	-24.5±2	10192-9879	Populus/Salix, ch	A142; E3; below Loc. 6	CH 165	-397
MAMS 23131	10040±35	-28.1±2	9804-9404	Populus/Salix, ch	A142, B1, West profile	CH 135	-377

Table 1 New radiocarbon data for the north-eastern part of the Younger Dryas occupation (ch=charcoal). For all data see www.exoriente.org/associated_projects/PPND.php.

The building was documented at a trench width of 1.50 m in C1 and D2 (Figs. 3-6). It was dug into the natural soil to a depth of about 90 cm. Its northern border is slightly curving from the northwest to the southeast. At the length of 1.14 m, the wall bends for 0.38 cm. If the dwelling was round, it must have had a diameter of about 3.80 m and a surface of 11.34 m². However, this has to remain a very preliminary estimation, because the excavated surface of the building is very small.

The border of the natural soil adjacent to the building shows strong traces of burning (Fig. 3), especially on the upper rim of the wall. The filling of the

dwelling consisted of a quite homogenous matrix of sandy silt. It contained cracked stones, a very small number of animal bone fragments, a small number of flints and some obsidian, many lumps of burnt clay and a large amount of charcoal. Close to the wall, but slightly above the floor, on top of some debris, large pieces of burnt wood were uncovered which had possibly fallen in from a wooden roof or roof support construction. Next to the charcoal remains, the soil showed traces of intense burning indicating that the burnt parts were still burning or at least very hot, when falling into the building. On the floor itself hardly any artefacts were discovered.



Possible schematic reconstruction of the surface of Building 1:

$a=0.38\text{m}, s/2=1.14\text{m}, s=2.28\text{m}$ excavated surface

$$r = (4a^2 + s^2) / 8a = (0.5776 \cdot \text{m}^2 + 5.1984 \cdot \text{m}^2) / 3.04 \cdot \text{m} = 1.9 \cdot \text{m}$$

$$A = \pi r^2 = \pi \cdot (1.9 \cdot \text{m})^2 = 11.34 \cdot \text{m}^2$$

Fig. 2 Schematic reconstruction Building 1, Trench A141 (M.Benz)



Körtik Tepe 2015
Trench A 141, C1-2
Loc. 1, Planum 1 and 2
Date: 30.5.2015
Author: A. Willmy
Photo ID: 3506

Fig. 3 The wall and the filling of Building 1, Trench A141, show clear traces of an intense fire, perhaps caused by deliberate burning. (Photo: A.Willmy)

Körtik Tepe 2015
 A 141, East / South / West Profiles
 Niv.: -1.50 m - -5.10 m
 Date: 22.05.2015
 Drawn by: F. Doğan

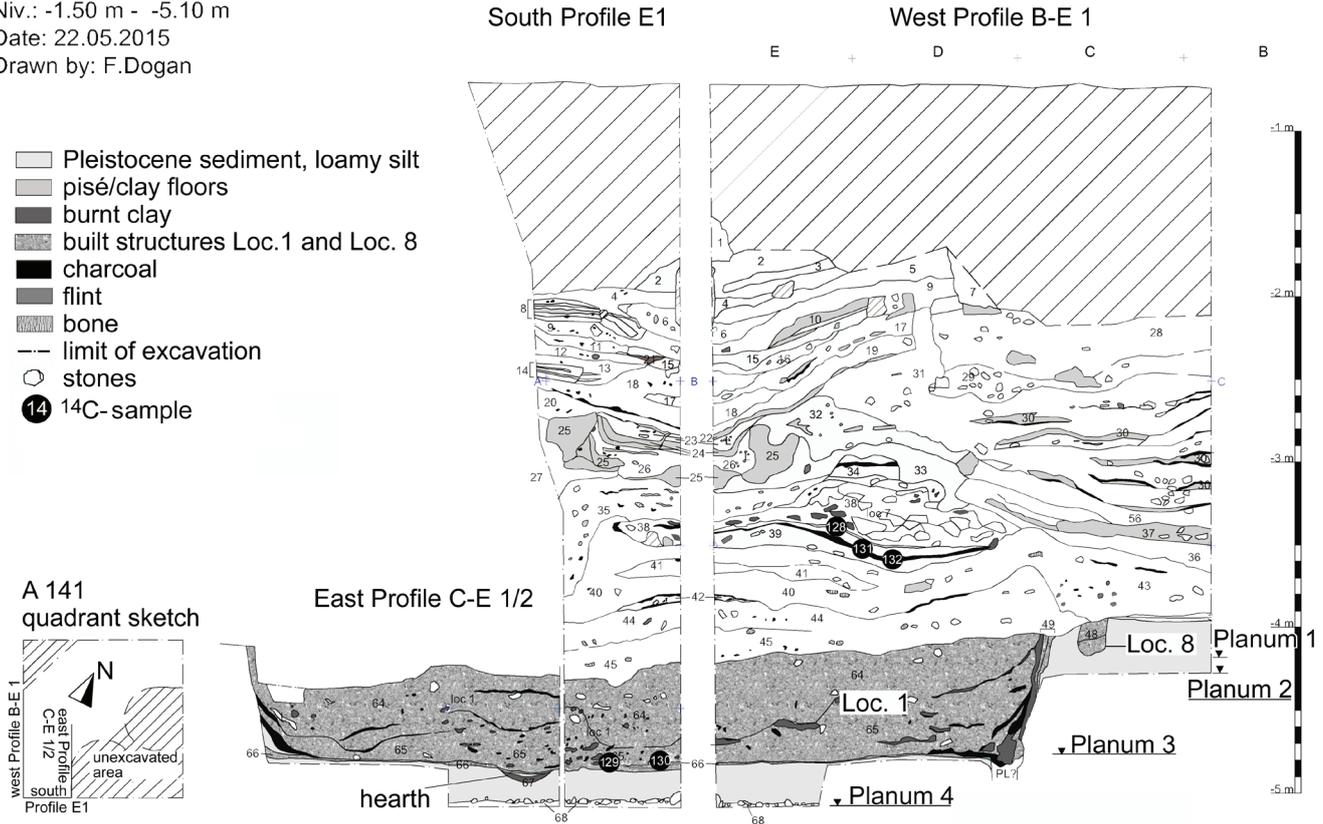


Fig. 4 Western, southern, and eastern profiles of Trench A141 with the remains of Building 1. (Drawing: F. Doğan)

Three postholes aligned Building 1 on its northern border at a distance of 15 to 40 cm. The depth of two of them was documented and ranged between 20 (PL 1) and 60 cm (Loc. 6e). The diameter was between 40 cm for Loc. 6e, 20 cm for Loc. 5 and 16 cm for Loc. 8 (Figs. 4-7). Whether these posts belonged to some kind of roof construction must remain an open question. Their contemporaneity with Building 1 is unclear because the outside living level was not preserved. Aligned with the wall of the building, a hole of a possible further post was uncovered (Fig. 4, PL?). It might have been part of a wall construction.

Building 1 was occupied for only a short time, indicated by a thin cultural layer, just below the filling. A hearth in a slight depression of the floor, visible in the eastern profile, confirms its use as a dwelling. In order to understand the interior and constructional details, several soil samples were taken.

A second building was discovered when cleaning the planum in Squares A-B 3-5. Building 2 had been dug down from the floor level at a depth of -3.92 m down to -4.32m. Similar to Building 1, a posthole was discovered at a distance of 10 cm from the border of the dwelling. It was dug into residual soil about 12 cm down. Inside the building, at a distance of 40 cm from the border, a second posthole was uncovered. The filling of this dwelling comprised more organic matter than Building 1, but it seems that the occupation was also quite short. However, at the bottom, a

thick patch of charcoal, ash and burnt clay indicated a fire place (Loc. 7; Fig. 7) which must have been in use either repeatedly or for a longer time. Near the western border on the floor of the building, a 20x15 cm large basalt grinding stone was discovered probably *in situ* (Fig. 8). The lowest level of the filling has been radiocarbon dated (MAMS 27149) to the same time range as the lower filling of Building 1 (MAMS 23130) between 10,090-9,816 cal BC (2 σ).

In the western profile, the Younger Dryas layers can be clearly distinguished from the early Holocene layers, since the latter comprise many more clay floors and less organic matter than the Younger Dryas layers. Additionally, in D-C 1 at the upper limit of the Younger Dryas layers, (between -3.55 m and -3.20 m) there is a 1-1.5 cm thick layer of charcoal, which has been radiocarbon dated to 10005-9452 cal BC (2 σ ; MAMS 23134).

In the southwestern Square E5, natural soil had already been reached by the Turkish Team in 2014. No further remains could be discovered there. In this small test pit beneath the Pleistocene clay sediment, a layer of rounded gravel was reached (Benz et al. 2015).

Before closing this section, for completeness two further structures should be described. Between Building 1 and 2 a shallow round pit (Loc. 6) was uncovered which had a diameter of about 55 cm and a depth of 36 cm. Its walls were covered with light clay. The difference in colour compared to the more orange Plei-

Körtik Tepe 2015
 A141, A-D 1-5
 Planum 1
 Niv.: -417 - 422 cm
 Date: 27.-28.5.15 AW

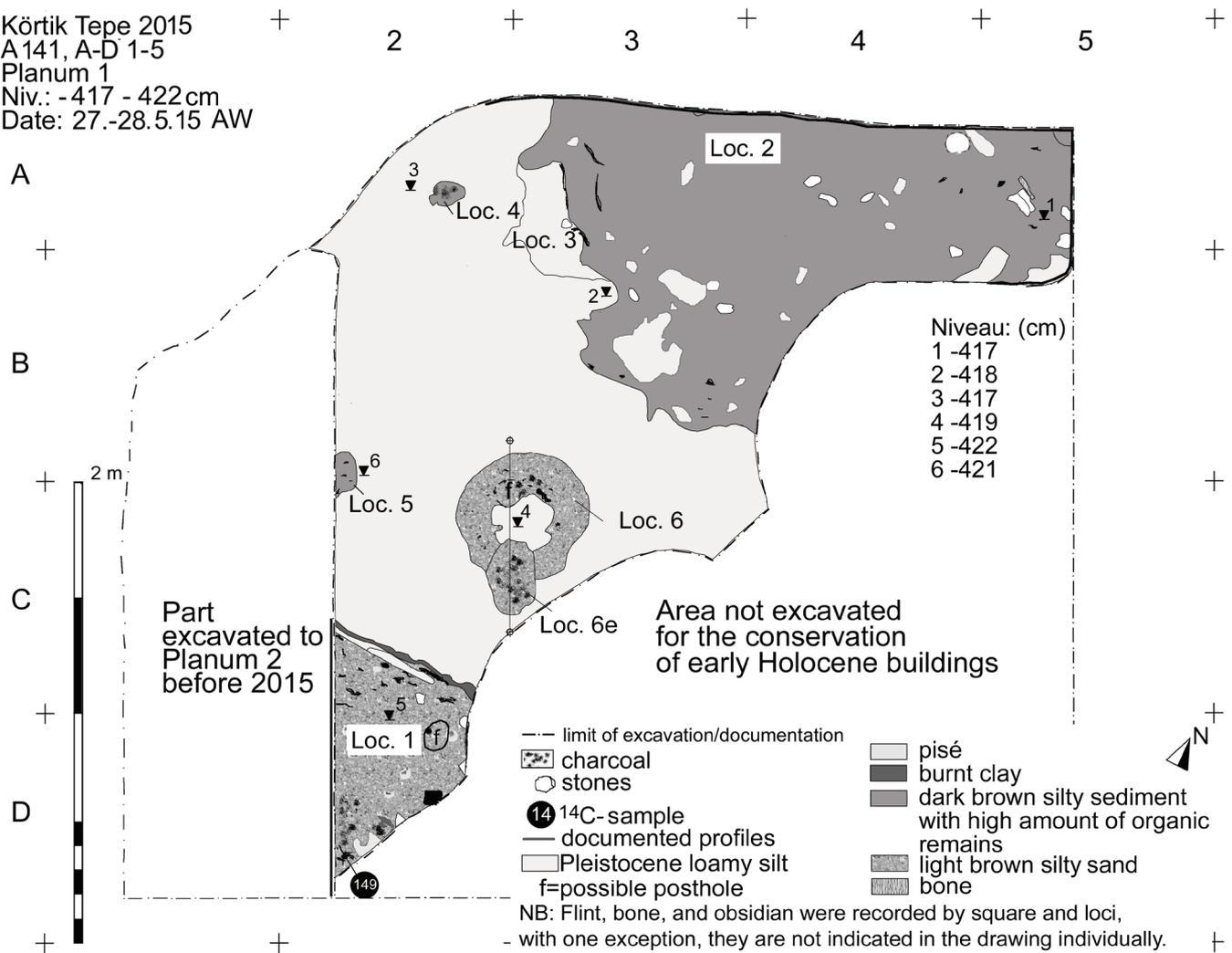


Fig. 5 Planum 1 of the Epipaleolithic remains in Trench A141, excavated in 2015. (Drawing: A. Willmy)

stocene sediment might indicate intentional plastering but it might also be the result of natural processes of demineralization of the clay iron or other mineral ions due to possible biochemical processes. However, inside the pit no unexceptional filling was observed, just some stones and a few pieces of charcoal. On top of the filling, an accumulation of charcoal was preserved, which was partly covered in the middle by a patch of orange-to-yellow clay from the residual soil. A rather identical structure was uncovered in Trench A142 (Fig. 9).

In a formerly excavated level of this trench, it was possible to document a clay lined, bell-shaped pit in the profile, which was filled with the same silty sediment as Building 2. It had a diameter of about 60 cm and was 30 cm deep. At its bottom, two large lumps of compact clay were positioned in the silt sediment. Although this structure is more recent than Building 2, it is embedded in the dark-brown silt sediment which is typical for the Younger Dryas. A very similar structure (Loc.5) was uncovered in the southeastern corner of Trench A142. There it was possible to document its stratigraphic position to the upper level of the Younger Dryas occupation.

Trench A142

Trench A142 is located five meters east of Trench A141. Most of the layers had already been excavated during earlier campaigns. The western, northern and southern profiles and the remaining surfaces were documented. In Squares C-E 3-5 it was possible to excavate the remaining levels from -3.71m down to residual soil at -4 to -4.25 m respectively.

In the northern profile (Squares A 1-3), a pit of c. 70 cm depth was documented. The visible section is only c. 2.10 m large (Fig. 10). Since the extension of this construction on the surface is not known, its size cannot be reconstructed. It remains an open question whether it was used as a dwelling. No occupational phases inside the pit could be documented, but many clay lumps made up the filling suggesting a collapsed clay construction. Adjacent to its southwestern border a posthole was observed. To the south of it and stratigraphically more ancient, some kind of clay surface (Loc. 9) must have existed. About 50 cm north of the southern border of this “platform”, in Square C, three postholes were aligned west-east in a row. However, it is not clear, whether they were contemporaneous. No observation

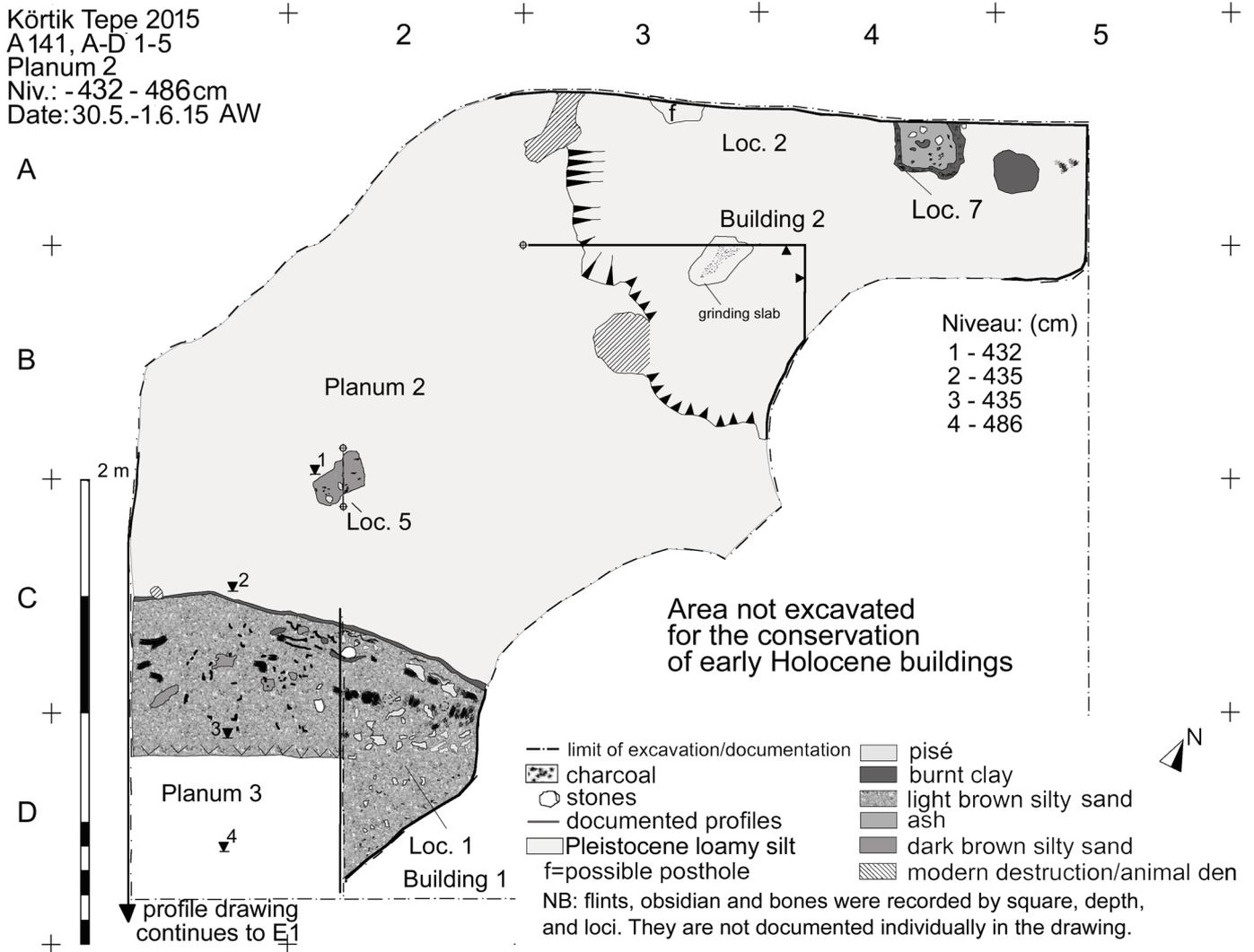


Fig. 6 Planum 2 of the Epipalaeolithic remains in Trench 141, excavated in 2015. (Drawing: A. Willmy)

of their upper border was possible anymore, except for one in the western profile. On top of this clay surface a charcoal layer was documented in the western profile and dated to 9804-9404 cal BC (MAMS 23131) (Tab. 1). In Squares C-D 3-4, the whole clay surface was covered by scattered pieces of charcoal. The vast extension of the clay surface suggests some open space with perhaps a wooden superstructure. In the southern area of the trench, the clay surface slightly sloped downwards and ended at a pit (Loc. 7). This pit was dug into residual soil and filled with silt sediment comprising many complete animal bones, a lot of obsidian, flints and charcoal. A sample of this filling gave a date between 10192-9879 cal BC, confirming the dating of the earliest occupation phase to the second phase of the Younger Dryas.

In the eastern part of the trench, the platform ended at a shallow pit, on top of which was a heap of up to fist-sized stones (Fig. 11). The densely packed stones probably served as a hearth indicated by the high amount of charcoal beneath, the heat cracked and blackened stones, and the intense burning of the subjacent clay. Many of these stones were dislocated for more than a meter into the trench (Fig. 12).

In Square A4, a round pit (Loc. 2) similar to Loc. 6 of Trench A141, was uncovered. It predates the possible dwelling west of it but might be contemporaneous with the clay “platform”. On the same level, a fireplace existed 1.5 m to the east.

In Square E5, another clay-lined pit (Loc. 5) was discovered, similar to the pit visible in the eastern profile of Trench A141. Interestingly, a thin layer of clay was observed inside the pit at its uppermost part, as if it had some kind of lid. As mentioned before, its stratigraphic position indicates a rather late date during the Younger Dryas.

The most enigmatic structure is the remains of a clay wall (Loc. 6) and a fire place (Loc. 8) adjacent to the north of it. This structure is stratigraphically younger than the clay platform, but their distance in time remains unclear. The wall had collapsed and the clay was washed onto the fireplace and into the above mentioned pit to the west of it (Loc. 7). To the east of the clay wall, a gully existed in which many fish remains, animal bones and stones were preserved, but without any visible structure. It can be suggested that these remains were probably dislocated by water.

To conclude this section, it is interesting to note



Körtik Tepe 2015
 A 141, A4, Planum 2
 Loc. 7
 Niv.: - 435/- 445 cm
 Date:12.6.2015
 Author: A. Willmy
 Photo. ID: 3632

Fig. 7 Remains of a hearth with a compact and thick layer of ash and charcoal inside the Epipaleolithic Building 2. (Photo: A. Willmy)

the similarities between the clay lined pits of Trench A141 and A142. Both round pits – Loc. 6 of A141 and Loc.2 of A142 – belonged to very early phases, whereas the clay lined, bell-shaped pits date to the most recent phases of the YD-occupation, if not to the transition to the early Holocene.

Despite the disconnected documentation of the structures in Trench A142, it can be suggested that the recorded data represent at least two occupation phases: The earliest being characterized by an open space with a clay “platform”, a shallow pit to its south with many animal carcasses, a fire place, and a possible storage pit; the second phase comprised a large pit, possibly a dwelling, remains of a clay wall and a fire place. The stone accumulation in the eastern part, the “roasting area”, might be contemporaneous or belong to a slightly younger phase. One

of the most recent features of the Younger Dryas occupation is the clay lined pit (Loc 5). In all, these structures indicate repeated activities of building, cooking, roasting and the destruction by a fire of the early phase.

Trench A154

In Trench A154, investigations concentrated on the deepest levels to gain more information on the charcoal sample taken in 2014, which had given a very old date between 10765-10609 cal BC (Benz *et al.* 2015), but the excavated surface was too small to uncover clear structures. It thus remains an open question, whether the earliest occupation started here during the first phase of the Younger Dryas or not.



Körtik Tepe 2015
 Trench A 141, Building 2
 Square A-B 3
 Date:5. 6. 2015
 Author: A. Willmy
 Photo ID:3563

Fig. 8 A grinding stone, probably in situ on the floor of the Epipaleolithic Building 2, Trench A141. (Photo: A. Willmy)

Körtik Tepe 2015

A 142, Loc 2 North Profile

Niv.: -3.93 m - -4.12 m

Date: 01.06.2015

Drawn by: F. Dogan

- brown silty sand
- light beige clay
- natural soil, loamy silt
- charcoal / detritus
- + position of nails
- - - limit of excavation
- stones

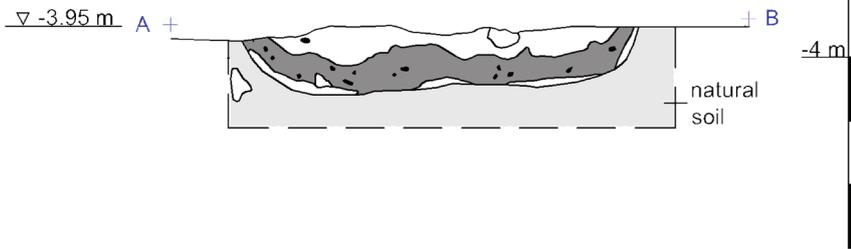


Fig. 9 An enigmatic shallow (storage ?) pit with some kind of clay cover, Trench A142. (Drawing: F. Doğan)

Discussion

In contrast to the buildings in the southwestern area of the site (Coşkun *et al.* 2012; Benz *et al.* 2015), none of the semi-subterranean buildings of the north-eastern area showed several occupation phases or multileveled floors, although the thickness of the fireplace and the intense burning of the clay floor below it in Building 2 of Trench A141 might point to a longer or repeated occupation of the same space. Although only a limited amount of constructions dating to the Younger Dryas were discovered, the constructional varieties are striking, ranging from the semi-subterranean house type of Trench A141 to rather shallow pits. No stone walls were observed for the north-eastern part, whereas in Trench A21 walls were constructed of river pebbles covered with mud (Benz *et al.* 2015: Fig. 9). Heat-cracked stones in the filling of Building 1 might indicate the use of some stones for the upper construction, but they could also come from hearths. It is only

during the early Holocene that dwellings were generally built of stones (Karul 2011; Özkaya and Coşkun 2011; Rosenberg 2011; Miyake *et al.* 2012).

A cursory comparison with other Epipalaeolithic dwellings in Northern Mesopotamia, from Tell Qaramel (Mazurowski *et al.* 2012) to Abu Hureyra (Moore 1991) and Mureybet (Cauvin 1991; Stordeur and Ibañez 2008) shows that intra- and inter-site variability seems to be the rule.¹ Although the size of the dwellings of the other sites can be compared to Körtik Tepe, significant differences in constructional details existed. The use of stones at Tell Qaramel was exceptionally high; at Körtik Tepe neither a comparable building to the so-called monumental “towers” nor to the impressive floor paving has been discovered so far. Since there were no other structures directly related to the heap of burnt stones (Loc. 4) in Trench A142, it is improbable that they were the remains of such a paving. This structure rather recalls built hearths similar to Mureybet and Tell Qaramel (Cauvin 1991: Fig. 9; Mazurowski *et al.*

Körtik Tepe 2015

A 142 West and

North Profiles

Niv.: - 2.50/ -4.75 m

Dates: 24./25.5./3.6.2015

Author: F. Dogan

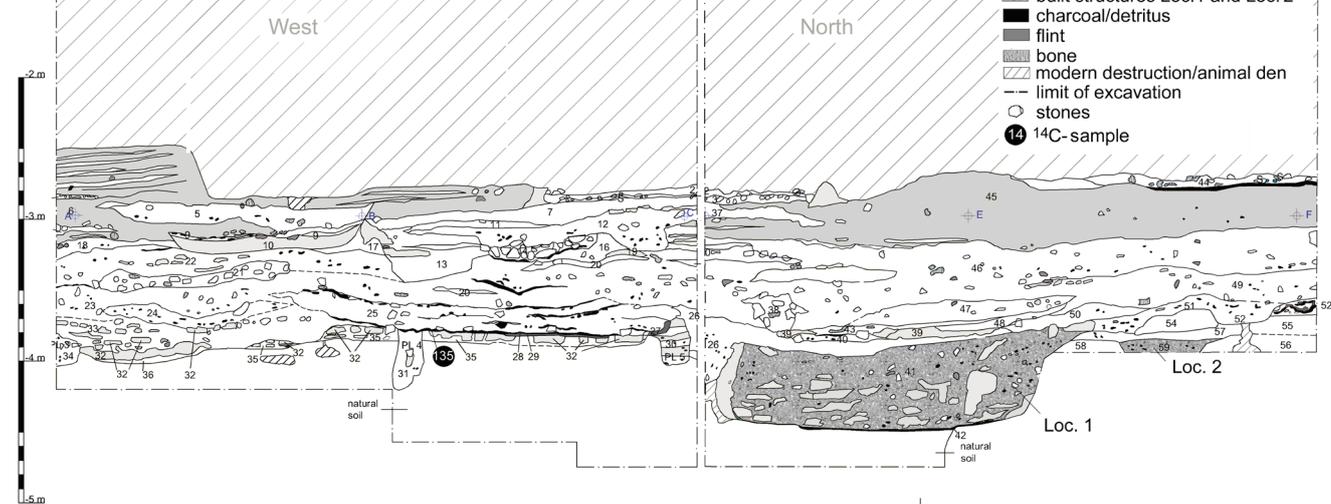


Fig. 10 Northern and western profiles of Trench A142 with a possible pit dwelling in the northwestern corner and the clay platform and posthole visible in the western profile. (Drawing F. Doğan).

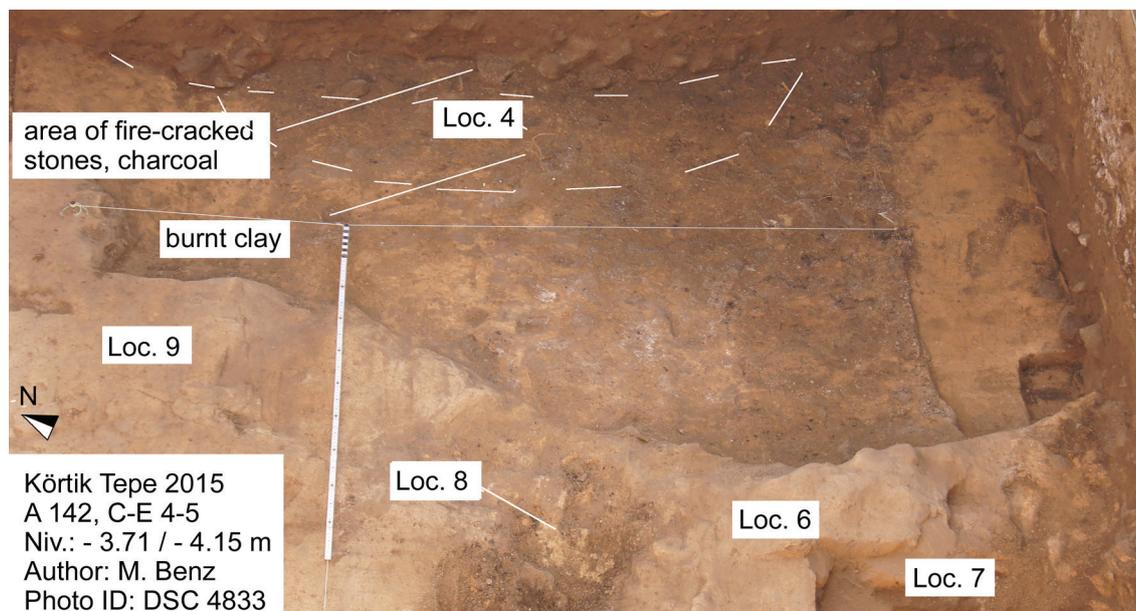


Fig. 11 Remains of a clay wall (Loc. 6) and a hearth (Loc. 8) next to a huge roasting area (Loc. 4) in Trench A142. (Photo: M. Benz)

2012: 40-42, Plan 31, Pl 62A) and possibly indicates an open, communal roasting area.

Concerning the size of Younger Dryas buildings, only two examples from Körtik Tepe were excavated with a sufficiently large surface for estimating their diameters. These two examples, with about 3 to 3.80 m, happen to range at the upper limit compared to Abu Hureyra and Tell Qaramel.

The intense fire destroying Building 1 in Trench A141 might indicate deliberate burning of a wooden superstructure similar to the deliberate burning and infilling of buildings as it has been observed at many Neolithic sites in the Near East, especially, but not exclusively, for so-called cult or communal buildings (e.g. Watkins 1990; Özdoğan and Özdoğan 1998; Schmidt 2006; Stordeur 2015). Despite very careful excavation it was not possible to identify different layers within the filling of Building 1 at Körtik Tepe, but it seemed quite homogenous. Furthermore, the preservation of the pit wall was excellent. All this suggests one rapid infilling event, but only investigations on soil samples might clarify that matter. The amount of artefacts on the floor of Building 1 and in the fill is low compared to the fill of Building 2 or buildings in Trenches A104 and A21. Building 1 might have been cleaned before abandonment, similar to observations made at Qermez Dere (Watkins 1990:341). However, more data is needed to decide whether Körtik Tepe provides a very early example for such a “ritual closure” (for a detailed discussion on this practice in Neolithic periods see Brami 2014: 76-96).

In Trench A142 the occupation of the area comprised at least two phases, but the use of space changed over time. Building traditions were thus not that strong as in the southeastern area of the site where houses were repeatedly occupied and renovated. In contrast to the other trenches, no subfloor burials were

uncovered in the Younger Dryas layers of Trenches A141 and A142. This is in line with the less intense commitment to houses.

Although the function of the shallow round clay lined pits remains ambiguous, interestingly, both belonged to the earliest occupation phase directly above residual soil. Their standardization in layout and constructional details is remarkable. They can be compared to contemporary and slightly later mud lined pits at Tell Qaramel (Mazurowski *et al.* 2012: Plates 16-17, 33-34). A second type of possible storage pits from Körtik Tepe resembling rather amorphous bell-shaped pits, date to the most recent occupation of the Younger Dryas.

Generally, the radiocarbon data of the north-eastern lower layers support the dating to the second half of the Younger Dryas. It can thus be suggested that all areas of the site were occupied since the first phase.

Conclusion

Excavations and documentation in the north-eastern part of Körtik Tepe proved the existence of at least two, possibly three, additional dwellings dating to the Younger Dryas providing important information on the Epipaleolithic occupation of the site. The new discoveries throw light on the striking intra-site variability of constructions, ranging from semi-subterranean houses to clay-stone-wall dwellings dug only slightly into the ground. Moreover, open air constructions for cooking and storage were documented, but because of the small excavated surface, the extension and precise layout of these arrangements remain speculative. Remains of early Holocene houses in Trench A141 prevented uncovering the deeper layers on the whole surface of the trench, preserving potential important records for



Fig. 12 Dislocated stones from the huge roasting area in Trench A142. The stones are cracked by the heat and blackened or reddish. (Photo: M. Benz)

future investigations. Although the patchy preservation of constructions in Trench A142 hampers a precise reconstruction, it points to intensive outdoor activities with a clay platform and large, possibly communal, roasting facilities.

Since neither the cultural remains nor the animal bones of these trenches have been studied in detail so far, it seems premature to make any culture historical comparisons with other Epipaleolithic cultures of the Near East. The high amount of obsidian and of micro-lithic industries is characteristic for the site, not only for the Younger Dryas occupation, but also for the early Holocene. A definition of the cultural entities in comparison to other regions will thus be a priority of future research. Scientific analyses of archaeobotanical and archaeozoological records will provide important insights into daily life of the earliest permanent settlers in southeastern Anatolia.

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Endnote

¹ A comparison with Natufian buildings of the Levant is out of the scope of this paper, but seems to be a promising investigation of future research. New AMS-radiocarbon data from Hallan Çemi suggest that the occupation of this site probably started only during the early Holocene. The dating of the formerly called “Epinatoufien”, now called Khiamian layer of Mureybet (niveau 4, phase IB) is crucial for the discussion about dwelling size during the Epipaleolithic. Radiocarbon dates of the late Natufian occupation and this transitional phase have a large overlap. If the early dates are accepted, the semi-subterranean building with a diameter of 6m is much larger than the contemporary buildings at Körtik Tepe (Cauvin 1991:309, Evin and Stordeur 2008). For a discussion of the radiocarbon dating of both sites see www.exorient.org/associated_projects/ppnd.php.

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Shkārat Msaied 2016: New Results from Unit F

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Our aim of the 12th season of field work at Shkārat Msaied was to continue the excavation of the central unit F, where all but one of the burials were found so far. The fieldwork took place between September 5th and 22nd, 2016 and was meant to clarify stratigraphic relations in Unit F, excavate human burials located in 2015 respectively check for additional burials within the structure.

The Neolithic Site of Shkārat Msaied (30°26'38"N, 35°26'21"E) is located on a mountain-pass approx. 16 km north of Petra/Wadi

Musa in Southern Jordan. The site is under excavation since 1999 by a team of the University of Copenhagen (Jensen *et al.* 2005; Kinzel *et al.* 2015, 2016).

The site dates into the (Early/Middle-) Pre Pottery Neolithic B (for ¹⁴C dates see Hermansen *et al.* 2006). Until now 26 round-house structures were exposed showing well preserved architecture with very dense and complex archaeological deposits. Burial practices and the modification of space seem to be linked very close to each other in Unit F, influencing also the development of the entire settlement.



Fig. 1 SM2016, Unit F after excavation, 3D-model (created with Agisoft Photoscan) with loci mentioned in text; hatching = misplaced stones. (Prepared by M.Kinzel)

Unit F

This year's work focussed on Unit F (Fig.1). One of our aims was to verify potential additional burials and to clarify further the stratigraphy of the building. The work in Unit F has proven to continue changing our perception of Neolithic mortuary practices. The finds and findings stemming only from this single house are exceptional and allow a quite detailed study of demography, mobility, marriage, and residence pattern due to the huge quantity and quality of available data. The burial findings resembles some similarities with intramural burial practices on other southern Levantine sites *e.g.* at Tell es-Sultan, Yiftahel, Ain Ghazal, Beidha, Ba'ja or el-Hemmeh, but also differs from them as the burials at Shkārat Msaied offer probably the first chance to analyse a „community“ and not simply few individuals. The finds from unit F offer new insights into these concentrated burial places in a single house, putting the findings also into a wider Near Eastern Neolithic context; *e.g.* with the so-called “maison des mort” at Dja'de (Coqueugniot 1998), the “charnel room” at Abu Hurayra (Moore *et al.* 2000) or the burials at Tell Halula (Kuijt *et al.* 2011).

In 2015 the last remains of a roof collapse (*e.g.* Loc. 110.138) stayed on a plaster floor (Loc. 120.120) related to an early building phase. This season most of this densely compacted roof collapse (Loci 120.104; 120.118; 120.135; 120.125) was removed and the floor of an earlier building phase (Loc. 120.120) was reached in most parts of the building. The lime plaster floor is well-preserved. The roof collapse was composed of mortar lumps, clayish soil, very small charcoal pieces, and fist-sized or small, flat stones. A number of articulated animal bones were found embedded in the collapse but partly associated with the actual floor surface in the western and southern part of the building. These bone concentrations are found mainly along the walls and in the southern parts -“downslope”. A plaster feature (Loc. 110.130) already discovered in 2015 was exposed to its full extent (Kinzel *et al.* 2016). The content of the plaster feature was sampled and is currently under investigation. In the (earlier) plaster floor also two symmetrically placed small pits were exposed (Loci 120.119 and 120.122); containing greyish, ashy material.

In the North-eastern section of the house a small stone installation (Loc. 120.102) was excavated. The box seems to have been emptied at an earlier point in history. Only the general silt fill material was found in it. Also the assumed pits in the North-eastern quadrant were only soil disturbances and contained no further bone material. South of one of the larger stone cists excavated in 2005 (Loc. 90.120) a small stone box (Loc. 120.108) was exposed, containing a long initial blade (Obj. 121.102/123.109; Length 10,45 cm) which was placed on a nicely polished plaster surface (Fig. 2).

In 2016 we excavated two additional child burials (Loci 120.105 and 120.131). The skeletons of both children were articulated, but missing the heads. While

the first (Loc. 120.105) was nicely placed in a small stone cist; the other was placed, comparable with the one from 2015 (Loc. 110.126) in a flat pit close to the North-western wall segment of Unit F (for further details see below).

During the work we could relocate one small burial cist excavated in 2005 (Loc. 120.114/90125) and identify a potential burial cist east of it, just below Loc. 120.110. Two further burials (Loci 120.112 and 120.117) could be identified inside Unit F.

In the context of the burials and in Unit F some worked cowrie-shells have been found. In the context of the burials they could be seen as “grave offers”, but other functions cannot be excluded either.

Unit F: Human Remains – Preliminary Results

During the works in Unit F human remains were found in 11 Loci containing a total of minimum 32 individuals of which minimum two were infants/new born and minimum three were sub-adults (<18 years). Two of the loci contained primary graves, two contained secondary burials mixed with tertiary deposits and the seven remaining loci contained loose disarticulated and fragmented human remains in the fill.

West of Locus 90.120 secondary depositions of human remains from minimum four individuals (two adults and two sub-adults) were identified including an adult female cranium facing west. These deposits may belong to the stone cist of Locus 90.120 or alternatively, may be part of Locus 120.112.

The outline of a stone cist covered by a large flat stone slab (Loc. 120.117) was identified aligning the South wall. Based on its size and the finding of disarticulated long bones that were exposed in the top soil of the cist after the stone slab cover had been lifted, it is believed to contain several individuals of both adults and sub-adults. However, so far only a sub-adult foot phalanx was removed from the fill. The stone cist top was refilled with loose sand to be excavated in a future excavation season. No pathology could be observed on any of the exhumed skeletal elements. However, severe dental wear on permanent molars were identified. In the following we will present the two child burials in more detail.

Child burials – Loc. 120105 and Loc. 120131

Two child burials were recovered in unit F in 2016. One burial (Loc. 120.105; Bone nr: 124.117) of one neonate/infant (0-1month) was identified already during our 2015 season but only excavated in 2016 (Fig. 3). A small stone cist (ca. 24 x 18cm) was recovered in the Southern part of house F, located immediately South of Locus 70222 and West of Locus 80214. It contained remains from a sub-adult in the form of ribs, and vertebral fragments that were exposed when removing the top soil layer. The bones were very brittle and broke easily when exposed and handled. Small charcoal and green



Fig. 2 Initial blade (Obj. 121.102/123.109) from a small stone box (Loc. 120.108) in Unit F (Shkārat Msaied Project/ University of Copenhagen).

stone inclusions were found in the fill. After cleaning more of the bone elements, it became clear that the remains were articulating and of one sub-adult individual lying in a West-East oriented hocker (?) position with the back towards the North and the head-end pointing West. Based on the size of the right ulna, development and fusion of the epiphyses, it was estimated to be of an infant aged 0-1 months. No skull or cranial fragments were found and there does not seem to have been room for a skull in the West end either. It is likely that the skull was removed intentionally prior to burial, while soft tissue was attached to the skeleton. The most upper part of the skeleton present was the C2 vertebra with the axis. The left arm and lower legs and feet were also missing. However, since the left hand was present it is likely that the arm was lost post mortem due to the taphonomic processes. The same may have been the case for the lower legs and feet. No pathology could be observed on the infant remains.

The other child burial (Loc. 120.131; Bone nr: 120.165) was found in the fill (Loc. 120.128/130) between the floors Loc. 120.127 and Loc. 120.120 (Fig.4). As Locus 120.130 was taken down 20cm to the level of the plaster floor in the north-western part of House F, the hand pick hit and damaged a mandible which

was lying in the fill approximately 15 cm above the plaster floor level close to the north wall. Based on the development and eruption of the teeth, the mandible was estimated to be from a child aged 3.5 to 4.5-year-old. All the mandibular deciduous teeth were present as well as the crowns of the permanent teeth: 46-43, 33, and 36. The crowns of tooth 34 and 35 were missing. The hand pick had also damaged some ribs and cervical vertebrae. When the *in situ* bones were cleaned it became evident that the elements were articulating and of a child (possibly 3.5 to 4.5 years old) lying in a hocker position with bended knees and arms and the back up against the north wall with the head pointing to the east. The burial was found approximately 1.5 meters west of the primary child burial of Locus 110.126 excavated in 2015. Except for the mandible, no cranial fragments were observed. This could suggest that the head had been removed while soft tissue was still attached to the body or the vault fragments were lost after burial, perhaps as a consequence of later activities in Unit F. All cervical vertebrae were present. Since the mandible was found isolated it could also be that the mandible doesn't belong to this individual. The pelvic area was very fragile and easily damaged when exposed and handled. The right and left hand bones were recovered.



Fig. 3 Unit F: Child burial; Loc. 120.105; headless child in little stone cist. (Photo: M.L.S. Jørkov)



Fig. 4 Unit F; Child burial; Loc. 120.131.

The bones were brittle and broke easily when exposed and handled. According to the bone measurements the child was around 2.5 years at the time of death. If indeed the mandible belongs to this child, there is a significant age discrepancy between long bone length and dental age. No pathologies could be observed on the skeletal remains. The soil in the area just north of the spine was black-ashy. The same concentration of ashy soil was found in the area around the right elbow and

knee. The soil south of the right foot was very compact and the foot bones may have been lost post mortem.

State of Conservation and Preservation Measures

In general the site is in a sound state of conservation. The fence around the site is in fair conditions, but some post will require replacement in coming seasons.



Fig. 5 Shkārāt Msaied 2016: plan of excavation area. Indicated are the main work area unit F (outline) and the main backfill areas (grey shaded). (prepared by M.Kinzel)

Most observed damages seem to be related to intense winter rain. On the other hand also the exposure of the remains to weathering, including intense sun and wind, has resulted in the loss of bonding of the Neolithic wall mortars as well as the disintegration of the (sand-) stone material itself. Especially some of the sand stone slabs showing flaking and detachment of layers or complete disintegration of the sandstone components. Vandalism was not observed this year.

To reduce the risk of wall collapse some stabilization and consolidation work were executed. Some areas were backfilled to prevent collapse and to reduce the impact of surface run-off water (Fig.5). Preventive measures were applied this year in Units D, E, F, J, K, L, and in Areas II, III, and IV as well as Enclosure c. To improve the appearance of the site and also to protect the remains all building units were cleaned of plants and litter.

Future Plans

In preparation of the final publication (project) it is planned to execute two additional field seasons to fully excavate the burials in unit F (e.g. Loc. 120.117), remove the remaining parts of the roof collapse (Loc. 120.130), and to undertake further preventive conservation measures in the south-western parts of the site. A publication of the results since 1999 is planned after the conclusion of the burial excavations.

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Link: <http://shkaratmsaied.tors.ku.dk/>

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Household and Death: Preliminary Results of the 11th Season (2016) at Late PPNB Ba'ja, Southern Jordan

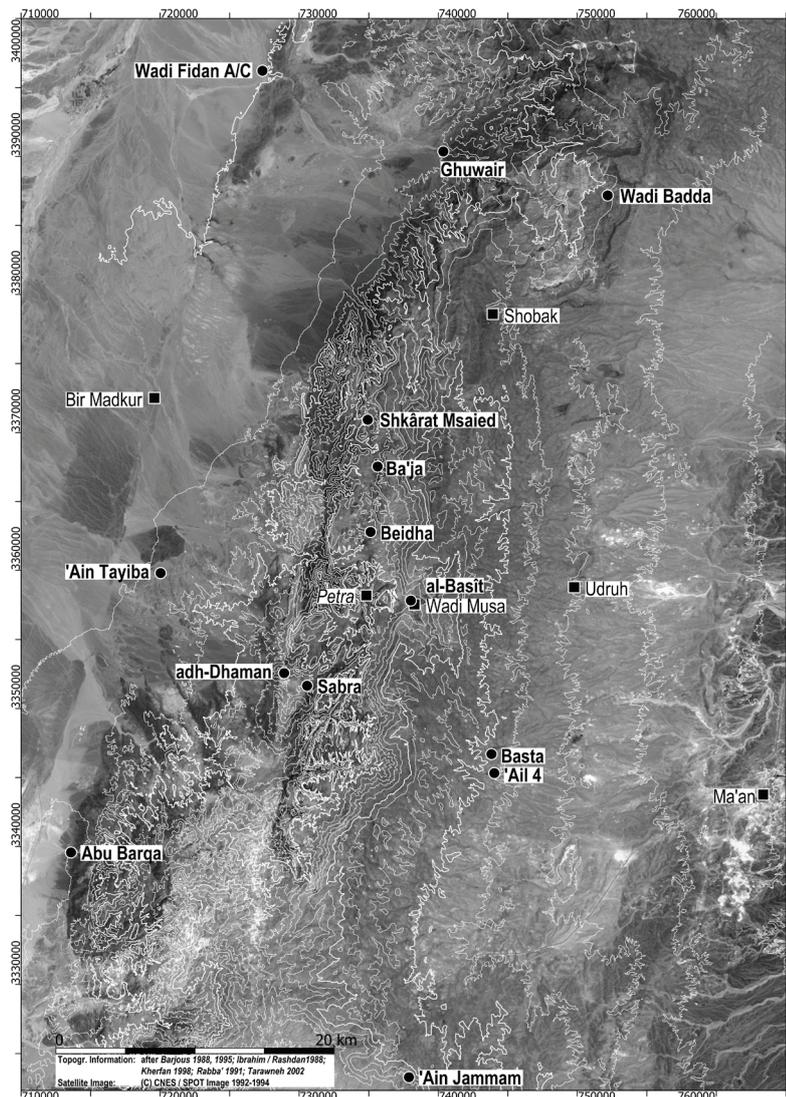
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Introduction (H.G.K.G., M.B.)

From August 6th - September 4th, 2016, the 11th season of the Ba'ja Neolithic Project took place, directed in cooperation with the Department of Antiquities, Amman, by Hans Georg K. Gebel, with Marion Benz as deputy director, both representing the Institute of Near Eastern Archaeology and the research association *ex oriente* at the Free University of Berlin. The season was a feasibility study for a planned larger project, devoted to the topic *Household and Death in Ba'ja*. The season's main aim was to evaluate the potential of evidence for active households, intentionally buried households, and burials, thereby enriching the material base for the future project. In

order to examine this potential, the layers of the lower stratigraphy in Area C were chosen. They confirmed our expectations and provided abundant relevant findings for the study of households and burials at Ba'ja. This report presents the preliminary results as well as additional information on the general research frameworks.

Excavations took place in six building units in Areas C and B-North: CII, CV and CVI (Fig. 4) as well as in BII, BIV and BV of western Square B11. In Building Unit CII, excavations continued in Rooms CR6 and CR7; in CV, in Rooms CR17, CR21, CR22.1 and CR22.2; in CVI, in Rooms CR35 and CR36; the eastern and northern ground plans of Building Units BII and BIV were completed.¹



Project's Research History (H.G.K.G.)

The Ba'ja Neolithic Project is embedded in a long-term three-phase research strategy for the Neolithic of the Greater Petra Area, followed since 1981 by H.G.K. Gebel in cooperation with the Department of Antiquities of Jordan. The 2016 Ba'ja season is the start of Phase 3 of the Neolithic research in the Greater Petra Area.

Phase 1: Regional study focussing on the reconstruction of Early Holocene environments/ the Neolithic physiographic units of the Greater Petra Area and settlement pattern reconstruction (1981-85; surveys and sounding/ sampling programme for Neolithic environmental data; e.g. Gebel 1986, 1988, 1990, 1992; Gebel and Starck 1985).

Phase 2: General material culture and subsistence research with a focus on the Mega-Site Phenomenon (1986-2014; mainly large-scale excavations at Basta and Ba'ja, surveys; e.g. Nissen *et al.* 2004, Gebel *et al.* 2006, for Ba'ja *cf.* references under General Site Information).

Phase 3: Holistic/ "deep knowledge" research on Neolithic household organization and sepulchral culture, territoriality and commodification², identity, cognition, and ethos (from 2016; with restricted invasive excavation work at Ba'ja, and using Ba'ja and

Fig. 1 Greater Petra Area. Location of Ba'ja and other early Neolithic sites. (map: C. Purschwitz)



Fig. 2 Ba'ja helicopter view from WSW in Spring 2007. (photo: D. Kennedy)

Basta evidence for understanding the evolution of early Neolithic social life; e.g. Gebel 2010, 2014a).

Phase 3 also includes site management and conservation planning for Ba'ja and Basta as well as heritage studies and advocacy for local communities (e.g. Gebel and Baumgarten 2012, Gebel 2015; since 2010).

General Site Information (H.G.K.G.)

The site of Ba'ja is located at 35°27'45" E / 30°24'55" N (altitude: 1140-1175 m a.s.l.); the linear distance to Wadi Musa in the south is 11 km (Fig. 1). With a size of 290 m x 20-90 m (1.2-1.5 ha), the well-preserved site rests on intra-montane steep slopes in a naturally secluded setting (a former intra-montane basin), and is accessed with difficulty through a gorge (Siq al-Ba'ja). The site was occupied no later than the Late Pre-Pottery Neolithic B (second half of the 8th mill. BC).

Between 1997 and 2007, seven excavation seasons took place in five areas (B-South, B-North, C, D, F, several test units; Gebel and Bienert 1997; Gebel and Bienert *et al.* 1997; Gebel and Hermansen 1999, 2000, 2001, 2004; Bienert and Gebel 2004; Gebel *et al.* 2006; Gebel and Kinzel 2007). The 8th to 10th seasons (2008, 2010, 2012) were devoted to special studies at the site and in the region (Purschwitz 2013a; Weniger *et al.* n.d.).

Many building units were exposed, with those of Areas B-North and C being thoroughly studied by M. Kinzel in his doctoral thesis (2013). A similarly thorough and comparative analysis of the technological and socioeconomic characteristics of Ba'ja's flint industries was presented by Purschwitz 2017 (see also Purschwitz 2013a, 2013b). Other studies on Ba'ja have been published by e.g. Gebel (2004b, 2006, 2009, 2014b), and others; Purschwitz and Kinzel (2007); Purschwitz n.d.; Michiels *et al.* 2012; palaeoanthropological work was presented by Schultz *et al.* (2004, 2007) and Schultz and Gresky (n.d.).

Basic information on the settlement's subsistence was provided by Neef in Gebel and Bienert *et al.* (1997) and von den Driesch *et al.* (2004). Animal husbandry relied on ovicaprines; agriculture may have concentrated on *Triticum dicoccum*. There is substantial evidence for hunting (meat, fur). Wild fruits were collected from pistachio, hawthorn, and fig; wood was collected from juniper and pistachio trees, with no evidence for oak. The species suggest a year-round site occupation.

The architecture at Ba'ja comprised at least two-storeyed terraced buildings with cellar-type substructures, occupying the site's slopes in a *pueblo*-like manner, with staircases connecting the various levels (Kinzel 2013). The buildings' intended ground plans reflect a central space with adjacent rows of small rooms, as also found at Basta (Nissen 2006: 134). Insertions and blockages of window-like wall openings allowed the re-grouping of corresponding rooms, most likely to aid functional and social flexibility. Ba'ja's final occupation, interrupted by at least one earthquake, is reconstructed as a densely built village without open spaces and lanes, with houses/ rooms accessible from roof tops or lower roofs, representing the settlement's communal space.

Flint (Purschwitz 2017) and ground stone industries as well as Ba'ja's sandstone ring production represent major fields of household production from mineral raw materials; they are a source of information on knowledge transfer and the management of *chaînes opératoires*. Remains of sandstone ring workshops were uncovered in many building units. This product provides valuable additional information on social exchange and development supported by immaterial values (Gebel 2010). Hidden objects in walls and floors testify to magical practices and rituals, as do the deposits of object groups related to households and household production, probable remains of events in room fills, and burials. Such behaviour and actions most likely relate to practices of avoidance, strengthening, fear, commodification and re-commodification.

On Ba'ja's Site Preservation and Safeguarding (H.G.K.G.)

The site's remote location protects it from the impact of visitors. Since 1997, comparatively little damage has been observed in the exposed areas, especially the walls, and looting pits are rare. Only sections with loose



Fig. 3 Ba'ja 2016 season: "Harvest" of ground stone items from ca. 18 m³ of occupational deposits and room fills. (photo: Gebel).

layers tend to collapse. However, it is only a matter of time before natural degradation will affect excavation areas.

Hitherto carried out measures supporting future preservation and conservation are: 1) partial back-filling of individual rooms, 2) a largely successful test of wall conservation, and 3) the storage of the LPPNB wall stones. Without bringing cubic metres of material by helicopter to the remote site, backfilling by available sieved material will remain insufficient since the fills of the small room architecture do not provide enough fine sediments. Wall conservation is durable for 15-20 years, but bringing up water, mortar materials, pigments, and the non-electric equipment onto the site is a troublesome and costly enterprise. Because of these unsolved problems, no new squares will be opened in Ba'ja, and future excavation will concentrate on already exposed areas. The best practice would be backfilling all excavation areas and conserving one area's walls for site presentation under a canopy. A feasibility study on Ba'ja's future site management and conservation is under way, in cooperation with M. Kinzel, conservation architect and former member of the Ba'ja team.

For the development of Neolithic Ba'ja as a site within the Petra culture tourism area (*cf.* also Tarawneh and Wray 2016), we currently have limited expectations: previous tests with tourist groups revealed that site access is felt to be physically too challenging and dangerous. For organised eco- and adventure tours the tourism industry and other stakeholders would demand a basic infrastructure for site visits.

Aims of the 2016 Field Work and of the Feasibility Study on *Household and Death in Ba'ja* (H.G.K.G., M.B., C.P.)

The aim of the 2016 season was to transfer our Neolithic research in the Greater Petra Area to the level of a holistic and integrated study of the nature of Neolithic social and ethos development, represented by the planned project on *Household and Death in Ba'ja* (*cf.* above: Phase 3).

The following works were undertaken in the 2016 season:

1. Area C, Rooms CR34-36: Investigating burials
2. Area C, rooms of Building Units CII and CV: Inves-

tigating remains of households, especially the extensive cooking/ baking area at the eastern fringe

3. Area B-North, western half of Square B11: Completing excavation of Building Units BII and BIV to understand their groundplan

4. Area B-South: Section cleaning and interpretation of major depositional causes and events in later site history (earthquake, rubble layers)

5. Work in the dig house store: Identifying appropriate collections/ samples for the integrated study on *Household and Death in Ba'ja*.

The season strongly confirmed the available potential for the intended "deep knowledge" project on *Household and Death*, discussing core questions of neolithisation in a holistic way from an "inner perspective". To characterise the planned project, some of its research questions are listed: What social and "ideological roles" did the dead under the house floors play? What function did the practices of intramurally burying the "terminated" – attested with both the sepulchral and household inventories – have in the social and cognitive territories of the Ba'ja people? Was Ba'ja an early sedentary community of corporately linked groups? What interrelated processes fostered the success of Ba'ja's productive life ways, especially the household production, and how was their share in the characteristic acceleration and agglomeration processes observed with the mega-site phenomenon (Gebel 2004a)? Through what types of organisation were identities of value and commodity communities established? Can we also describe the Neolithic ethos of Ba'ja in neurobiological and cognitive terms?

Intramural Cemetery, and an Outstanding Grave Inventory (M.B., K.T., J.G., H.G.K.G.)

One of the aims of our investigation was to clarify the relationship between houses and burials. Excavations in Area C therefore focussed on the eastern part of House CVI (as defined by Kinzel 2013) where two collective burials (Loci 152 and 170) had already been uncovered (Gebel and Hermansen 2001, 2004; Gebel *et al.* 2006). Two new burials were identified during the 2016 season in Room CR35 (Loci 405 and 408). In adjacent rooms, CR36.2 and in the eastern part of CR36.1, we uncovered terrazzo-like floors (Fig. 5); we hesitate to use the term *terrazzo floor* as it may have a fixed technological meaning in other parts of the Near Eastern Neolithic. The delimitation of the latter floor (Loc. 20) recalls Burial Loc. 408 and was probably not a living floor but the cover of another burial (see below). These observations confirm that this part of Area C was used as an intramural burial ground between the earliest and later architectural phases in Area C.

In Room CR34 remains of the collective Burial Loc. 170 were still preserved beneath Buttress Loc. 64; due to superimposed layers and architecture it was not possible to excavate it completely in 2005. This burial was set on top of a "terrazzo" floor. A layer of

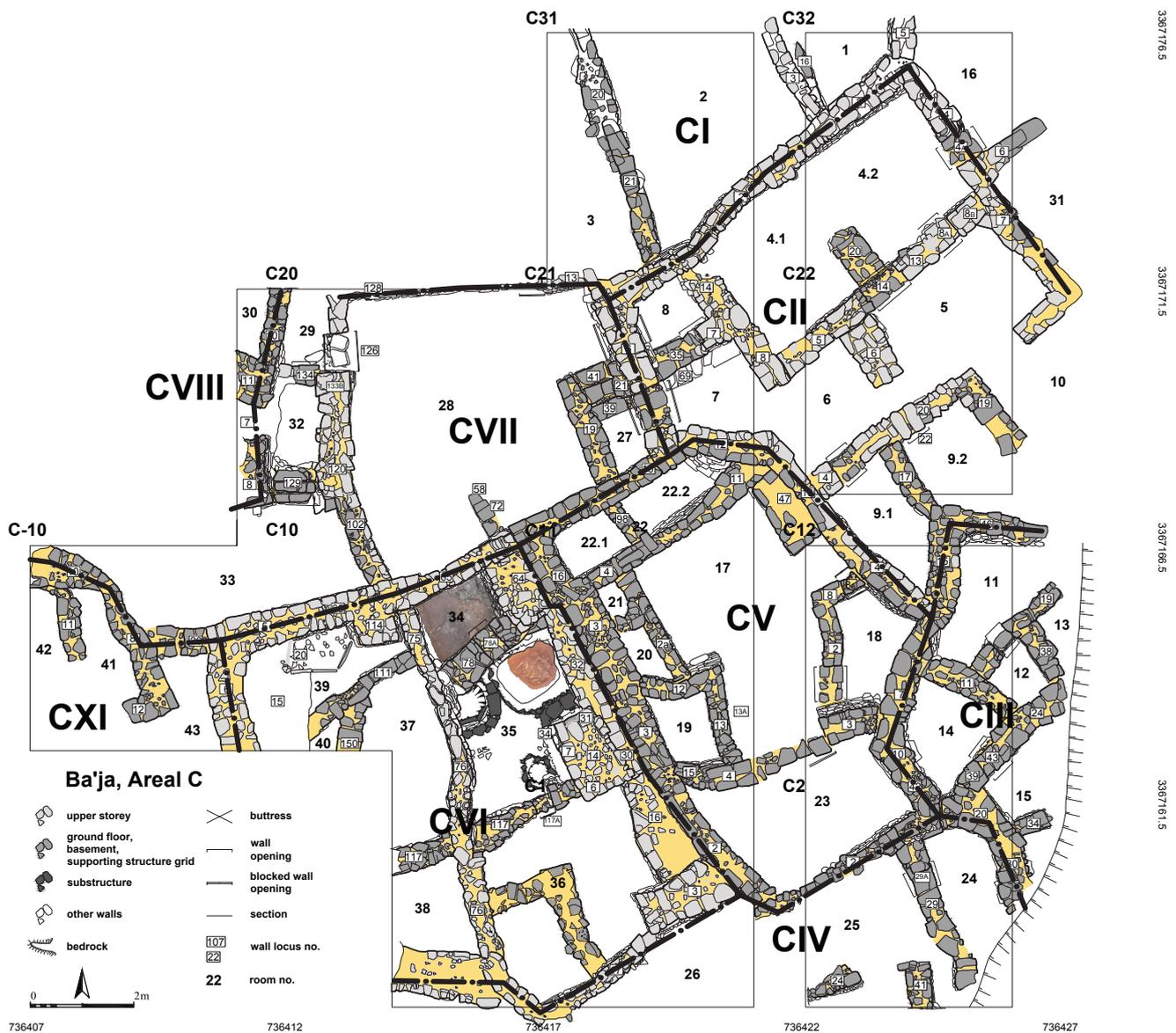


Fig. 4 Area C: Location of rooms excavated in Buildings CII, CV and CVI. (ground plan updated by Benz/ Tucker/ Purschwitz after Kinzel 2013: Taf. 3.40)

up to fist-sized stones formed a small barrow above the bones. Inside the burial layered sandy sediments indicate that the burial was either left open for a while or that sediment intruded into the cavities through the burial's stone cover. The former scenario might support earlier suggestions that "repetitive burying inside the house's basement must have taken place" (Gebel and Hermansen 1999: 22). On the "terrazzo" floor traces of red pigment were preserved.

An Exceptional Single Burial (Loc. 408)

In the northwestern corner of Room CR35 – where a collective burial (Loc. 152) in the northeastern corner had already been excavated in 2005 (based on records by J. Gresky: Gebel et al. 2006: 15) – an elaborate primary single Burial (Loc. 408) was discovered (Figs. 6-7). Its pit was surrounded by trapezoid and rectangular stone slabs abutting both walls (Locs 76 and 78). The inner extension of the grave was 115 cm N-S x 76 cm E-W;

the burial pit itself measured 72 cm N-S x 60 cm E-W. The depth of the grave, from the upper stone border to the bottom of the pit, was about 60 cm. The grave pit was covered with several layers of different materials: On top was a white plaster running onto Wall Loc. 76 in the southwestern part of the grave. Below it, a layer of reused "terrazzo" floor material formed a barrow of about 10 cm partly covering the stone slabs and sloping down above the burial pit. Inside the stones' half-circle a layer of anthracite coloured sand was added. Several objects were embedded in the "terrazzo" floor material cover (see below; Fig. 8, Table 1). Three large stone slabs and up to fist sized stones covered the burial pit itself. The southern stone slab rested on two vertical stone slabs, whereas the others lay on the flattened border of the pit. Traces of charcoal were preserved on the northern slab. The stone slabs run under the adjacent walls. However, it was not clear whether these parts of the walls were younger than the burial or whether the burial undercut both walls.

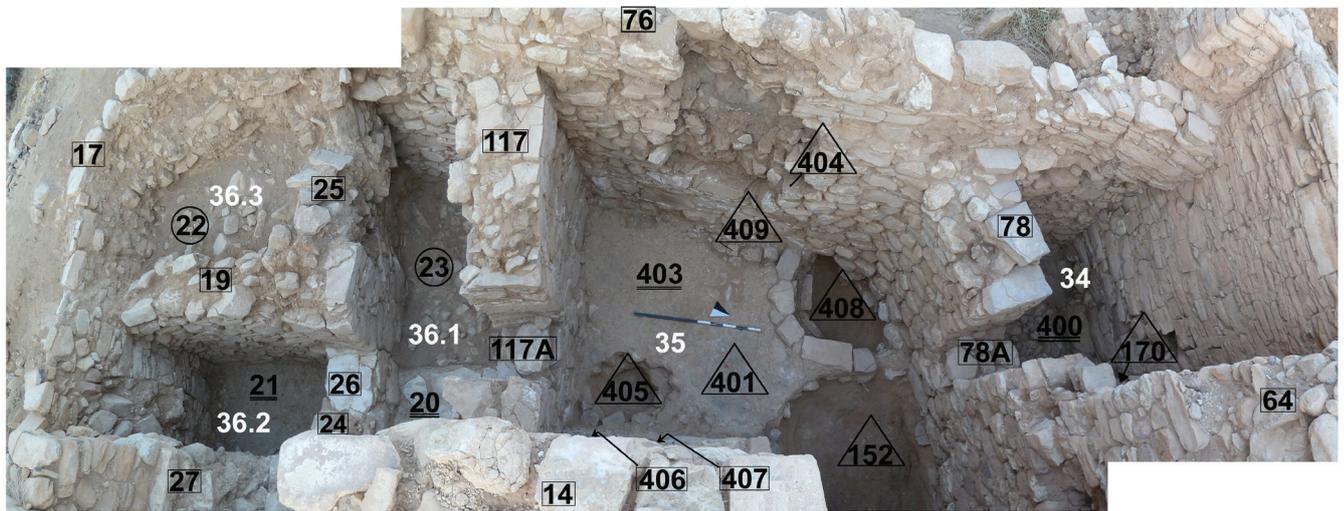


Fig. 5 Building CVI, Rooms CR34, 35, 36.1, 36.2, and 36.3: Vertical view of final state of excavation with loci numbers of walls, graves, and features in the eastern part of Building CVI. (photo: Gebel)

The stone slabs covered the grave's infill of almost sterile sand and fine gravel with flecks of charcoal. Embedded in this sediment, a skeleton rested on its back with its legs in a left crouched position. The right hand gripped the upper left arm, while the left arm was stretched below the legs. The upper body was probably originally slightly turned on its left side and had slipped onto its back during decay.

The orientation of the skeleton was SW-NE; the orientation of the face remains unknown because the skull had fallen onto the chest, the mandible being turned upside down. Both taphonomic processes indicate that there must have been a void into which the sand had penetrated only after decay and that the head was orig-

inally slightly elevated. The preservation of the bones and teeth of the individual was very poor. Abrasion of the teeth indicates an adult age. Estimating the sex was not possible in the field: neither the pelvis nor the skull was well enough preserved.

The dead wore an unique composite upper arm ring made of four mudstone and one mother-of-pearl ring (Fig. 9); another ring or ring-like sewn-on object of mother-of-pearl was attested for the upper right arm; several beads were found scattered close to the chest and neck. A "mace-head" was placed beside the left shoulder.

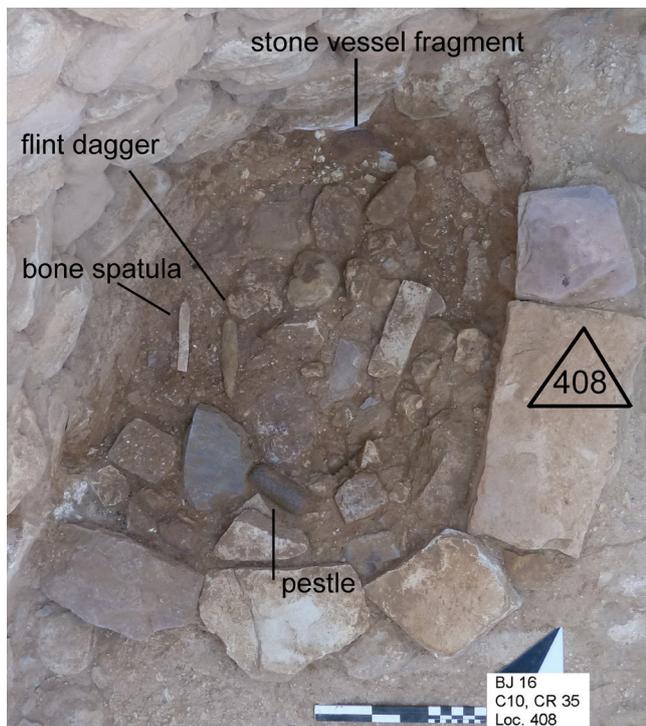


Fig. 6 Building CVI, Room CR35: Upper cover of single primary Burial Loc. 408 with "grave goods", embedded in reused "terrazzo" floor material. (photo: Benz)



Fig. 7 Building CVI, Room CR35: Single primary Burial Loc. 408 with "grave goods". (photo: Gebel)

Item Field number (Fig. reference)	Location	Description, raw material, measurements (mm; l length, h height, w width, th thickness, d diameter, med medial, prox proximal, dis distal, pres preserved)
flint dagger 92019 (Figs. 6, 8)	embedded in upper sealing* of grave	pressure-flaked dagger with impact burination, fine edge denticulation outside hafting/prehension area; flint, complete l 183.4; w max 33.3; th prox 7.5; th med 7.8; w dist 6.7; weight: 66.36g
bone spatula 95014 (Figs. 6, 8)	embedded in upper sealing* of grave	bone spatula from rip; medial and distal preservation l pres 138.6; w med 18.1; w dist 19.7
projectile point 92020 (Fig. 8)	embedded in upper sealing* of grave	tanged arrowhead (tang broken); flint l pres 30.6; w max 9.6; weight: 0.77g
stone pestle 91813 (Figs. 6, 8)	embedded in upper sealing* of grave	cylindrical pestle, basalt? igneous rock; flat working face; proximal: old fracture l 119.0; w max 54.0; weight: 625.80g
stone bowl 96804 (Figs. 6, 8)	embedded in upper sealing* of grave	rim fragm. of steep-sided bowl; light reddish sandstone d 300?; th 10 below rim: 27
mace head 91812+91811	inside grave, next to the left upper arm	mace head with biconvex outline and biconical perforation; smashed in situ by a single high-energy blow (split in 2 halves with several fragments; one fracture surface shows impact point with radial scars); basalt/ igneous rock; h 53.0; w 55.5; d central perforation 13.4; d outer perforations 25.2 and 24.9; weight: 241.50g
composite arm ring 91264 (Fig. 9)	inside grave, around upper left arm	composite ring made of superposed elements: one carved mother-of-pearl ring and four rings carved from a layered (?) mudstone; fragility of mudstone (marlish/ clayish material) makes it likely that this ornament was applied only on the corpse (not worn); very fragile; poor preservation (soil acids, roots) interior diam. +/- 69mm
mother-of-pearl arm ring 90400		ring of carved mother-of-pearl; poor preservation (soil acids, roots) d interior +/- 70.00 (?)
4 small mineral beads 90800	inside grave, neck and head area	1 unfinished turquoise bead; l 6.75, w 3.85, th 1.89 1 broken turquoise bead, l 3.85, w (?) th (?) 1 turquoise flat semi-cylindrical bead, d max 5.12, h 2.90 1 turquoise flat cylindrical bead, d max 4.86, h 2.98 1 fragm of malachite
4 small mineral beads 90803	inside grave (from sifted grave fill)	1 turquoise flat cylindrical bead, d 5.01, h 2.26 1 malachite faceted bead, l 5.37, w 6.05, th 4.74 1 carnelian bead, pendant-shaped, l 8.66, w 3.40, th 3.32 1 bead from sea shell heavily leached; shape (?); > 6.01 x 5.51 2 fragm. of turquoise
shell fragments 90802	inside grave, left part of chest	1 Conus sp.; heavily leached; <15mm 1 (?), heavily leached; <16mm
shell fragments 90804	inside grave (sifted material)	small and tiny shell fragments, affected by soil acid/ leached
mother-of-pearl fragments 90407	inside grave (sifted material)	small and tiny mother-of-pearl fragments, affected by soil acid/ leached
"red mineral" 97902	inside grave, between finger bones of right hand (gripping the left upper arm), holding it intentionally (?)/ reached this position after decomposition?	mixture (?) of red mineral, lime inclusions and fossilized material

The objects found can thus be separated by their two contexts: 1) items embedded into the grave cover (Fig. 8) and 2) objects found directly associated with the individual (e.g. Fig. 9).

1. A pressure-flaked flint-dagger of non-local raw material was found in the western part of the grave cover. Its shape and size resembles the two daggers discovered at Ba'ja in the adjacent collective Burial Loc. 152 and the collective Burial Loc. 26 in D11/12721/22 (Gebel and Hermansen 2001; Gebel et al. 2006). The fine denticulation above the hafting area on both edges is less pronounced than in the other two daggers. The high-quality work and non-local raw material most likely relates to a workshop outside the region. Apart from the impact burination on its tip this piece is well preserved; does the impact result from a burial ritual?

West of the dagger, a bone spatula was uncovered (Fig. 21: A-B). Further east was found a cylindrical pestle. It shows a flat working face and traces of use on its distal end. In the northeastern part of the grave cover a rim fragment of a bowl was uncovered. Furthermore, a broken tanged flint arrowhead was embedded in the cover.

2. The most outstanding item in this context is the above mentioned composite upper arm ring (Fig. 9). To our knowledge, no other such object is known from Neolithic or other contexts. The other mother-of-pearl arm ring worn on the right arm was composed of several parts, originally possibly connected by organic materials or sewn on cloth or leather. Both mother-of-pearl objects were heavily "leached out" and the mineral rings were also extremely fragile. The aforementioned "mace-head" had been broken by a deliberate stroke presumably inside the grave (pers. comm. H.G.K.G.) since almost all fragments were still *in situ*. The beads were all made from non-local raw material: "greenstone"/turquoise/malachite, carnelian and shell. Although raw materials still have to be determined precisely, possible sources of the greenstones are located along Wadi Araba (e.g. to the north in Wadi Feinan, to the south near Timna). Turquoise most probably came from the Sinai. Items from this source have been identified at the Neolithic sites of Basta and Beidha (Hauptmann 2004). The mace head was made of the same igneous rock as the pestle. Another interesting item is a red mineral found between the right fingers of the individual. Since no other stones covered the dead below the stone slabs, it seems that this stone had been deliberately positioned. Analysis of its raw material could clarify whether it might have been used for the production of red pigments.

Table 1 Ba'ja Area C, Building Unit CVI, Room CR 35: Inventory of grave goods of single Burial Loc. 408 (raw materials: preliminary determinations)
*upper sealing of grave composed of (reused) plaster and "terrazzo" floor material and fist-sized stones, resting on the three stone slabs covering the grave.



Fig. 8 Building CVI, Room CR35, Burial Loc. 408: Grave goods from upper grave cover (cf. Fig. 6, Table 1): flint dagger (92019), arrowhead (92020), sandstone bowl rim fragment (96804), basalt pestle (91813), bone spatula (90514), found together with some isolated human teeth. (photo: Gebel)

<p>Event 1: digging the pit through the “terrazzo” floor into natural sediment, partly below wall Loc. 76; setting two vertical stone slabs on the southern border of the pit and aligning the pit’s border in a half circle of stone slabs</p> <p>Event 2: lighting a fire outside the grave (if Loc. 401 does not relate to Loci 152, 405 or 170)</p> <p>Event 3: burying the dead with its personal outfit, destroying the mace head</p> <p>Event 4: covering the pit with three stone slabs</p> <p>Event 5: use of fire and/or charcoal on the slab</p> <p>Event 6: covering the slabs with large stones and deposition of objects (flint dagger, arrowhead, basalt pestle, stone bowl fragment, bone spatula, cf. Figs. 8 and 21: A-B)</p> <p>Event 7: covering with re-used “terrazzo” floor material, filling the gaps in the wall above the stone slabs</p> <p>Event 8: covering with anthracite coloured sand inside the stone slab half-circle</p> <p>Event 9: adding white plaster on the southern edge (possibly originally extending over the whole grave – but not preserved)</p> <p>Event 10: decay of body with the head falling on the chest, turning the mandible upside down</p> <p>Event 11: intrusion of fine sand and fine gravel and collapse of the stone slabs</p>
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Table 2 Sequence of events attested with Burial Loc. 408, based on stratigraphic observations of burial rituals and taphonomic processes (elements of the sequence might be in slightly different order).

A Double Child Burial (Loc. 405)

In the southeastern corner of the same room, a primary burial with two children was uncovered (Fig. 10). It was also dug through the floor and covered with a stone slab. The pit had a diameter of about 40 cm, and a depth

of c. 35 cm. The upper child (Ind. 1; 1-1,5 yrs according to dentition) was slightly turned on its right side, the legs drawn up with the knees under the chin, facing downwards to the east. Possibly the skull may have fallen forward. Partially below – but facing it – was an older child (Ind. 2; 4-5 yrs according to dentition). Its knees were up against the skull, the right arm under the mandible, the pelvis scattered, and the vertebra bent and twisted, as if the child’s corpse had been squeezed into the pit. Ind. 1 was buried with or only shortly after Ind. 2. There was no indication of a re-opening of the grave and no grave goods. The fill contained some charcoal, probably washed into the grave from a nearby fireplace. On the southwestern border, traces of fire were recorded.

Further Observations

Between the cover of the single burial and the “terrazzo” Floor Loc. 403 was a thin layer of ash (Loc. 401). It decayed within a few hours of excavation, but the traces of the fire were visible on the floor and on the wall (Loc. 407). It is not clear whether this fire event relates directly to Burial Loc. 408. This fire place existed shortly before or during the burial, and contained fragments of red pigment, but in contrast to the collective burials excavated earlier, in none of the burials excavated this season was the use of pigments recorded.

Further, yet unexcavated, burials might be discovered in this room. South of the single burial and close to Wall Loc. 76, the “terrazzo” floor is destroyed (Loc. 409) in a similar manner as above the double child burial. Another burial might be found in Room CR36.1: As mentioned above, a white plaster floor was uncovered there, limited by three rectangular to trapezoid stone slabs as seen in the construction of the adult burial (Fig. 11).

Stratigraphic observations indicate that this part of Area C was first covered by a “terrazzo” floor, probably contemporaneous with wall Loci 78, 117, 407 and 76. The contemporaneity of this complex is supported by identical heights (+/- 1cm) of the wall openings, Loci 26, 117A and 78A, which were all excavated this year. These openings linked the three rooms CR34, CR35, and CR36. At a certain time, several burials were dug into the “terrazzo” floor of CR35. After the covering of



Fig. 9 Building CVI, Room CR35, Burial Loc. 408: Composite (upper) arm ring (91264) made from one carved mother-of-pearl ring and four carved rings of a layered silty-clayish material. (photo: Gebel)

Burial Loc. 408, Room CR35 was probably not used as a living floor, since the grave cover formed a small barrow. During a later phase the buttresses Loci 64 and 14 were built over the Burial Loc. 170 in Room CR34, and above Loci 407 and 406 in Room CR35 respectively.



Fig. 10 Building VI, Room CR35: Pit Burial Loc. 405 without „grave goods“, with a baby and a child facing each other in the southeastern room corner. (photo: Benz)

Collapsing stones exposed a small cavity (Loc. 404) in Wall Loc. 76, containing tiny and heavily leached bone fragments and charcoal, possibly representing a cache deposit of human/animal bones (s. above) or an unintentional admixture in the double-faced wall's fill (Gebel 2002).

Discussion and Conclusion

The newly discovered burials are exceptional in many respects. The only other single – less formal and extramural – burial of Ba'ja was found in a midden area probably dating to the final PPNB/PPNC (Gebel et al. 2006: 18). The construction of Loc. 408 and the precious objects suggest that the deceased had a special position. Compared to other Late PPNB burials in the region, it is the most lavishly equipped burial. The differentiation of two sets of grave goods, deposited in two different events, also seems exceptional (Tables 1 and 2). Despite these differences to other burials, the body's position recalls the crouched position of one of the upper skeletons of the collective Burial (Loc. 152) and the burial from the midden context. The dagger resembles the two items discovered in Loc. 152 and in the collective burial in Area D (Gebel et al. 2006).



Fig. 11 Building CVI, Room CR36.1, Loc. 20: White plaster floor delimited by large rectangular stones. Feature is similar to upper cover of Burial Loc. 408 in Room CR35. (photo: Benz)

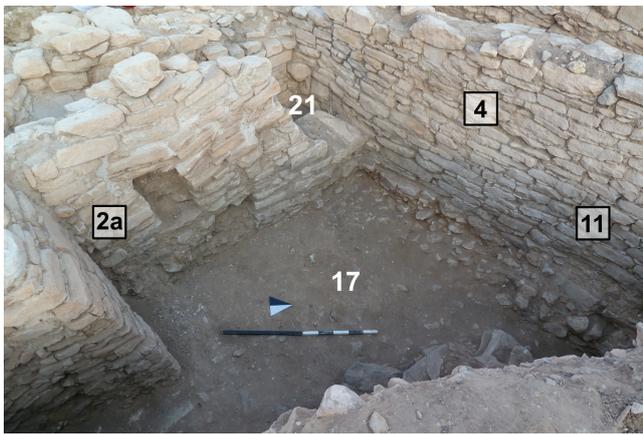


Fig. 12 Building CV, Rooms CR17 and CR21. View of final state of excavation from East. (photo: Gebel)

The composition of the grave good assemblage is also very similar to the objects discovered in the latter burial (Gebel and Hermansen 2001: 18). Moreover, there, the dagger was deliberately destroyed like the mace head in Loc. 408. The covering with stone slabs of Loci 405 and 408 confirms observations that the collective burial in Area D was possibly covered with stone slabs (Gebel and Hermansen 2001: 17). The comparison with the other burials from Ba'ja shows that those from this season belong to the same community burial practices, while the individual inhumation of Loc. 408 appears quite special. For the first time, it was also possible to reconstruct the ritual process of this burial in some detail (see Table 2).

There is good evidence that this part of the “house” was used as an intra-mural burial area, before fundamental architectural changes were made during a later phase. However, further investigations of the architecture will be needed to confirm the precise stratigraphic relationship of the burials. Scientific analyses of the skeletons will provide important information on daily life in Ba'ja and give some clues into the outstanding character of the adult burial. Isotope and a-DNA analyses of all individuals buried in that area might help to clarify the composition and role of households during the Late PPNB. Samples for radiocarbon dating have been submitted to the laboratory but results are still pending.

Ritually Deposited (Transformed) Household Inventories and Events, and the Practice of Burying the “Terminated” (H.G.K.G.)

Continued excavations in Rooms CR22.1 and CR22.2 of Area C, Building Unit CV, revealed an unexpected fine example of intentional depositions of household and household production inventories; most probably the depositions included the remains of an event that left burnt animal parts and bones. Room CR22.2 contains significantly more ash and charcoal than CR22.1. It appears that all loci (24, 36, 38 and 39 in CR22.1 and 35, 36 and 39 in CR22.2) belong to the same depositional event, or series.

The loci of Room CR22.2 had high amounts of ash and charcoal, within a “greasy” matrix. Objects and material were horizontally embedded. Since the rooms show no clear signs of intra-mural fire, being only stained by the deposited ashes and charcoal, one interpretation is that the material, along with the ashes and charcoal, was deposited in Rooms CR22.1-2 after burning occurred elsewhere. The depositions of Rooms CR22.1-2 appear to represent secluded loci created by secluded action in secluded spaces; they are formal in the sense of not being random, casual, or mixed, in terms of coming from different original contexts. An intentional intramural deposition of burnt household remains in Ba'ja must be considered to have an ideological and ritual background since – explicitly – other sorts of disposal, which are also attested at Ba'ja, were not chosen, *e.g.* the non-formal disposal in room fills as described for CR17 or in B11 (*cf.* below) or the use of dump areas as attested with Sounding 1 in 1984 (Gebel and Starck 1985). In terms of commodification and the biography of things, households – or their parts – were given a new value. They were transformed and re-commodified to act as an object in the sphere of respected terminated relations.

The depositions in Rooms CR 22.1-2 reflect two if not three original contexts of materials and objects: 1) items of household activities, such as food preparation, textile working, tool production, maintenance and re-refinement, personal items, *etc.*; 2) items of household production, such as the strong element of sandstone ring manufacturing; and probably 3) re-



Fig. 13 Building CV, Rooms CR22.1-2: Transformed household inventories. Final state of excavation. (mounted photos: Gebel)

mains of an “event leaving animal bones and parts” (a feast?).

The dense depositions of Loci 34, 36, 38 and 39 in Room CR 21.1 give substantial evidence of sandstone ring production, needle working, flint and bone tool production; grinding tools are less common, and there is some evidence of production related to plastic material. Burnt bones and animal parts are well attested. The similarly dense depositions of Loci 35, 36 and 39 in Room CR 21.2 reflect substantial elements of food preparation (grinding tools) including prepared meat, sandstone ring production, needle working, flint and bone tool production, and various activities related to maintenance and refinement; there is some evidence related to pigment production, heated/ burnt copper mineral and a low-fired grit-tempered sherd of a small vessel (Fig. 14).

Dumped Household Items, and Ba'ja's Ordinary Room Fills (H.G.K.G.)

The seemingly non-ritual/ non-formal disposal – or dumping – of household and household production materials in room fills appears to be the standard evidence at Ba'ja, attesting to the excommodification of household items: The freshly excavated fills of Room CR17 (Fig. 12) present evidence for this behaviour, as do the fills of the B11-Rooms (*cf.* below, the report by D.Š.). The results of the feasibility study enable us to further distinguish between this common depositional attitude at Ba'ja and the ritually deposited/ transformed household inventories and events. Future work has to evaluate signs of overlapping behaviour represented in both practices: Ritual and magical attitudes may have been involved in casual dumping and *vice versa*.

Contrary to the secluded loci formed by secluded action in secluded spaces of the ritually deposited household inventories, the character of the non-formal disposals/ dumps appears more random, casual and mixed in terms of involved inventory and primary contexts; objects and materials tend to be obliquely embedded. The fills of Room CR17 – most likely the central room or space of a typical Basta-House – are presented here to explain the non-ritual household inventory disposal practices.

Loc. 37 of Room CR17 is an incompletely excavated thick accumulation of settlement debris with finds showing limited indication of associated or interrelated material and secluded events of collapse or deposition. Rather, and despite their density in the locus and sometimes extraordinary quality or preservation, most bones, flint and other artefacts are randomly distributed in this disposal area. The Loc. 37 fill accumulated over time, interrupted by a few patch-es of temporary (some natural?) surfaces and features (*e.g.* ash and plaster concentrations, horizontally embedded wall stones and building debris, a stone alignment, related finds like two weights); the overall picture is that of a designated and undifferentiated dump area without other uses. In comparison, the fills of B11 (*cf.* below) reflect more diversified depositio-nal events with spots of concentrated or functionally interrelated objects and features. Sandstone ring fragments and worked bone items are comparatively rare while animal bones and flint waste are represented in “normal frequencies”; broken, as well as some complete and rather unworn, grinding slabs and *manos* are significantly frequent.

Active Households, and the Remains of an Extensive Food Processing Area (B.K.)

Rooms CR6-7 were excavated to 1) understand the site's potential for studying active households and 2) to further explore the nature of the large food processing area represented by Rooms CR31, CR9.2, CR5, CR6 and CR7, first identified in the 1997 season (Fig. 4). In these rooms evidence was found for intense kitchen activity, the use and possible manufacture of early plastic vessels/ containers, and large chunks of charred wood. The remains close to the steep fringe area of the settlement were always discussed as representing a possible community cooking area. However, there are indications that Rooms CR6 and CR7 represent an *in situ* final stage of an active household which was destroyed by fire: wall stones are stained black but are not cracked. Remains were embedded both horizontally and obliquely. There is almost no evidence for ornaments in both rooms, except for a small concentration in Room CR7, Loc. 37.

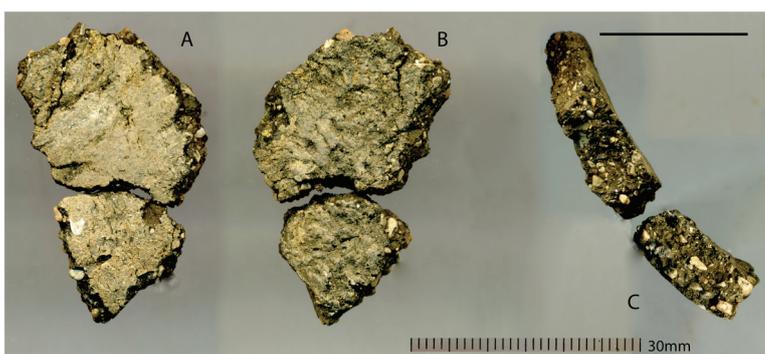


Fig. 14 Building CV, Rooms CR22.2, Loc. 39: Low-fired grit-tempered rim sherd (91618). (photo: Gebel)

Room CR6

In the northeastern part of Room CR6, an upper phase of Wall (Loc. 6) was identified above fills with ashes, charcoal and tumbled stones. This fill (Loci 12 and 14) extends inside Room CR6. The Wall Loc. 20 was heavily stained by ash and charcoal in Loci 12 and 14 at about the level of a collapsed window-like wall opening.

Three loci were identified in Room CR6. The upper layer Loc. 12 is interpreted as the primary context of kitchen remains (burnt bones, few grinding tools) with some flint

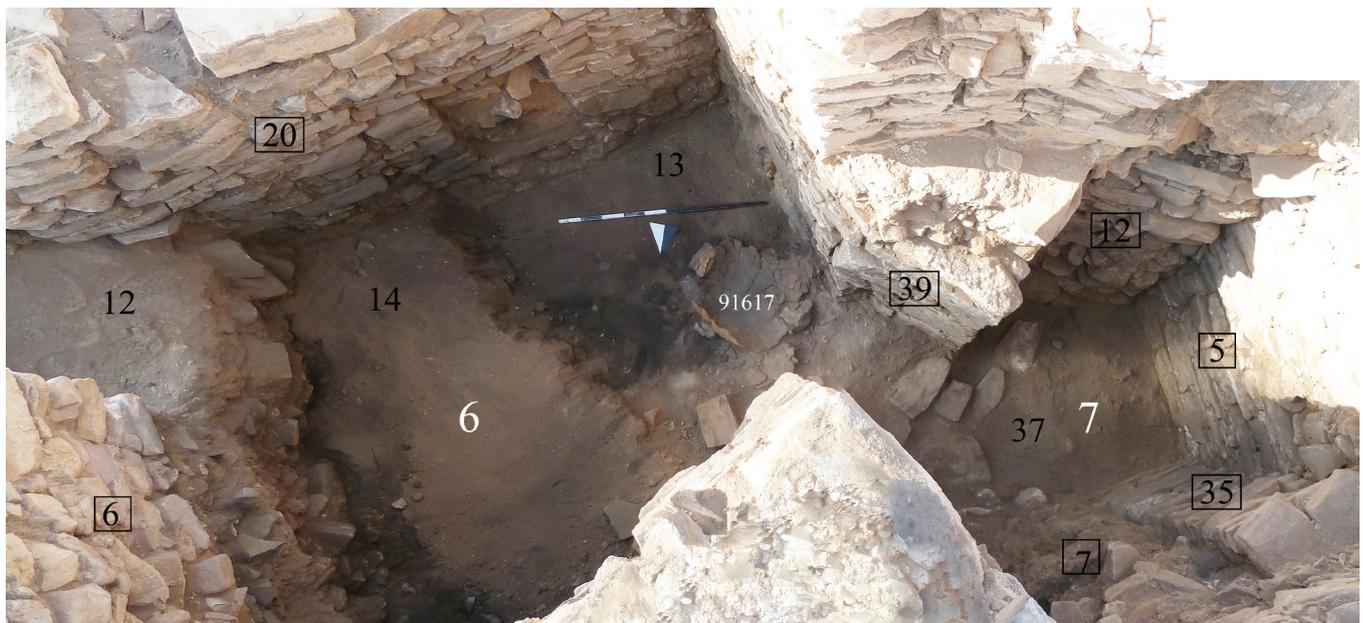


Fig. 15 Building CII, Rooms CR6-7: Final state of excavation of active household remains Loci 12-14, 37. (photo: Gebel)

artefacts and sandstone ring fragments. Loc. 13 in the southwestern corner was full of burnt materials representing various find classes (heated/ burnt copper minerals, grinding tool, a stone plate, few sandstone ring fragments and flint artefacts). Among these, Vessel 91617 (*cf.* below), isolated sherds and burnt lumps of clayish/ marlish material – interpreted as prepared paste of various stages for making plastic containers or features – dominate. Loc. 14 consists of very black ashy sediment containing more burnt bones, large charcoal chunks, heated/ burnt copper minerals (Fig. 16; *cf.* below), sandstone ring fragments, and a few grinding and bone tools.

Room CR7

Room CR7 is also a smaller space but full of complete and fragmented tools. Loc. 34 can be interpreted as a layer resulting from household activity (many burnt bones, grinding tools, flint artefacts, and a few sandstone ring fragments). Loc. 35 is more an intentional room fill of household material (many flint artefacts and burnt bones; few grinding and bone tools, sandstone ring fragments, sherds). After removal of Loc. 35, a non-formal surface was encountered. Loc. 37 included better preserved tools/ tool fragments (grinding and flint tools), many burnt bones, some ornaments, and a good amount of sandstone ring fragments; it can be interpreted as a burnt active household surface or the burnt dump of an active household.

Parts of flint assemblages from both rooms were exposed to high temperatures (thermal fractures, thermal extractions; pers. comm. D.Š.). There is a different distribution of primary and secondary products in the rooms. In general, Room CR7 yielded material from bidirectional production as well as many flint tools, especially projectile points.

Baked Containers Made From Plastic Material, and the Evidence of Heated/ Burnt Copper Minerals (H.G.K.G.)

Two exciting discoveries within household contexts (Area C, Building Unit CII, Rooms CR6-7) were made: lumps and a vessel made from – what we provisionally call – a clayish-marlish paste, and heated/ burnt copper minerals.

Sherds and a Vessel Made From Low-Fired Plastic Material

Ba'ja's baked "clay" industry is known from the first large-scale excavation season in 1997 (Gebel and Bienert *et al.* 1997: 251); until now, this evidence had been restricted to Building Unit CII and the eroding rooms east of it. During this season, for the first time a "true" and rather complete chaff- (and/ or herbivore dung-?) tempered vessel (91617; Figs. 15, 17) and a grit-tempered rim sherd (91618; Fig. 14) were found. Both remains – along with sherds from other chaff-tempered vessels/ containers and lumps of burnt plastic material – represent low-fired/ baked items of an extremely fragile nature. The other sherds and baked lumps are randomly scattered in Loci 13 and 14 of CR6 as well as in Loci 34, 35 and 37 of Room CR7.

The large vessel was found in Room CR6: Loc. 13, partly in the passage to Room CR7, resting on one side. Apparently it broke *in situ*; flimsy parts of a flat bottom and a simple rim were preserved in their expected positions. Prior to restoration, the fragments allow only an estimation of the original vessel height: *c.* 50-60 cm. It might have been barrel-shaped, with no indication of a bin-like or cuboid shape. The vessel's outer side is smoothed and shows patches of different light-brown to black colours indicating an uneven exposure to temperature; the inner face shows

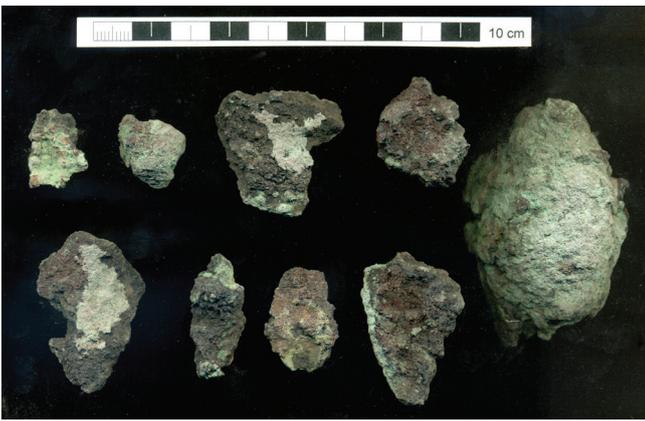


Fig. 16 Building CII, Room CR6, Locus 13: Heated/ burnt copper minerals (97804). (photo: Gebel)

the shallow approximately horizontal grooves left by the potter's fingers. The sherds dissolve in water, although some parts have apparently been exposed to higher temperatures as they are largely undissolvable. They are around 20 mm thick, and often show a reduction core. Without archaeometric analysis, it is not possible to understand if the vessel was intentionally low-fired or accidentally baked. In traditional local marl (*samagah*) *taboon* (portable "cover furnaces or hood kilns") making in the area, the women producers often heat/ burn them after manufacture in a pile of shrubs "to harden them for transport" (Gebel *et al.* 1994). It also cannot be said what the components of the paste are: Chaff or dung was used as temper, grit is sometimes visible and might be a natural component of the source material; but whether the material is a clay or marl matrix or an admixture of both remains a question for analysis. Such sherds and vessels from nearby LPPNB Basta were apparently made from local marl (*samagah*) – a lime-rich mudstone which contains variable amounts of clay and silt – (Neu-

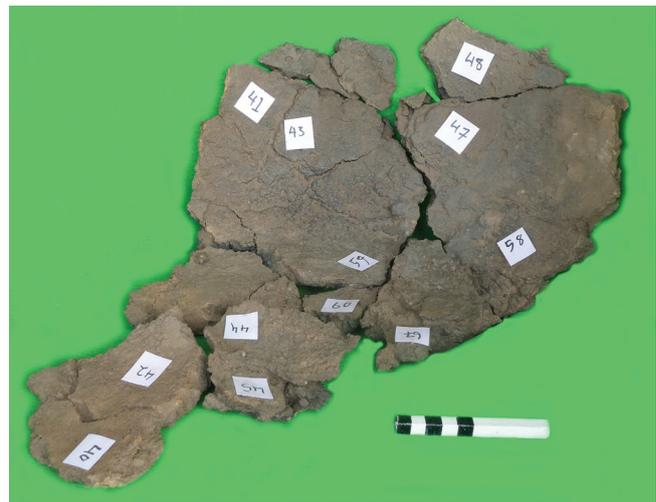


Fig. 17 Building CII, Room CR6, embedded in Loc. 14: Larger fragment of an almost complete barrel-shaped vessel (91617) made of low-fired, chaff-tempered clayish material. *cf.* also Fig. 15. (photo: Gebel)

berger n.d.). A similar matrix seems to have been used in the PPNB of Kfar HaHoresh (Biton *et al.* 2014); however, the use of the term "ceramics" for this evidence appears unjustified since the terms "ceramics" and "pottery" should only be used for technologies reaching temperatures which irreversibly consolidate clay minerals.

Due to its fragility, the vessel is considered "not portable". The baked lumps of plastic material and the other sherds found together with the vessel may indicate a temporary vessel production area in both rooms, having an unknown stratigraphic relationship with meat cooking (many burnt bones in the area).

Another unique find is the Sherd 91618 found in Building Unit CV, Room CR 22.2, Loc. 39 (Fig. 14). It represents a neat thin-walled vessel/ rim sherd,

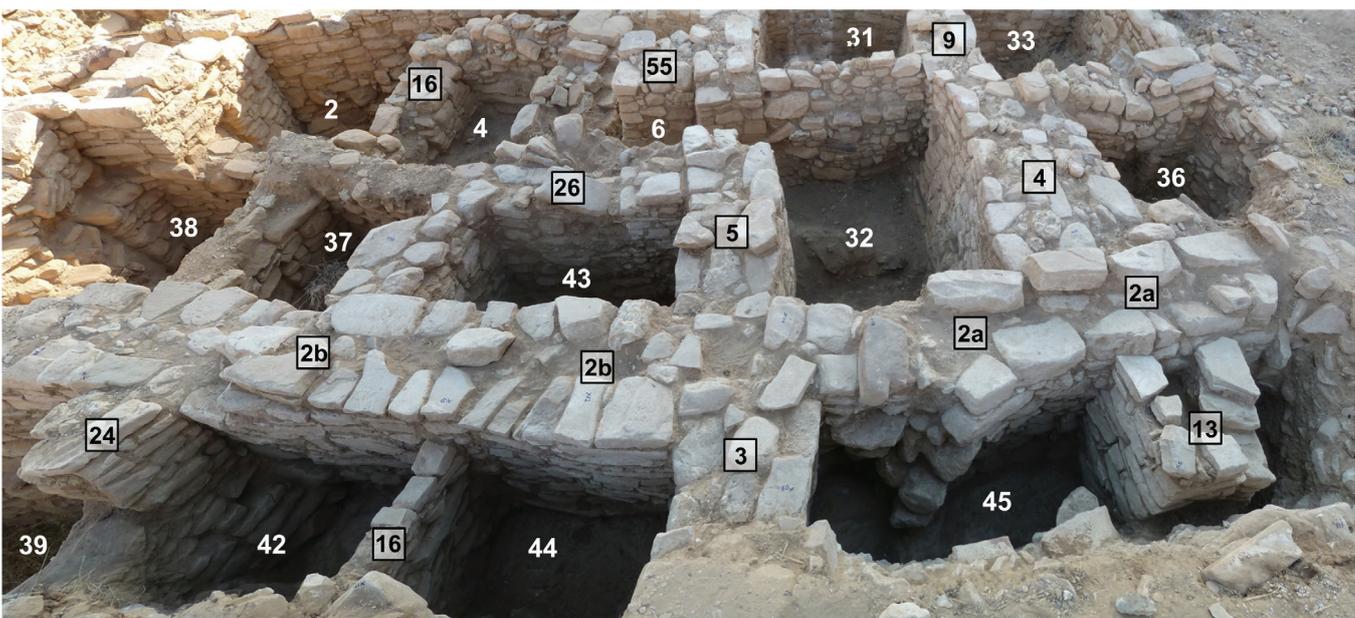


Fig. 18 Area B-North, western half of Square B11: Completed groundplans of Buildings BII and BIV, freshly exposed rooms of Building BV and Room 45 of a new building. View from East. (photo: Gebel)

possibly of a bowl, of some 10-12 cm in diameter with a coarse grit temper. Further macroscopically observed technological features are: heavily grit-tempered (15-20%?, most likely from source, inclusions are 1-2 mm, larger grit extracted?); sherd dissolves in water: low-fired or secondarily burnt; small and clear cracks in the body; low share of marl/clay/silt: plastic matrix subject to future archaeometric analysis.

Evidence of Heated/ Burnt Copper Minerals

In contexts with heating/ heavy fire, in Rooms CR6, Loci 13 and 14 and CR 22.2, Loc. 35, seven samples of burnt sediment lumps mixed or “coated” with heated/ burnt copper minerals were found. Heated/burnt copper minerals are also attested without attached ashy sediment. The fractured and fragile lumps, with sizes between *c.* 15-60 mm, have a loose consistency and feel light in the hand. Sample 97804 (Fig. 16) shows a highly un-usual characteristic: The light green mineral covers the exterior to a thickness of 0,5-1,5 mm, as if resulting from melting and coating the surface of the mineral lump with the material; the green surfaces are smooth.

We do not believe that our finding is related to extractive copper metallurgy. More likely is “accidental” heating of the minerals in the household context. The finds are also curious for being the first recorded at Ba’ja after so many seasons, with reports from other sites not mentioning such material.

Ground Plans of Building Units in Eastern Area B-North (D.Š.)

The main aim of the 2016 excavations in Area B-North was to complete the ground plans of Building Units BII and BIV (Fig. 18; for the ground plans of Building Units in B-North *cf.* Kinzel 2013: Taf. 3.25.A-B and 3.26.A-B). For that reason, only the western part of Square B11 was excavated. The advanced erosion of architecture in this topographically high part of the settlement enabled us to reach sandstone bedrock in most parts of the trench, at approximate depths of 120-160 cm.

By the complete exposure of Rooms 32 and 36, the ground plan of Building Unit BII was completed; the same was true for Building Unit IV by the exposure of Room 43. Freshly exposed

Rooms 42 and 44 – separated by the thin Wall Loc. 16 – may represent parts of Building Unit V while new Room 45 and Buttress Loc. 13 must belong to a new building not having yet received a designation. Rooms 42, 44 and 45 are located east of the long Wall Loci 2a-b running downslope (Fig. 18). The completed lowermost ground plans of Building Units BII and IV belong – in terms of the general architectural stratigraphy – to the earlier occupations at Ba’ja.

Other architectural features in B11 are: Wall Loc. 2a, supported on its eastern side by the Buttress Loc. 13, while its southern part is partly collapsed on

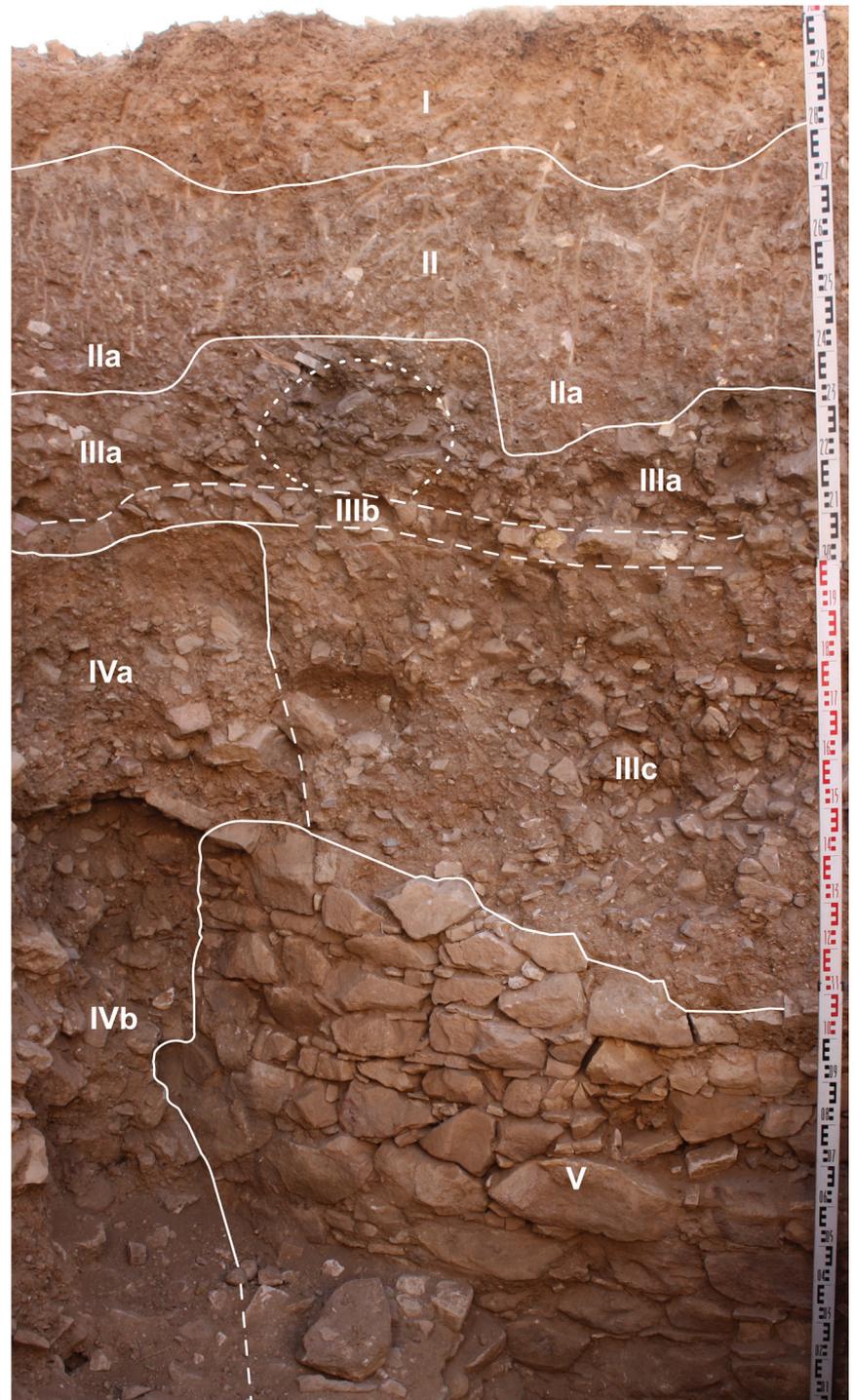


Fig. 19 Area B-South, Square 64, northern part of eastern section: Sequence of high-energy events (fluvial and seismic?). (photo: Gebel)

the eastern side where a strange curved wall feature extends into Room 45; Buttress Loc. 13 could also be the support for a beam carrying an upper floor. The north-eastern extension of Building Unit BIV (Room 43) was built directly on bedrock. The western Wall Loc. 26 of Room 43 and the southern Wall Loc. 24 of Room 42 included window-like wall openings.

The layers inside the excavated rooms represent various types of room fills, resulting from intentional activity as well as from collapse; no formal floors were uncovered in the rooms. The fills indicate that the basements of the buildings had no *in situ* layers preserved that would testify to their latest use; rather they show single occurrences and often loci-wise concentrations of worn and intact grinding tools (extremely frequent *manos* and slabs including some micro slabs and *manos*), a few stone vessel fragments and pestles, bone tools, many sandstone ring fragments, a few sandstone balls, numerous flint artefacts including many hammerstones, and animal bones. While some of the grinding tools may have arrived in the fills from their secondary use in walls, the majority appear to have been intentionally dumped in the fills (non-formal/ non-ritual depositions *sensu* excommmodified items; *e.g.* a concentration in Room 32 at a depth of 120 cm).

The chipped stone industry of the fills represents unidirectional flake and blade production and bifacial celt production; the bidirectional technology is mostly attested by tool blanks. A fill in Room 45 exposed a pre-shaped bidirectional core and more frequent bidirectional blades and core trimming elements. Tools are rare in the fills; the most frequent tool types are 'Amuq points, celts, and retouched blades and flakes.

Wadi Mehmud "Snake Valley" Probes (A.S., H.G.K.G.)

The small gorge to the north of the site and its very limited catchment drains through a bedrock cavity into the Siq or Wadi al-Ba'ja (Fig. 2). During earlier seasons, large amounts of ornaments, sandstone rings, human and animal bones were found in primary disposal contexts in cleft fills just below Area D. This season, three probes located outside its gulleys were made in the central parts of Wadi Mehmud, in order to gain more information about refuse disposal behaviour in the settlement. The probes revealed only information on secondary refuse contexts proving that flint artefacts, sandstone ring fragments, human and animal bones, and ashes originally discarded into the gorge were redeposited inside the wadi.

High-Energy Events During Occupation: The B64-Sections Revisited (H.G.K.G., A.S.)

Previous excavations in Area B-South, Square 64, exposed the 3 m high northern and eastern sections with evidence of strong fluvial events (Events III, Table 3)

following (a series of?) kinetic impacts (Events IV), identified, from air-pockets, twisted walls and a "domino" appearance of fallen stones and walls in Area B-South, as resulting from at least one earthquake period (Gebel and Kinzel 2007, Gebel 2009).

Since the topographical position of the sections seemingly excludes the possibility of the rubble and gravel layers coming from natural catchments, a team from Cologne University, specialising in Jordan's early Neolithic rubble layers, recorded and sampled the sections in 2010 (8th Season at Ba'ja). Unfortunately, analysis of this mission is still pending. During the 2016 season, the sections were discussed on-site with B. Khrisat, Hashemite University, who recently developed the thesis that a series of tectonic events at the end of the Pleistocene and early Holocene is responsible for these enigmatic rubble layers in the Transjordanian Highlands, by destroying intramontane barriers of sediments and gravel (Khrisat, 2016 lecture). While this thesis appears highly reasonable, it does not explain the origins of the Ba'ja rubble flow. In order to promote discussion on the rubble layers of Ba'ja, the authors decided to re-record the section, this time by a simplified description of section observations (Table 3, Fig. 19). It resulted in an explanation for the origins of Ba'ja's rubbles (*cf.* below).

The B64- sections are located upslope and east of Wall Loc. 4 which must have served as a barrier for sediments arriving from the east (Gebel 2009: Fig. 19, 22). Similar rubble and fine gravel deposits – or flows – and air pockets were observed in Squares C-10, Baulks C-20/20 and C-10/10 (Gebel 2009: Fig. 23), and therefore they all presumably represent the same events.

Regarding the origin of the "colluvium-type" of rubble layers, the 2016 discussion 1) ruled out a natural

<p>Events I (in North-Section: same/ similar finding) laminated hard silty matrix of light brown colour; high lime content; few artefacts; roots</p> <p>Events II (in North-Section: same/ similar finding) silty matrix of greyish-brownish colour with some sand; high lime content, some gypsum?; compact, hard; no artefacts; stony content angular; dissolved lime in lower parts of deposit; "wetter conditions than today"</p> <p>Event IIa: gulleys cutting into upper Event III deposits</p> <p>Events III (Architectural Phase 4A) (in North-Section: similar finding, <i>cf.</i> below; equal with Gebel 2009: "huge intra-site rubble and fine gravel flows, RF/FGL")</p> <p>Events IIIa: (upper part of III): loose matrix with ashes and "colluvium"-type deposition of fist-size angular sandstones; no lamination; remains of fireplaces; rare flint artefacts, bones, and charcoal; "short and fast rubble flow episodes taking place in a restricted time while surfaces were used by inhabitants"</p> <p>Event IIIb: horizontal deposition/ bed of + fist-size angular sandstones</p> <p>Events IIIc: (lower part of III): loose matrix with ashes and "colluvium"-type deposition of fist-size angular sandstones; no lamination; remains of fireplaces; some flint artefacts, bones, and charcoal; "short and fast rubble flow episodes taking place in a restricted time while surfaces were used by inhabitants"</p> <p>Events III in northern section: reflect the same two sub-events with embedded small gravel lenses, separated by a gully's fill of dense small (10-20 mm) subangular-rounded gravel, embedded in a silty matrix.</p> <p>Events IV (end of Architectural Phase 2) (in North-Section: tumbled stones with air pockets above Event V)</p> <p>Events IVa-b: collapsed wall stones with horizontal lamination of finer hard matrix; light-brown- reddish; embedded are disintegrated lime plaster and floor material including fine "terrazzo" floor gravels, bones, flint artefacts: "collapsed architecture after one or two earthquake events".</p> <p>Events IVb: same as IVa which continues as room fill in front of Event V- wall.</p> <p>Event V: Wall of Architectural Phase 1 or 2 in B64, probably the same phase as Walls 26, 29 and 13? in the northern Section (Gebel 2009: Fig. 22).</p>
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Table 3 Ba'ja Area B-South, Square 64, eastern section: Sequence of high-energy events (fluvial and seismic), *cf.* also Fig. 19.

source of the gravels due to topographical and geomorphological reasons, 2) decided that the rubble as well as the fine gravel most likely originate from house ruins higher up on the site, destroyed by the earthquake(s). The origin of the substantial amount of angular rubble and fine gravel in the flows is reasonable if one considers the 1) amount of such material that forms the (“terrazzo”) floor substructures and beds as well as the rubble fill inside the double-faced walls of the two- to three-storied architecture, and 2) that wall stones were extracted from the rubble for rebuilding.

The BJ16 Worked Bone Industry (B.A.)

The preliminary analysis of the season’s bone tools and production waste revealed four main categories: pointed bone tools, spatulas, scratchers, and worked raw material. Analysis was supported by stereomicroscopy Leica

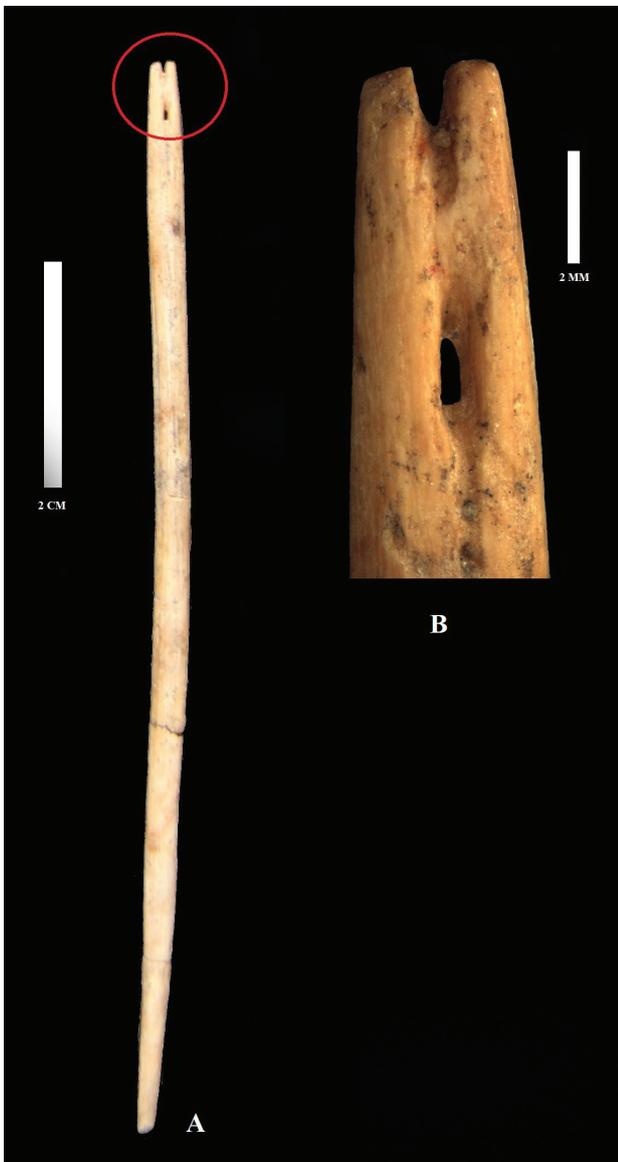


Fig. 20 Building CV, Room 22.1, Loc. 39: Needle (95004) A: front view. B: Stereomicroscopy photo view elongated thread eye. (photo: Abuhelaleh)



Fig. 21 Area C: (A-B) dorsal and ventral view of grave good spatula (95014; Building CVI, Room CR35, Burial Loc. 408), cf. also Figs. 6 and 8; (right) lateral view of sheep/ goat tibia with two long cuts from its distal to medial parts (95026; Building CV, Room CR22.1, Loc. 39). (photo: Abuhelaleh)

EZ4 HD to document traces of production and use.

Pointed tools were represented by two types: awls and needles. 13 awls were identified, all of medium and small size; three of them are almost complete. Raw materials were: 1 sheep/goat tibia (distal portion); 1 medium-sized metapodial (unfused); 1 lateral *Equus* metapodial; the rest of the awls were made using medial bone parts. The proximal fractures seen on the majority are ancient and may relate to use. 16 small-sized and one medium-sized needles/ needle fragments were found, representing the most frequent bone tool class of this season. Only one is complete, with an elongated complete thread eye and

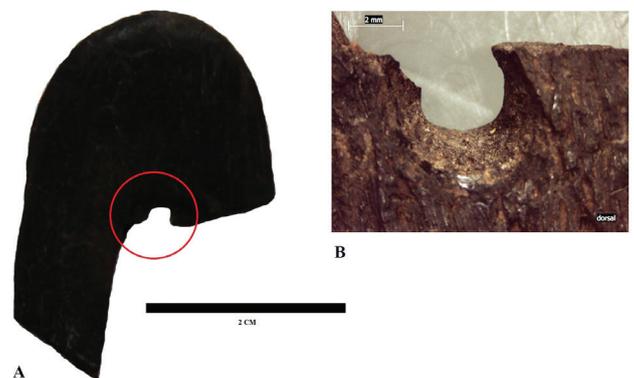


Fig. 22 Building CV, Room CR22.1, Loc. 36: Spatula (95011). B: Stereomicroscopy photo view circular perforation. (photo: Abuhelaleh)

a broken (?) eye at its distal part (Fig. 20: A-B). 9 of 16 needles show blackening from heating, possibly intentionally undertaken to reduce fragility.

Altogether 11 spatula fragments and one complete spatula were recovered; the complete example forming part of the grave goods of Burial Loc. 408 in Room CR35 (Figs. 8, 21: A-B). The spatula fragments were made using different portions of medium and large animal ribs. One example had a circular (broken) hole (Fig. 22). The spatulas are rather thin with a maximum length of c. 16 cm.

There were also two “scratchers” (95008C and 950023): They have shapes similar to spatulas but pointed ends (probably used in leather working). They were produced from the medial parts of long bones of medium-sized animals.

Worked bone raw material was represented by 9 specimens. One example was made from a sheep/goat distal tibia and shows four long cuts from the distal to medial parts on four surfaces (Fig. 21: right). Possibly the piece is for needle manufacture. Other worked bone pieces had straight and perpendicular cuts indicating the second and third steps of pointed tool production.

Stereomicroscopy of the proximal and middle parts of the tools shows soft polishing on the surface of most items: Some of the polish might be the result of working with leather or fur. Observed scratches could have resulted from contact with stone surfaces.

In summary: Ba'ja's inhabitants displayed a high technological competence for the production of bone tools, and a careful raw material selection can be observed. Pointed tools were mainly made from lower limb bones, such as tibia and metapodials, while ribs of larger animals were preferred to produce spatulas.

Summary and Conclusions on Household and Death in Ba'ja (H.G.K.G., M.B., C.P.)

The season's main results can be summarised as follows: 1) Settlement-related burials are located in the deeper layers of the rooms, and may even be in contact with the natural deposits below Ba'ja's architecture. The hitherto unique LPPNB collective burials at Ba'ja are not the only type found at the site: single burials do occur. The concentration of burials in lower Area C might be interpreted as an intramural cemetery.

2) In terms of general stratigraphy, it seems that a horizon of formally deposited/ buried household inventories exposed to fire existed above the grave horizon. Above this, a horizon of active households and non-formal disposals/ dumps of household material was attested in the room fills. Our season confirmed earlier evidence that household and household production inventories may have been subject to ritual deposition/ termination, often containing intact items; we suggest such findings should be designated as transformed households/ household inventories.

3) The two formal burials excavated consist of one with a baby and an infant without grave goods and a

single burial – probably of a special person – in a stone chamber. The burial was marked by a “terrazzo” sealing containing unique grave goods, placed above the chamber's stone cover; personal ornaments accompanied the dead in the chamber.

4) The season provided further evidence of early vessel making at Ba'ja. The plastic matrix of a large and rather crude vessel appears to be marl and/ or clay with chaff and/ or herbivore dung as temper. The material was either low-fired or sun-baked and secondarily fired. One other sherd attests to the production of neat bowls with heavy grit temper. The context of the large vessel sherds is cooking/ heating/ baking in a larger area, interpreted since 1997 as a communal kitchen area in eastern Area C.

5) One piece of enigmatic evidence are heated/ burnt copper minerals, most likely accidentally burnt/ melted. 6) By excavating the western half of Square BII down to bedrock, the ground plans of two building units were completed.

7) A new record of sections in Area B-South confirmed that at least one earthquake must have destroyed (parts of) Ba'ja's architecture, followed by rubble land-slides and the rebuilding of architecture. It became more evident that the source of the rubble could be house ruins resulting from the earthquake.

So far, four types of evidence have been identified as related to households in Ba'ja: inventories of active households, intramural ritual depositions (transformed) household inventories and events, intramural non-formal dumps of household inventories, and extra-mural disposals of household inventories (refuse dumps).

For the sepulchral sector, types of the Ba'ja burials are more difficult to differentiate, especially if we consider evidence from contemporary neighbouring sites, such as Basta and 'Ain Jammam. The collective burials at Ba'ja, containing all age classes using built chambers or small rooms are special and exceptional, as possibly also are the individual burials in pit-type chambers or pits. How representative are the collective burials at Ba'ja since, in the LPPNB's sepulchral world, the house-related single burial seems to be standard? Does physical anthropological, stratigraphical and other evidence exclude the possibility that the collective burials reflect a sepulchral “emergency”, e.g. resulting from the need to quickly bury – family/ group-wise – many dead after an earthquake? The sepulchral evidence from Ba'ja and Basta questions the notion of burials or even intra-mural cemeteries co-existing with active living floors above. One of the authors (Gebel in Bienert *et al.* 2004) never really dared to question research's common sense understanding of households operating on top of burials. The LPPNB intra-mural burial practice within Ba'ja's household environs will – at any rate – contribute to the understanding of *Household and Death*, and whether, at Ba'ja, we are looking at more complex relations, a special case or both.

As for the conclusions on the potential of Ba'ja for the topic *Household and Death*, the following main points can be summarized for the planned project's “view from the interior”:

1) The site, the previous excavations, the advanced state of material analysis, and the available archive of information, samples, and finds, is an excellent base for commencement of holistic research on the “deep knowledge” topic, with the aim of identifying the Neolithic ethos from inside a village community, and helping to explain Neolithisation from the evolutionary micro-perspective.

2) The in-field feasibility study refined the research questions on the findings related to household and death.

3) The intramural “burying of the terminated” as acts of memory, respect, and possibly fear, played a major role in the cognitive spheres of Ba’ja and was an important part of the inhabitants’ ethos: They kept (and controlled?) the otherworldly in the habitation areas. Such project theses are generated from the most “productive” spheres – household and death – with our aim of reconstructing rituality, values, identities and ethos of the Ba’ja people.

4) Ba’ja’s households and household production provide enough data on their material productivity and socio-economic operation modes, and how values, identities, and ethos were thereby created.

5) The lifeways (from food and storage via morbidity to social structure) are the other part of the “worldly” web, requiring research input on the available findings we have for the biotic resources.

6) The *Household and Death* project design supports a holistic approach, meaning that synthesis work and results are shared transdisciplinary efforts.

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Endnotes

¹ The term “building unit” refers to ground plans identified architecturally and by means of building stratigraphy (Kinzel 2017), which does not necessarily mean that they represent social units (households). The question of the “social house” is a subject of the planned project. Our distinguishing use of the term “building unit” and “house” refers to this.

² For the concepts *territoriality* and *commodification* cf. Gebel 2014 and 2010; for the original concepts of *commodification* cf. Appadurai (ed.) 1986 and Kopytoff 1986.

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Remarks on the Neolithic Period in the Wadi Shu‘aib, Jordan: First Results of the Wadi Shu‘aib Archaeological Survey Project, Season 2016

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Introduction

The Wadi Shu‘aib constitutes one of the major routes connecting the southern part of the Jordan Valley (coming from Jerusalem and the oasis of Aricha/Jericho on the western side of the southern Jordan Valley) with the central Jordanian highlands in the region of as-Salt, and continuing towards Amman in the southeast and the Baq‘ah Valley in the northeast. While the upper reaches of the Wadi Shu‘aib (here also referred to as the “Wadi as-Salt”) – including adjacent tributary wadis such as the Wadi al-Kafrat and Wadi al-Azraq –, features fertile soils watered by the perennial waters of the wadi and abundant annual rainfalls, the southern part of the wadi’s course consists of dry lands until it finally merges and junctures with the Jordan River. In general, the hilly flanks in the Wadi Shu‘aib are difficult to explore, the area receives about 200 mm of rain annually which is minimal for sheep and goat herding, but is not sufficient for extensive agriculture. However, since the wadi carries large amounts of water – being fed by several natural springs in the vicinity of as-Salt in the north (e.g. the spring ‘Ain Jazzir) as well as the annual rainfall from the Transjordanian highlands, the wadi itself provides enough water throughout the year. In several parts of the wadi, flat areas next to the wadi bed therefore allow for intensive cultivation. The wadi encompasses three natural environmental zones: the Mediterranean woodlands in the north, the foothill steppe, and the riparian forest associated with the wadi bed and springs. Based on current evidence, agricul-

tural practices in these areas did not include large-scale terracing, but were rather focused on the exploitation of moderate topographic niches as well as soil pockets between lapies.

The alluvial fan of the Wadi Shu‘aib in the southern part of the eastern Jordan Valley represents the end of the wadi (here referred to as “Wadi Nimrin”). Today, the Jordan Valley receives rain only during the months of October through May, while the north receives ca. 380 mm rainfall a year, the southern part receives only half of this and thus must be considered a semi-arid desert environment. On the eastern Jordanian side, the Jordan Valley is dissected by numerous smaller wadis, which flow from the Transjordanian Highlands into the Valley, one of which is the Wadi Shu‘aib.

While several surveys (see below) have been conducted in parts of this region before, it has hitherto never been properly surveyed as a whole, since previous efforts either concentrated on the areas around as-Salt in the north, or on sites in the Jordan Valley in the south. Thus, since previous exploration of the wadi itself so far has been very limited, the initial intention of the *Wadi Shu‘aib Archaeological Survey Project* (WSAS) was to thoroughly record and document all archaeological sites within the area of the Wadi Shu‘aib, starting just south of the modern town of as-Salt in the north – including parts of the Wadis as-Salt and al-Kafrat – down to the town of Shuna South (Shunet Nimrin) in the eastern Jordan Valley (Figs. 1-2). The total area surveyed thus comprises a length of ca. 18 km from north to south, and covers an altitude difference of approximately 1000 m. The survey area extends two kilometers on each side of the wadi bed, while the wadi itself was chosen a natural transect.

Given this particular importance of the wadi, it is surprising that hitherto only few archaeological investigations were conducted in the region, which almost totally focused on the regions near as-Salt or the Jordan Valley, but never on the Wadi Shu‘aib itself. Albright collected material of archaeological sites on various visits to the Jordan Valley, including the region immediately north of the Dead Sea (Albright 1924, 1926). Glueck surveyed several sites at the southernmost point of the Wadi Shu‘aib, *i.e.* at the juncture of the wadi with the Jordan Valley, during his extensive surveys in the years 1939-47, the wadi here referred to as “Wadi Nimrin” (Glueck 1943, 1951: 366-371). In 1975, the eastern Jordan Valley was again surveyed thoroughly by Ibrahim, Sauer and Yassine (1976, 1988). The site of Tell Nimrin, located within the town of Shuna South, was excavated in the years 1989-1995, located at the

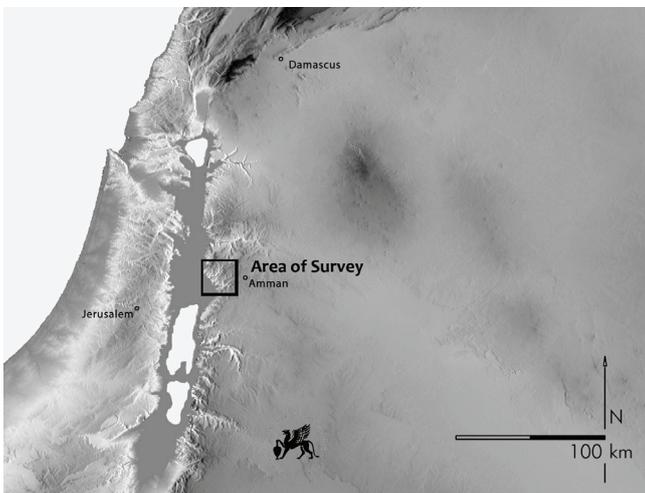


Fig. 1 Map of Jordan showing the survey area of the WSAS (Map: DAI, T. Urban & A. Ahrens).

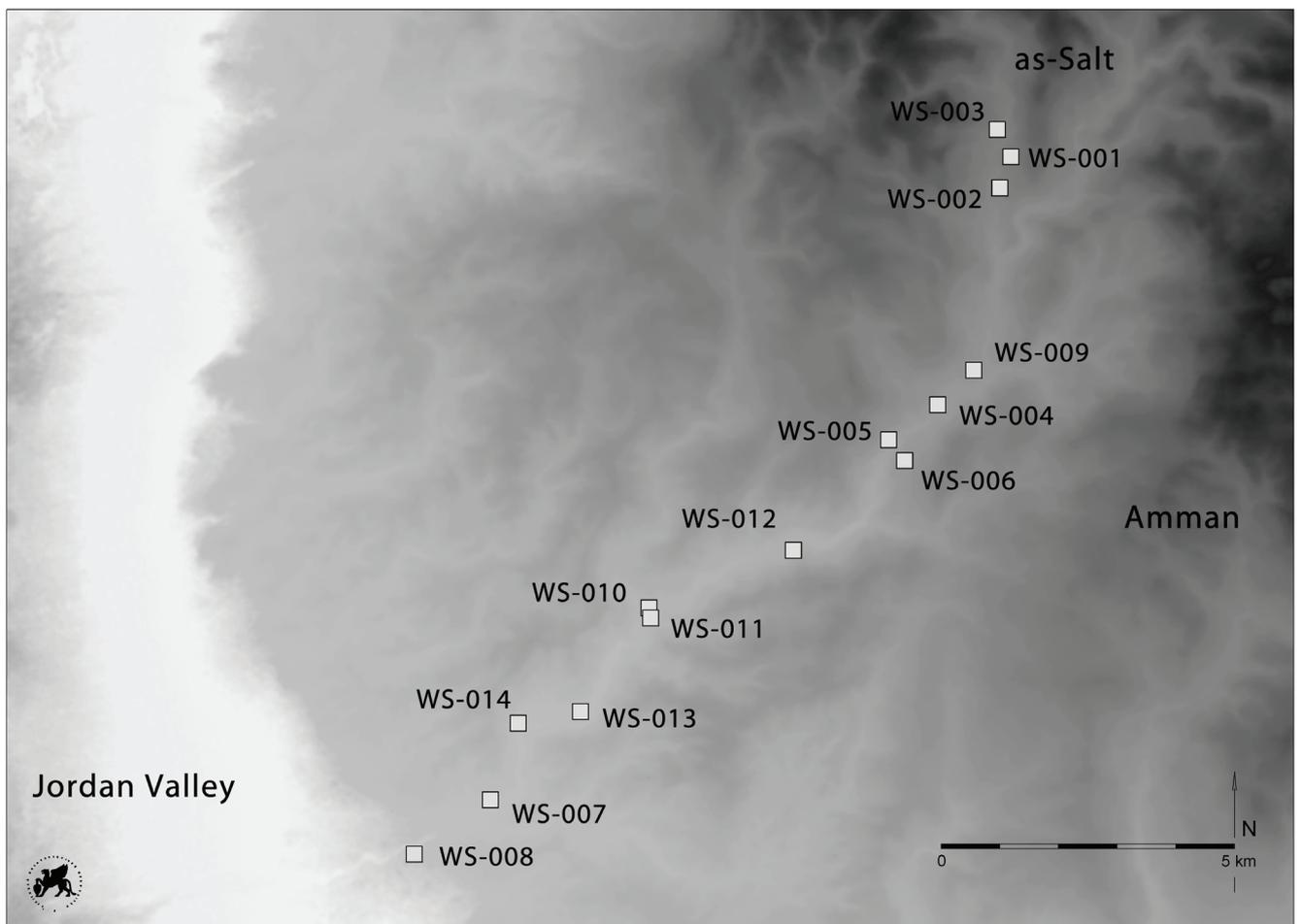


Fig. 2 Sites surveyed by the WSAS in 2016 (Map: DAI, T. Urban & A. Ahrens).

southern end of the wadi's alluvial fan, within the limits of the modern town Shuna South (the excavation results are summarized in Flanagan *et al.* 1996). In the years 1998 and 2000, Ji and Lee (1999, 2002; Ji 2007: 137-139) surveyed parts of the wadi at its juncture with the Jordan Valley as part of their survey of the region of Irāq al-ʿAmir and the Wadi Kafrayn again. The area immediately south of as-Salt was preliminarily surveyed by de Vaux in 1937 (de Vaux 1938). Later on, several Neolithic sites in the Wadi Shuʿaib were briefly visited by Zeuner (1957), Raikes (1965), and Mellaart (1975). However, only as late as in 1988, the region of Wadi Shuʿaib between Shuna South and as-Salt was the focus of a preliminary archaeological survey, which apparently was not developed into further and more detailed survey campaigns later on (Wright *et al.* 1989). Apart from these surveys, excavations were conducted in 1988-1989 at the Neolithic site of “Wadi Shuʿaib” about halfway between as-Salt and Shuna South (site WS-009, see Fig. 2, excavation results summarized in Simmons *et al.* 1998, 2001).

The Neolithic Period in the Wadi Shuʿaib: Newly Discovered Sites and an Old Acquaintance

During the first campaign of the WSAS in 2016, a number of four hitherto unknown Neolithic sites

– among various sites dating to later periods – were discovered (for a first preliminary report of the survey, see Ahrens 2016, in press). Among the sites surveyed, four Neolithic sites were unknown, while one site (the “Wadi Shuʿaib Neolithic Site”), as already mentioned above, had previously been the focus of targeted excavations (for the locations of the sites discussed here, see Fig. 2).

A description of each Neolithic site surveyed in 2016 is given below (the acronym “WS” stands for “Wadi Shuʿaib,” followed by the specific site number; known names of sites are given in brackets). The numerical list of sites surveyed given in the gazetteer below follows the at times alternating itinerary of the survey, not a definite or clear-cut north to south direction.

WS-004

The site is immediately north of the Wadi Shuʿaib viaduct bridge, south of the village located in the vicinity (Fig. 3). The site consists of undiagnostic pottery and lithic scatters. Since the material recovered was collected from an agricultural field in use, there is a possibility that the material actually comes from a different place close-by, possibly even WS-009/Wadi Shuʿaib Neolithic site, or an unknown archaeological site below the modern village, albeit no archaeological



Fig. 3 Site WS-004 (Photo: DAI, A. Ahrens).



Fig. 4 Wadi Shu'aib neolithic site (WS-009), roadcut section (Photo: DAI, A. Ahrens).



Fig. 5 Site WS-010 (Photo: DAI, A. Ahrens).

remains were found to exist here. No other features were detected.

The chipped stone material indicates on-site preparation of cores as seen by primary production elements. The raw material used consists of fine to medium grained flint predominantly of grey color. The tools are not diagnostic at all although some formal tools like perforators, a burin, a scraper and notched and retouched blanks are evident. It is therefore difficult to date.

WS-009 (Wadi Shu'aib Neolithic Site)

The Neolithic site of "Wadi Shu'aib" – dating to the PPNB and PNA – has been known to scholars since the 1920s (Zeuner 1957: 23; Mellaart 1975: 63, 68), but it was identified as an important site only in the late 1980s when the road leading from as-Salt to Shuna South in the Jordan Valley was enlarged (Rollefson 1987: 521). Subsequently, two seasons of excavations were conducted at the site (Simmons *et al.* 1998, 2001).

The site lies on the northern bank of the wadi (Fig. 4), right next to the main road (Rollefson 1987: 521-522). Today, visible features of the site are only discernible along the section that initially led to the discovery of the site; random scatters of lithics are abundant all over the site. The area is used for the cultivation of olive trees today.

The material recovered during the survey in 2016 includes all formal tools (like perforators, burins, sickles, scrapers, a pick, and denticulates) as well as notched flakes and blades, and also retouched flakes and blades. Thus, the material shows typical PPNB elements, underlined by the presence of a variety of burins as well as one naviform core. Several pottery fragments clearly date to the Yarmoukian Period (PNA). All in all, the chronological sequence established by the excavations is also reflected in the material retrieved during the survey.

Since the excavation trenches apparently were at least partly backfilled directly after the excavations, there is no imminent threat to the site at the moment.

WS-010

The site was first identified during the survey in 2016. It is located along the northern bank of the wadi bed. Locals refer to the site in total as "al-Jisr al-Iraqien" ("Bridge of the Iraqis") or "al-Jisr al-Kheshep" ("Bridge of wood/trees"), since a modern bridge crosses the wadi bed here, so "Khirbet al-Jisr al-Iraqien" was chosen as a tentative place name (Fig. 5).

The site consists of an embankment/accumulation of stones, sand and gravel which was formed by the wadi, on top of which some modern houses exist that seem to have been abandoned recently, however. It is not clear, if a distinctive "tell structure" exists, or if the houses rest on the aforementioned natural embankment. Next to these houses, several features, such as stone foundations and stone pavements or floors, seem to be remains of older structures of yet unclear date. Further away from these features, to the south, is another feature which tentatively could be interpreted as remains of an installation of a larger oven. A large number of lithic finds is found all over the site dominated by blades (predominantly bidirectional, some epsilon blades) although blade cores haven't been found, yet (Fig. 6). The raw material consists of fine grained flint of purple, dark brown, light brown and ivory color. The tool kit is dominated by retouched flakes and blades as well as notched blades and flakes. Burins are by far the most obvious



Fig. 6 Chipped lithics from WS010 (Photo: DAI, A. Ahrens).

formal tool type, representing Rollefson's Group I and II (Rollefson 1995) and may date the site to the PPNB, compared to other known "burin sites" in Jordan (*e.g.* Betts 1982; Rollefson *et al.* 2014: 5, 1982). Two of the burins were originally used as sickles as the gloss shows. Two trapezoidal microliths, one exhibiting micro-burin technique, and backed bladelets may moreover hint at an earlier (Epipaleolithic/PPNA?) occupation.

WS-013

The site is located on the northern bank of the wadi. The site rests on a moderate slope and consists of a number of lithic finds, probably dating to the PPNB (Fig. 7).

Among the assemblage of lithics collected at the site, core trimming elements as well as blanks hint at on-site production of flint tools. The raw material is dominated by fine grained flint of grey and ivory colors. Sickles and burins were not found, whereas perforators, scrapers and denticulates are present. Retouched and notched flakes and blades dominate the tool kit. However, due to the absence of diagnostic finds, the dating of the site is difficult.



Fig. 7 Site WS-013 (Photo: DAI, A. Ahrens).

Pottery finds are not abundant and all seem to date to modern times, since the area is settled by Bedouins and features a number of concrete houses located around a large courtyard, which were apparently used by the Jordanian army until the 1990s. Archaeological (and architectural) features of older periods therefore may have been destroyed here, although the site was surveyed thoroughly and no remains of archaeological features were detected. WS-013 seems to correspond with Wright's "Site no. 13" (see Wright *et al.* 1989).

There is no immediate threat to the site.

WS-014

Site WS-014 rests on a protrusion of sand and gravel on the northern bank of the wadi (Fig. 8). The site was used as a military installation until the 1990s, several ditches made of concrete attesting to that. Also, there are several older houses, made of stones, which seem to date to the late 19th-early 20th century, and which are now abandoned. There is also a large number of lithic finds (PPNB?) in this area, as well as some pottery.

The assemblage of lithics from WS-014 predo-



Fig. 8 Site WS-014 (Photo: DAI, A. Ahrens).

Primary industry	WS004		WS009		WS010		WS013		WS014	
	N	%	N	%	N	%	N	%	N	%
Core trimming elements	0	0.0	9	5.6	2	0.9	3	3.4	4	4.4
Flakes	59	69.4	52	32.3	34	15.6	28	32.2	12	13.3
Blades	6	7.1	25	15.5	103	47.2	12	13.8	8	8.9
Burin spalls	0	0.0	1	0.6	2	0.9	0	0.0	0	0.0
Naviform cores	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0
Exhausted amorphous flake cores	3	3.5	0	0.0	0	0.0	0	0.0	0	0.0
<i>Sub total</i>	68	80.0	88	54.7	141	64.7	43	49.4	24	26.7
Tools										
Retouched blade	1	1.2	11	6.8	19	8.7	6	6.9	25	27.8
Retouched flake	8	9.4	22	13.7	13	6.0	17	19.5	16	17.8
Notched blade	0	0.0	5	3.1	7	3.2	2	2.3	6	6.7
Notched flake	3	3.5	10	6.2	9	4.1	6	6.9	3	3.3
Perforator	3	3.5	5	3.1	6	2.8	5	5.7	9	10.0
Burin	1	1.2	10	6.2	14	6.4	0	0.0	1	1.1
Sickle	0	0.0	5	3.1	2	0.9	0	0.0	2	2.2
Scraper	1	1.2	2	1.2	4	1.8	4	4.6	3	3.3
Pick	0	0.0	1	0.6	0	0.0	0	0.0	1	1.1
Denticulate	0	0.0	1	0.6	1	0.5	3	3.4	0	0.0
Pressure retouched flake	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0
Geometric microlith	0	0.0	0	0.0	2	0.9	0	0.0	0	0.0
<i>Sub total</i>	17	20.0	73	45.3	77	35.3	44	50.6	66	73.3
Total	85	100.0	161	100.0	218	100.0	87	100.0	90	100.0

Table 1 Chipped lithics from WS004, WS009, WS010, WS013, and WS014.

minantly features retouched and notched flakes and blades, followed by perforators, scrapers and sickles. One retouched blade exhibits heavy use wear at one edge. Core trimming elements as well as blanks hint at an on-site production. The raw material comprises fine to medium grained flint dominated by grey and dark brown flint. The absence of diagnostic artefacts make the dating difficult.

The pottery seems to date to modern times, but some sherds might date to earlier times, making an even earlier occupation of this site possible, although this cannot be proven.

The site is not in immediate danger, and no looting pits were visible during the survey. However, the houses mentioned are slowly collapsing.

Preliminary Conclusions

Certainly more detailed studies on the material and the newly discovered sites is needed to substantiate the first results put forward in this preliminary report. Nonetheless, it is evident that during much of the Neolithic Period these sites present a “connection” or “link” between the region of the Jordan Valley with the upper reaches of the Wadi Shu'aib and – even farther east – to the Transjordanian Highlands. It is hoped that future survey campaigns will locate additional sites in the wadi and further refine the chronological impressions expressed here.

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A Short Note on a New Figurine Type from Göbekli Tepe

Oliver Dietrich and Klaus Schmidt (†)¹

During the 2012 autumn excavation season at Göbekli Tepe, a small figurine (5,1x2,3x2,7 cm) was handed in as a surface find from the north-western hilltop of the tell (Fig. 1). The motif of the figurine is an ithyphallic person sitting with legs dragged toward his body on an unidentifiable object. He is looking up and grasping his legs. Between the legs, a large erect phallus is depicted (Fig. 2), while a quadruped animal is sitting on the person's left shoulder (Fig. 3). As one half of the figurine has a thick layer of sinter, the question whether there originally was another animal on the other shoulder remains open. The animal species cannot be determined with security either, but the general form is consistent with depictions of large wildcats or bears at Göbekli Tepe (e.g. Schmidt 1999: 9-10, nr. A8). The material of the sculpture is unusual for the site on the other hand. Nearly all sculptures and figurines so far known from Göbekli Tepe were made from local limestone. The new figurine is most likely made from nephrite². The figurine is perforated crosswise in its lower part. A functional interpretation for this detail is hard to give as one perforation would have sufficed to wear it as a pendant for example. Maybe the figurine was meant to be fixed to a support.

The unclear find circumstances and the unusual material raise the question of the figurine's provenance. The sinter layer is a characteristic for finds from Göbekli Tepe (and clearly indicates that the figurine was originally buried with the right side down), but could have formed of course also at another site with similar natural conditions. There is however an older find that could represent a fragment of the same figurine type. This fragment, comprising head and shoulder of a small

figurine (3,9 x 4.0 x 2.8cm) made from brownish limestone, was discovered in 2002, also on the surface of the tell (Fig. 4). There are two more examples of larger seated sculptures from Göbekli Tepe. A first depiction of a seated person (h. 32.5cm; Fig. 5), badly preserved, was found on the surface of the tell, too (Schmidt 1999: 9, pl. 1/1). Here, the hands are brought together under the belly, the gesture reminds of the 'Urfa Man' who most likely is presenting a phallus (Hauptmann 2003), but unfortunately the lower part of the sculpture is not preserved. A snake could be depicted crawling up the back and head of the sculpture, but this remains uncertain, too. Another example (h. 44cm) was found more recently in a deep sounding in the northwestern depression of the tell (Area K10-55, Locus 21.2; Fig. 6). The find context is still under evaluation, much speaks for a PPN B date so far. The preservation of this sculpture is also rather bad, the lower part is missing again. Both examples show some clear differences compared to the figurine: the arms are folded in front of the body, there is no animal on the shoulder, and the persons seem to sit on the ground, not on some object. As the lower part is missing we cannot be sure whether a phallus was depicted. Summing up, it seems nevertheless reasonably sure that the new figurine is from Göbekli Tepe – and represents a type, or variant, not known so far in the site's sculptural inventory.

Date and Analogies

Without knowledge of the original find context, or analogies from clear contexts, there is no possibility



Fig. 1 Seated figurine from Göbekli Tepe (© DAI, Photo N. Becker).



Fig. 2 Detail of legs and phallus of the new figurine (© DAI, Photo N. Becker).

to attribute the new figurine to one of Göbekli Tepe's architectural horizons – Layer III with the PPNA and possibly early PPN B large stone circles formed of T-shaped pillars, or Layer II with early/middle PPNB rectangular or sub-rectangular buildings. Offsite analogies also seem to be scarce.

29 similarly seated limestone figurines are known from Mezraa-Teleilat's phase IIIB, i.e. the Late PPNB / early Pottery Neolithic transition (Özdoğan 2003: 515-516, Fig. 1a-c, 2b-c, 4, 5; Özdoğan 2011: 209, fig. 14-21; Hansen 2014: 271, Fig. 9). One more find can be added to this group, a more recently published stone figurine from Çatalhöyük (Hodder 2012: fig. 14b; Hansen 2014: 271). Although the overall form is very similar, the figurines from Mezraa-Teleilat and Çatalhöyük are much more abstracted, the former are sitting on armchair-like seats, wear robe-like clothes and in some cases belts, and examples with animals on the shoulders seem to be missing. As the latest finds from Göbekli Tepe date to the middle PPN B, the figurine must be older than the finds from Mezraa Teleilat and Çatalhöyük. Whether the naturalistic sculpture(s) from Göbekli Tepe can be regarded as the prototypes for this group and thus also a similar meaning could be proposed, cannot be answered with security for now.

Further analogies are hard to find. The much later standing female clay figurines holding leopard cubs from Hacilar (e.g. Mellaart 1970, fig. 196-197), and the so-called 'Mistress of Animals', a female figurine seated on a leopard and holding a leopard cub (Mellaart 1970: fig. 228), or, in another case, seated on two leopards and holding their tails (Mellaart 1970: fig. 229) are different in gesture and topic.

Discussion

The meaning of the figurine from Göbekli Tepe remains enigmatic. The finds from Mezraa Teleilat and Çatalhöyük seem to be the best analogies for now. But in contrast to this group, the find discussed here has the animal on the shoulder (or one on each shoulder originally?) as an important characteristic. There are several examples of animal-human composite sculptures from

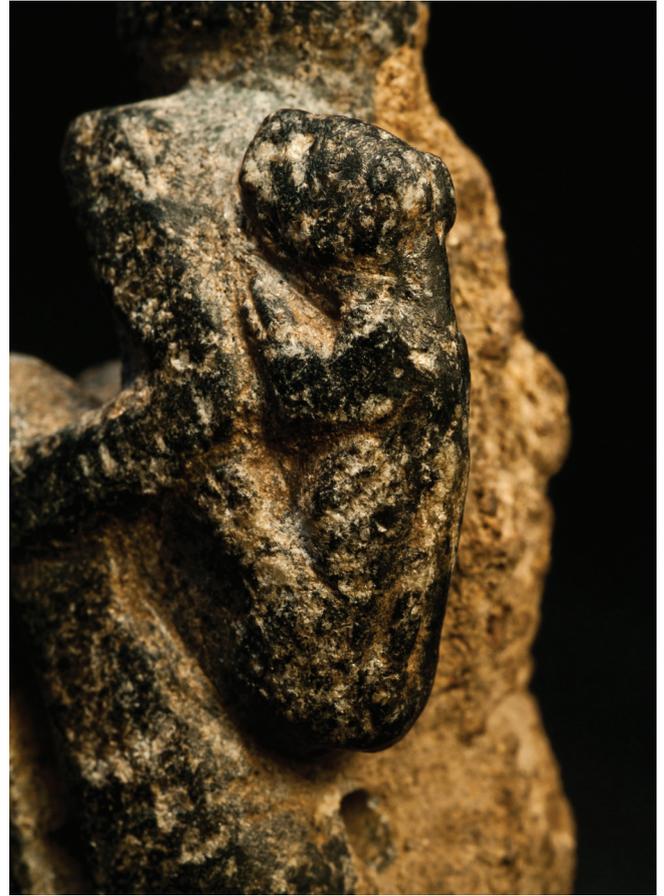


Fig. 3 Detail of the animal on the shoulder of the new figurine (© DAI, Photo N. Becker).

Göbekli Tepe. But they show animals – birds and quadrupeds – on the heads of people, grabbing them with their claws, maybe carrying the heads away (e.g. Beile-Bohn et al. 1998: 66-68, fig. 30-31; Becker et al. 2012: 35). This kind of iconography most likely relates to Neolithic death cult (Schmidt 1999: 7-8). The new sculpture, with one or two animals in the shoulder area, does not fit well into this group. The animal is clinging to the shoulder in a crouched position, there is no indication of aggression or attack (Fig. 3), or a reaction of the sitting person. The animal could thus have a completely different meaning. We could be dealing with a more metaphorical relationship between man and animal here.

At Göbekli Tepe, animal symbolism seems to have an emblematic/totemic connotation in some cases. In every one of the monumental enclosures of Layer III, one animal species is dominant by quantity of depictions (Notroff et al. 2014: 97-98, Fig. 5.9). In Enclosure C for example boars have this role, in Enclosure A snakes, Enclosure B has many undecorated pillars, but foxes are more frequent, while Enclosure D is more diverse, with birds and insects playing an important role. Given this background, one hypothesis would be that the animal characterises the person depicted in the figurine as a member of a certain group.

The other important characteristic of the depiction is the prominent erect phallus. Göbekli Tepe's iconography is generally nearly exclusively male (e.g. Dietrich and Notroff 2015: 85), and the phallus features prominently



Fig. 4 Fragment of a limestone figurine discovered in 2002 at Göbekli Tepe (© DAI, Photo I. Wagner).

in several depictions of animals and humans. For example, a headless ithyphallic body is depicted on Pillar 43 amongst birds, snakes and a large scorpion (Schmidt 2006). Although the central pillars of the large enclosures are clearly marked as human through the depiction of arms, hands, and in the case of Enclosure D also items of clothing, their sex is not indicated. An erect phallus however is a prominent feature of the foxes depicted on several of the central pillars. There are also a few phallus sculptures from the site (e.g. Schmidt 1999: 9, Pl. 2/3-4).

It is hard to say whether all these diverse depictions/contexts share a similar basic meaning, or a multitude of meanings is implied. There is a vast ethnographic and historic repertoire of phallic depictions in the context of power, dominance, aggression, marking of boundaries/ownership, and apotropaism (e.g. Sütterlin-Eibl-Eibesfeldt 2013 with bibliography). Phallic symbolism is also often integrated in rites of admission in social groups. The association of animal and phallic symbolism in the sitting (watching?) figurine could hypothetically hint at such rites of admission, it could be a mnemonic object illustrating an aspect/moment of the rituals involved. However, further finds from secure and informative contexts from Göbekli Tepe, or elsewhere, should be awaited to shed some more light on this new figurine type.

Endnotes

¹ This short text was meant to be published much earlier. It has been “forgotten” following Klaus Schmidt’s untimely death in 2014. Although the find presented here is not so new any more, it has not been discussed extensively so far and certainly merits some attention. I have to thank Marion Benz for helpful comments on an earlier version of this text.

² Optical classification by Klaus Schmidt.

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Fig. 5 Seated limestone sculpture from Göbekli Tepe (© DAI, Photo T. Goldschmidt).



Fig. 6 Seated limestone sculpture from Göbekli Tepe (© DAI, Photo N. Becker).

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CPPN8 – Thoughts on the 8th Pre-Pottery Neolithic Workshop on Lithic Industries of the Near East November 23-27th 2016, Nicosia, Cyprus

Laurence Astruc, François Briois, Vasiliki Kassianidou and Carole McCartney

Adding to the successes of the previous seven meetings, the 8th Pre-Pottery Neolithic workshop on lithic industries of the Near East was held November 23rd to 27th 2016 in Nicosia. It was our pleasure to welcome the PPN lithic ‘family’ who joined to listen to and debate recent discoveries and researches into Near Eastern lithic industries of the Neolithic. It was the first time a congress of archaeologists researching lithic traditions gathered on Cyprus for a 5 day workshop and excursion to Neolithic sites, bringing new enthusiasm for technologies made from stone and the early prehistoric periods when stone industries were used to the island.

With a desire to embrace the contributions of both established scholars and new researchers, a compromise between the nostalgia of the smaller Berlin workshop and the conference style of more recent PPN events was needed. Sessions were made up of 20 minute papers that ranged around a central theme. Discussion took place at the end of each session when questions were addressed to the panel of speakers and more general themes or clarifications on the nuances of particular chaînes opératoires provoked by the presentations were debated. When the time for collective debate was too limited, discussions carried on into coffee breaks, receptions and sessions set aside for the examination of archaeological samples. The final discussion (or AGM) opened with a panel of younger scholars who had been asked to provide suggestions about ways to facilitate new research while pointing out areas where

current research is still inadequate. In a further attempt to retain the open dialogue of a workshop meeting, all discussions were recorded during the meeting and will be reported in the workshop proceedings.

Sincere Thanks

We were fortunate to be able to hold the CPPN8 workshop with the support of the Department of Antiquities of Cyprus, the Cyprus American Archaeological Research Institute and our host, the Archaeological Research Unit of the University of Cyprus. Financial support was provided by the Archaeological Research Unit of the University of Cyprus, CNRS, INEE, INSHS, BQRP Paris I and BQR Paris X.

The Director of Antiquities Dr. Marina Solomoiou-Ieronymidou opened the CPPN8 workshop by providing an overview of recent Neolithic discoveries and welcoming workshop participants Cyprus, and Curator of the Cyprus Museum Dr. Despo Pilides welcomed the workshop on the second day of the meeting to view a new exhibition featuring recent late PPNA discoveries on Cyprus and PPNB developments informing on seafaring, settlement and symbolism of early PPN groups on the island. The support provided by many of the archaeologists and staff of the Department of Antiquities, in particular, the Director Dr Marina Solomoiou-Ieronymidou, Curator Despo Pilides and archaeological officer Evthymia Alfas, who expedited



Fig. 1 Group photo with most of the workshop contributors. (photo: XXX)

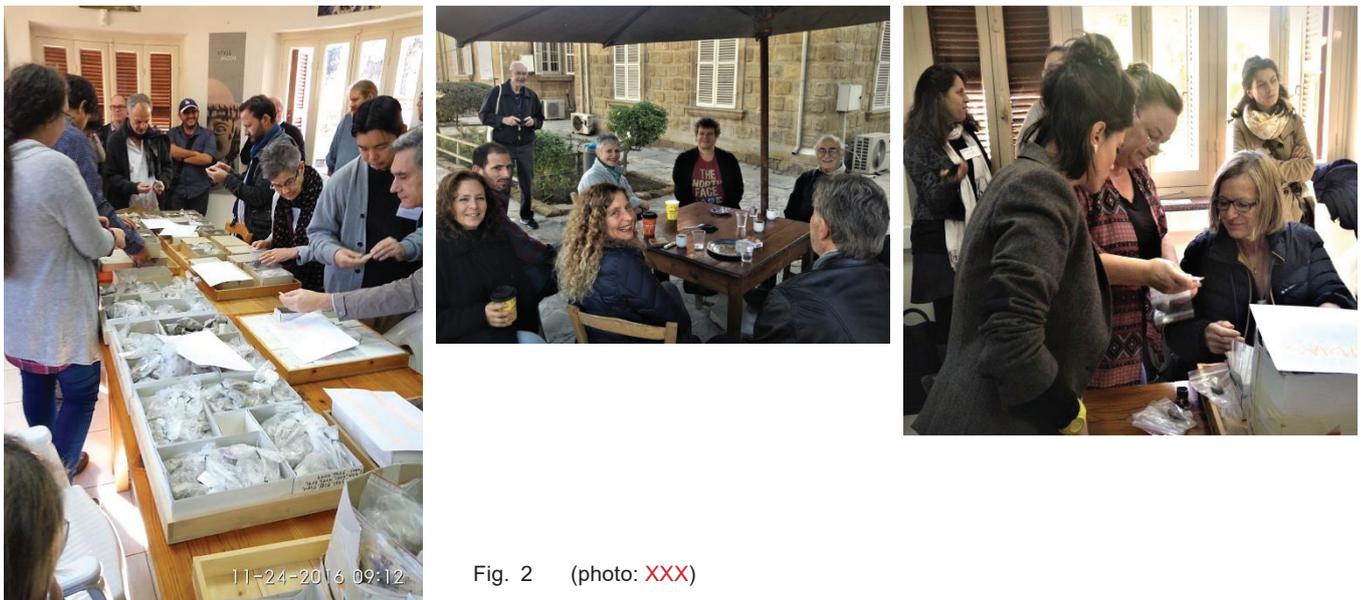


Fig. 2 (photo: XXX)

the wonderful new exhibition, enabled the organizing committee to bring together the largest collection of lithic samples from district museums around the island for a handling session on the same day, and facilitated access to archaeological sites visited during the excursion that closed the workshop.

The opportunity to handle archaeological material was enhanced by a visit to the Cyprus American Archaeological Research Institute (CAARI), where the Director, Andrew McCarthy, welcomed CPPN8 participants to a reception on the evening of the first day of the workshop. There we had the opportunity to handle chipped and ground stone objects in the CAARI collection, and to examine a collection of the diverse flint raw materials collected by one of the organizers (C.McCartney).

Workshop sessions and discussions were held at the new campus of the University of Cyprus. The venue, technical staff and logistical help were graciously organized by Prof. Vasiliki Kassianidou, Director of the Archaeological Research Unit (ARU) of the university. Prof. Kassianidou welcomed workshop participants on behalf of the University of Cyprus at the opening session, and to a reception

at the ARU on the third day of the workshop where we were treated to a flint-knapping demonstration by François Briois and Frederic Abbes, with contributions by Juan Antonio Sanchez Priego, Imad Alhussain and narration by Bastien Varoutsikos. Holding the workshop at the University of Cyprus provided students of archaeology with a unique opportunity to meet top researchers of early prehistoric periods and to appreciate the significance of recent discoveries on Cyprus to the wider Neolithic of the Eastern Mediterranean.



Fig. 3 Flint-knapping demonstration by François Briois and Frederic Abbes. (photo: XXX)

CPPN8 Goals

For the second time, following the Niğde PPN4 workshop, the 2016 PPN8 meeting took place in one of the areas where PPN developments took place. As an island, the movement of Neolithic communities and ideas to Cyprus required discussions of seafaring, settlement and the stocking of animals by early hunters and farming communities. Similarities and unique differences of the Cypriot Neolithic form the basis of two ‘Cyprus focus’ sessions and key note lectures on the second day of the workshop. The focus on expansion of PPN interactions across the Eastern Mediterranean was also extended to neighbouring Caucasus region and the Aegean widening our view of the PPN beyond the ‘Core Area’ of the Levant. This central concept crystallized in the PPN8 workshop title: *Near Eastern Lithics on the Move: interactions and contexts in Neolithic traditions*.

PPN veteran, Frank Hole, commenced the workshop sessions by recalling, ‘*The PPN conferences since 1993*,’ reminding participants of previous successful workshops and the aims that provided the foundations of the PPN meetings. Recalling Hans George Gebel’s 2011 article ‘*The PPN 1-6 Workshops: agendas, trends and the future*,’ Hole noted that the workshop format was intended to facilitate discussion of the topics presented in order to build consensus on specialized vocabulary and keep researchers up to date on developments in all regions of the Near East. The CPPN8 workshop has added 57 oral contributions and 14 poster presentations, 2 opportunities to handle lithic materials, an exhibition of recent PPN discoveries, a 2 hour knapping replication demonstration and an excursion to 3 major Cypriot Neolithic sites. Of the original 84 participants who registered, 65 provided oral papers and/or poster contributions. Those who were unable to attend were missed and have been invited to contribute to the final publication.

Nine session topics were organized around 4 broader themes: specialisation and lithic technologies in socio-economic contexts, micro-regional specificities, interaction and diffusion and continuities and discontinuities in technical practice and Neolithic traditions. Sessions dealing with specialization, diffusion and

interaction included: *Cyprus Focus, Interactions and diffusion, Technology and Specialization*. Discussions of these topics highlighted the need to distinguish between local and non-local networks for considerations of interaction intensity, value and commoditisation and the ways we define specialisation in varying contexts. Papers presented on lithics in Neolithic social and economic contexts encompassed sessions including: *Lithics in Social and Economic contexts, Agricultural practices and use-wear, Special items*, sessions that demonstrated the need to place lithic industries in the contexts where people lived and worked and show how lithic tools were part of wider technologies of the Neolithic Near East, refining our perception of the dispersal of PPN ideas and populations. Finally, it is a result of the intensity of research in the PPN of the Near East, which permitted rich presentations of continuities across time and in specific regions addressed in sessions covering *Continuities and Discontinuities, Towards the end of PPNB and Beyond PPN*. All presentations illustrated our expanding knowledge and data base, and the clear necessity of the PPN workshops as a venue where terms and understanding are continually refined.

Results and Publication

One of the more interesting results of the PPN8 meeting was the degree to which the archaeological record has expanded along a number of important lines. The earlier paucity of PPNA and EPPNB occurrences has been altered across the Near East, provoking the return to fundamental questions such as, ‘how do we define the EPPNB,’ that need to be continually refined in light of new discoveries. The effect of this enlargement of the archaeological record was underscored by research on chaînes opératoires and localized developments in both unidirectional and bidirectional core reductions and the tool products they produced. Similarly, the need to re-consider terms like ‘workshop’ or ‘specialization’ as characteristics associated with lithic industries should take place in light of evolving social and economic theory (for example, ‘commodification’ cf. Gebel



Fig. 4 (photo: XXX)



2008). Another important way in which new research has begun to affect our interpretations of lithic industries is in the growing number and variability of site types beyond that of the Neolithic village. This vital development along with the increasing numbers of well excavated site generally is critical if social and economic researches are to progress in a more holistic way and develop broad narratives into regional histories. Ultimately, however, it is the quality of the data gathered that counts, which difficulties limiting the application of new technologies to the analysis of lithic industries has highlighted. These new lines of enquiry underscore the need for continued reflexivity in our debates.

Perhaps the most significant result of the PPN8 meeting was the air of camaraderie that existed during the workshop. The sincere but dark editorial provided by Gebel and Rollefson in the 11/2 issue of *Neo-Lithics* earlier lamented:

..Increasing regional bloodshed and supra-regional tension in the Middle East paralyze our hearts and minds. While mourning and being at a loss for words, some of us try to manage by doing business as usual, while others question the role and meaning of prehistoric research in the face of these monstrous and outrageous developments; some reflect or modify their emotional engagement and formalities; some prefer to remember the good old times ... This all stays introverted, and it is difficult to share our mourning, fears and weakness. We who love the lands and people of the Middle East, or are part of them, have lost our voices. (Hans Georg K. Gebel and Gary O. Rollefson 2011, editorial, *Neo-lithics* 11/2: 2.

Thus, the opportunity to hear about on-going fieldwork and new discoveries in parts of the Middle East, in spite of the devastation occurring elsewhere, was a welcome reminder that those of us who cherish the people, places and history of the countries of the Middle East persevere beyond current struggles. United by a passion for prehistory, participants reached across ideological boundaries to share data, debate concepts and join in reveries that allowed all to preserve the best of what makes the Near East so special to us.



Fig. 5 (photo: XXX)

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Christoph Purschwitz

2016 *The Lithic Economy of Flint during the Early Neolithic of the Greater Petra Region. Geological Availability, Procurement, Production, and Modes of Distribution of Flint from the Early to Late PPNB-Period.* Ph.D.-Thesis, Freie Universität Berlin. (German with English, captures, tables, and summary).

The lithic economy of the Greater Petra Region was the primary focus of investigation of this Ph.D. dissertation recently completed at the Institute of Near Eastern Archaeology at Free University of Berlin (supervision: Prof. Dr. Reinhard Bernbeck, Prof. Dr. Susan Pollock).

Five early Neolithic sites (Ail 4, Ba'ja, Basta, Beidha, Shkârat Msaied) of the early Pre-Pottery Neolithic B (EPPNB, ca. 8.600-8.300/8.200 BCE), the middle PPNB (MPPNB, ca. 8.300/8.200-7.500 BCE), and the late PPNB (LPPNB, ca. 7.500-6.900 BCE) were selected. Several find collections from these sites with a total sample size of more than 15,990 flint artefacts were recorded. The artefact analysis included raw material classification and comprehensive metrical and technological recordings for each artefact.

For decades studies on flint raw material have been a neglected research field among chipped lithic analysts working on the prehistory of SW Asia. To highlight the potential of systematic raw material analysis within and between prehistoric settlements was therefore the primary concern of this research.

The high abundance of lithic raw material within the archaeological record of prehistoric sites makes it an ideal source of information to study and test sociocultural changes and developments within the long lasting Neolithization processes of the Fertile Crescent. This study incorporated the analysis of raw material presence as well as an investigation of raw material availability in the region.

Concerning the latter, the geological availability of flint raw materials in the Greater Petra Region was studied during a five week raw material survey (Purschwitz 2013). This survey revealed that primary sources of flint raw materials are restricted to a few geological formations, however with noticeable differences in quality, quantity and regional distribution of specific flint raw material groups (FRMG). The archaeologically established FRMG show a high degree of correlation with certain geological formations of the Greater Petra Region which makes flint a promising material to study its acquisition and distribution modes within early Neolithic lithic economies (Purschwitz in prep. a).

An idealized site catchment was reconstructed for each of the investigated sites. For this purpose geological maps focussing on flint resources were created. The site catchments were analysed by means of a least-cost-model, which illustrates the minimal time needed to reach a specific spot (such as a raw material resource or contemporary site) within a site's surrounding. Although least-cost-models assume to a high degree

economic rationalized human behaviour to minimize efforts (for transport, time, distance) – which are often not the prime motivators for human thinking and behaviour – the application of a site catchment analysis which was based on a least-cost-model is seen as an important tool to link and contrast the sites' geological and environmental conditions with the factual raw material provision as attested from excavations.

The chipped lithic samples were analysed according to site and context. A technological analysis identified major and minor production activities (represented by the samples). *Chaîne opératoire* analysis provided evidence of manufacturing stages present within the material and the raw material analysis allowed conclusions about the procurement modes of specific FRMG, i.e. at which stages in the *chaîne opératoire* raw material entered a site. The analysis of preserved cortex remnants provided additional information, particularly if the resource areas were unknown.

The analysed flint samples revealed differences in flint use with chronological, micro-geographical and socioeconomical implications. Chronological differences can be identified between sites of the E/MPPNB and LPPNB sites. Generally the importance of local resources increases in the LPPNB round year used mega-sites, while in the seasonally occupied villages of the E/MPPNB more distant flint sources were commonly present. Reasons are could be differences in mobility, respective grades of sedentariness, settlement size and population density, organization of craft production and social organisation.

Regional differences of flint use are attested between sites with different raw material availability within their catchments. This concerns primarily the sites on the Petra Sandstone Shelf, where the number of high quality flint sources is restricted compared to the sites of the Jordanian Limestone Plateau with their abundance of various high quality flint sources.

Socioeconomic differences in flint use are also in evidence (Purschwitz in prep. b). Domestic flint use, which is intended to meet a household's self-supply, is characterized by a highly opportunistic raw material procurement, and largely relies on Wadi flints from the immediate site vicinity. Bidirectional blades instead are often produced by specialized workshops, which produce beyond their own demand and show considerable investment and additional effort in raw material procurement (e.g. thermal treatment, exclusive use of high-quality flints extracted from primary resources, mining?).

The identification of specific procurement modes and their contribution to the site economy turned out to be a difficult undertaking, particularly when the actual raw material sources were unknown or a raw material entered the site in various productions stages (such as nodule, precore / preform, bank or tool). In these cases it is difficult to decide whether embedded or logistical procurements or direct or indirect procurement strategies prevailed. In any case, the *chaîne opératoire* analysis according to FRMGs proved to be a useful

approach for the identification of procurement modes.

Three core reduction technologies contribute to the blank supply of Neolithic households: 1) bidirectional blade technology as the hallmark of the PPNB period, and of minor economic importance 2) blade production via non-bidirectional blade cores and 3) flake core reduction strategies. The individual importance and contribution of each technology to the general lithic economy varies according to the degree of social complexity present at the respective sites under consideration.

Non-bidirectional blade technology and flake core reduction are common strategies of self-relying households or workshops. In contrast, bidirectional blade technology appears often to be used by households and workshops that produce high-quality blade blanks beyond their own consumption.

The discrepancy or “technological dualism” between inner-site production- and consumption behaviour at the household level rises with increasing specialization in crafts, and comprises all levels of production – from raw material procurement to exchange. In the Greater Petra Region this technological dualism is not attested prior to the mega-sites of the LPPNB, although it might be present at northern sites such as ‘Ain Ghazal already during the MPPNB period (Quintero 2010). Its main characteristic is the increasing gap between few (in the LPPNB still part-time operating) craft specialists (e.g. for bidirectional blade production) and a rising number of consuming households (Purschwitz in prep. b).

The changes in craft production correspond well with changes in the range of manufactured products. MPPNB blade production is generally characterized by a universal functionality of the produced blade blanks, which without great effort can be modified into almost every needed tool. LPPNB blade production instead is characterized by various very standardized size classes, such as bladelets, (ordinary) blades, and mega-blades. This blank diversity offers the development of a more specialized tool kit, but restricts the functionality of the blank. Once acquired blanks can only be used for a limited range of tools, or have to be modified with great effort I assume, that the increasing diversity in blank- and tool- kits in the LPPNB reflects an increasing demand on new products, tools and weapons – due to an increase in social complexity within the mega-sites. The emergence of prestige items (such as bifacial daggers) and burial customs (trash burials) may hint to increasing social inequality during the LPPNB.

Numerous artefacts of non-local raw materials have been reported from the Greater Petra Regions, and illustrate far-reaching exchange networks. These regional networks have a general N-S orientation and extend all over the Levant.

The MPPNB networks of the Southern Levant are mainly based on small, often seasonally inhabited, settlements. According to general network theory (Turner and Maryanski 1991, cf. Gamble 1998; Watkins 2008 as archaeological applications), the personal networks of each household are likely to be distributed over several more or less distant settlements, and thereby

meet the demand for many non-local raw materials and products via social exchange from non-resident family members, friends or relatives.

However, the network structure of households of LPPNB mega-sites appears to be different. It is generally assumed that the southern Levantine mega-sites provide space for several hundreds to thousands inhabitants, most of them living there all year round. I suspect that the personal network members (family, relatives, and friends) predominantly inhabited the same village, which is also supported by evidence on social endogamy at Basta (Alt et al. 2013). If so, the household demand of non-local raw materials could hardly have been satisfied via personal networks. Exchanges of non-local products between mega-sites instead may have been taken place on an more anonymous level and between persons who did not have strong personal relations. I suspect that the lack of social control within the LPPNB exchange networks promoted profit-oriented (or negative reciprocal) exchange actions, surplus-production and led to an increase in social inequality as is evidenced by differences in the status of burials or the emergence of prestige items (such as bifacial daggers) in the LPPNB.

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- 2016 *New Stories from Old Buildings: Revisioning architecture and social organisation in central Anatolia and the Lake District between 6500 and 5500 BC*. A PhD thesis at the Department of Archaeology, Flinders University of South Australia

This thesis offers a comprehensive re-evaluation of the epistemology by which archaeology of prehistoric Cappadocia, the Konya plain and the Lake District (southcentral Anatolia) translates architecture into social organisation. Originally, the aim of the thesis was to investigate the formation of socioeconomic inequalities in southcentral Anatolia. However, during research, the lack of an appropriately evaluated toolkit for reconstructing social organisation from architecture within the heterogeneous research landscape of the region became obvious. Accordingly, the thesis concentrated on the development of such a toolkit, specifically for the cultural context of southcentral Anatolia in the Late Neolithic and Early Chalcolithic (LN-EC, 6500-5500 BC). This period has recently come into research focus as featuring social transformations that together could have started the development towards social stratification: increasing household autonomy, social competition, mobility (Arbuckle 2012; Düring 2011; Hodder 2014) and the appearance of warfare (Clare et al. 2008). These developments mark the LN/EC as an episode of decisive processes between ca. 6500 and 3000 BC in southcentral Anatolia that fundamentally changed the ways people organised themselves into groups – households, neighbourhoods, village communities – from the egalitarian village communities of the Early Neolithic to the socially stratified, ‘complex’ societies of the Early Bronze Age.

The thesis has two components. In the first, and much larger, component this thesis systematically maps the existing scholarly discourse on LN/EC social organisation and its relation to settlement architecture. This is based on a content analysis of 222 archaeological publications that discuss architecture and society in Neolithic/Chalcolithic south-central Anatolia – at the sites of Canhasan, Çatalhöyük East, Çatalhöyük West, Pınarbaşı B, Erbaba, Hacilar, Kuruçay Höyük, Höyücek, Bademağacı, Tepecik, Gelveri, Musular and

Köşk Höyük. Content analysis is a method more commonly used in social sciences, by which a researcher systematically identifies patterns in a body of text, or also video/audio communications. The 222 publications chosen for analysis were systematically read for mentions of a relationship between architecture and social organisation, such as “we should ask again why people had a preference for living in clustered neighbourhoods. If households were the major social entity one would expect them to have occupied free-standing buildings, a development that occurs later in central Anatolian prehistory” (Düring and Marciniak 2005:178). In the software program NVivo, each text passage was tagged with a label reflecting its content (in the above example: ‘#33 household autonomy – nonclustered settlement layout’). These labels were called ‘architectural indicators’: architectural features that are associated by archaeologists with one or more of the aspects of social organisation studied in the thesis: household autonomy vs. community integration, social competition/stratification, mobility and warfare. ‘Architecture’ was defined holistically as also incorporating unroofed spaces between buildings and house-related processes such as construction and abandonment. Indicators received a number and were collected in a table that also listed the authors/sources mentioning them, and the sites mentioned in relation with indicators. Similar indicators were then sorted into ‘themes’, for example all indicators relating to settlement layout, or to the choice of building materials. The thesis identified a total of 182 indicators and 28 themes in the archaeological discourse on LN/EC architecture and society – a much larger number than expected.

In a second step, the thesis critically evaluates the validity of each indicator by reading all tagged text passages in detail to understand the arguments for the connection between a particular architectural feature and its social interpretation; and by drawing on additional architectural and non-architectural evidence that sheds light on the social role of each architectural feature in Neolithic/Chalcolithic southcentral Anatolia. The indicator evaluation takes up the bulk of the pages in the thesis, and results in a final list of 136 indicators that are deemed a reliable toolkit for the study of social organisation from architecture.

The epistemological discussion led to two further important results: First, the in-depth evaluation of indicators and themes also provided a thorough critical summary of current knowledge about the social use of architecture during the LN/EC of southcentral Anatolia, describing how people deliberately shaped built environments in order to produce the social interactions they sought to create, for example to create community or assert household status. And second, the dissection of the scholarly discourse allows for a critical evaluation of research biases that have shaped previous research on architecture and society in Neolithic/Chalcolithic southcentral Anatolia. For example, the indicator lists reveal patterning in the way that architectural features are interpreted: different schools of archaeological thin-

king have interpreted the social meaning of architecture differently, and this has influenced the overall impression of the social organisation of entire sites, regions or chronological periods in the study area in ways that might not represent the prehistoric social reality. These observations reveal that the thesis operates within a framework of thought derived from reflexive and contextual archaeology: It is based on the assumption that first, it is useful to research the archaeological research process in order to improve it; and second, that the use of architecture is always culturally situated and that archaeological epistemology needs to be derived from a thorough understanding of the relationship(s) between people and architecture characteristic of the specific cultural context in question, in this case Neolithic/Chalcolithic southcentral Anatolia.

The second, much smaller, component of the thesis is a trial-run application of the developed toolkit which – using the list of 136 indicators as a guideline – analysed the social organisation of some selected sites in the study area based on published descriptions of architecture. This analysis indicates that the architectural record of the Late Neolithic and Early Chalcolithic does not clearly display developments towards social features that characterise the later Chalcolithic and Early Bronze Age: it suggests an ongoing strong community integration balanced with household autonomy; only few cases of social competition, stratification or mobility; and no clear evidence for warfare. This result might be due to local differences in architectural expression not adequately acknowledged in the toolkit, or a failure of excavations to gather necessary data in the field; but it also suggests local and regional differences in social trajectories between 6500 and 5500 BC. The trial-run reveals further research biases that have influenced architecture research in the region, and it demonstrates some strategies for overcoming these in the future.

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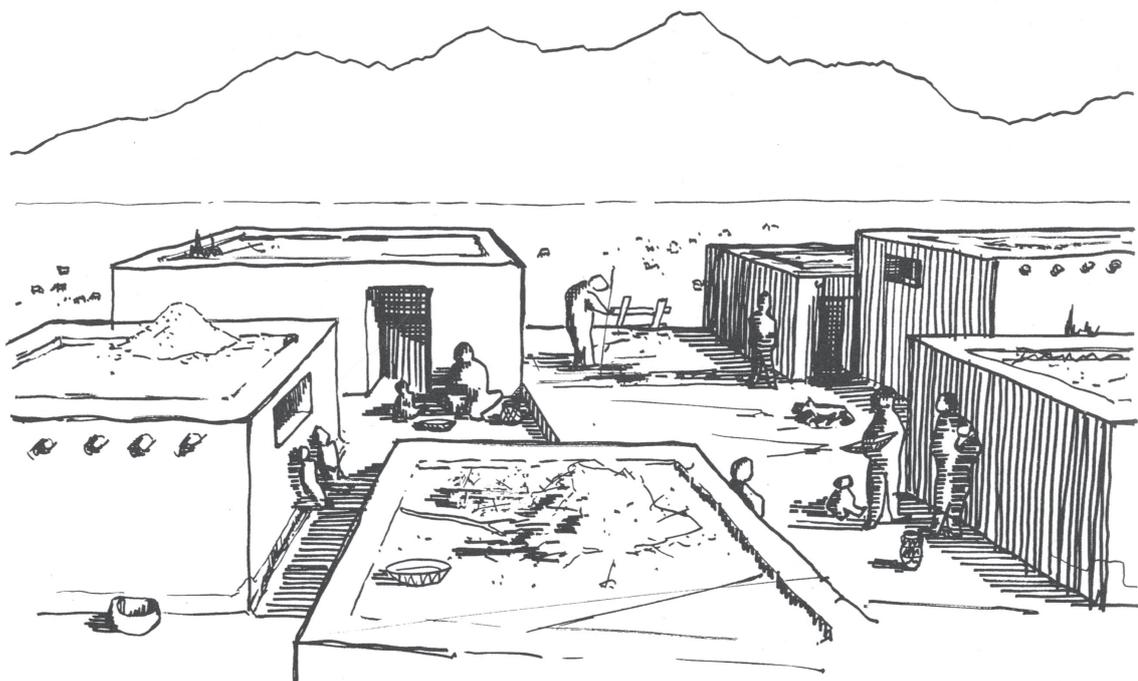


Fig. 1 Reconstruction of the roofscape of Canhasan Level 2b, adapted from French (1998: Fig. 59)

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