

Life and Death at Shakārat al-Masā‘īd: Results of the 2014 and 2015 Seasons

Introduction

The small Early-/Middle-Pre-Pottery Neolithic B site of Shakārat al-Masā‘īd (*ca.* 0.1ha) is situated approximately 16km north of Petra/Wadi Musa in southern Jordan and is in close proximity to other well-known Early Neolithic sites such as Ba’ja and Beidha. Excavations at the site began in 1999; from 1999 to 2001 as a field school project of the Carsten Niebuhr Institute (Kalizan *et al.* 2001) and later on as a research excavation project (2002 to 2005, and from 2010) by the Department of Cross-Cultural and Regional Studies, University of Copenhagen in close co-operation with the Jordanian Department of Antiquities and the Carlsberg Foundation (Jensen *et al.* 2005; Hermansen *et al.* 2006; Kinzel *et al.* 2011, 2015, 2017).

Twelve seasons of excavation exposed approximately 600m² of early Neolithic architecture from six phases of occupation (Kinzel 2013). Phase 0 describes the occupation predating the stone buildings at the site, lacking so far secure dates. According to ¹⁴C-dates Phases I to III span the first half of the Middle Pre-Pottery Neolithic B (hereafter MPPNB, *ca.* 8250 to 7950 calBAD, Jensen *et al.* 2005, 116; Herman-

sen *et al.* 2006; *cf.* <http://shkaratmsaied.tors.ku.dk/>). Phase IV is dated to the Late Neolithic and Phase V represents the Nabatean / Roman Period (Kinzel 2013).

In the MPPNB Shakārat al-Masā‘īd is characterized by circular buildings of various sizes (between 5m² and 27m²). More than 25 circular buildings have been identified and provide evidence of complex and long lasting use histories (Jensen *et al.* 2005; Kinzel 2013).

The main objective of the 2014 and 2015 excavation seasons was to consolidate the exposed architecture which had been affected by heavy winter rains in 2013. Additionally, illicit diggings and vandalism has been noted in 2013 and damaged the architectural remains of two buildings (Unit B and Unit R). The severe damage necessitated salvage excavation to document the state of destruction and to carry out immediate actions to consolidate and stabilize the affected architecture. A looting pit in Unit R was used to investigate the earlier use history of the building as well as the underlying phases of the earliest occupation and the beginnings of the settlement (Architectural Phase 0, *cf.* Kinzel 2013). Work also focussed on the continua-

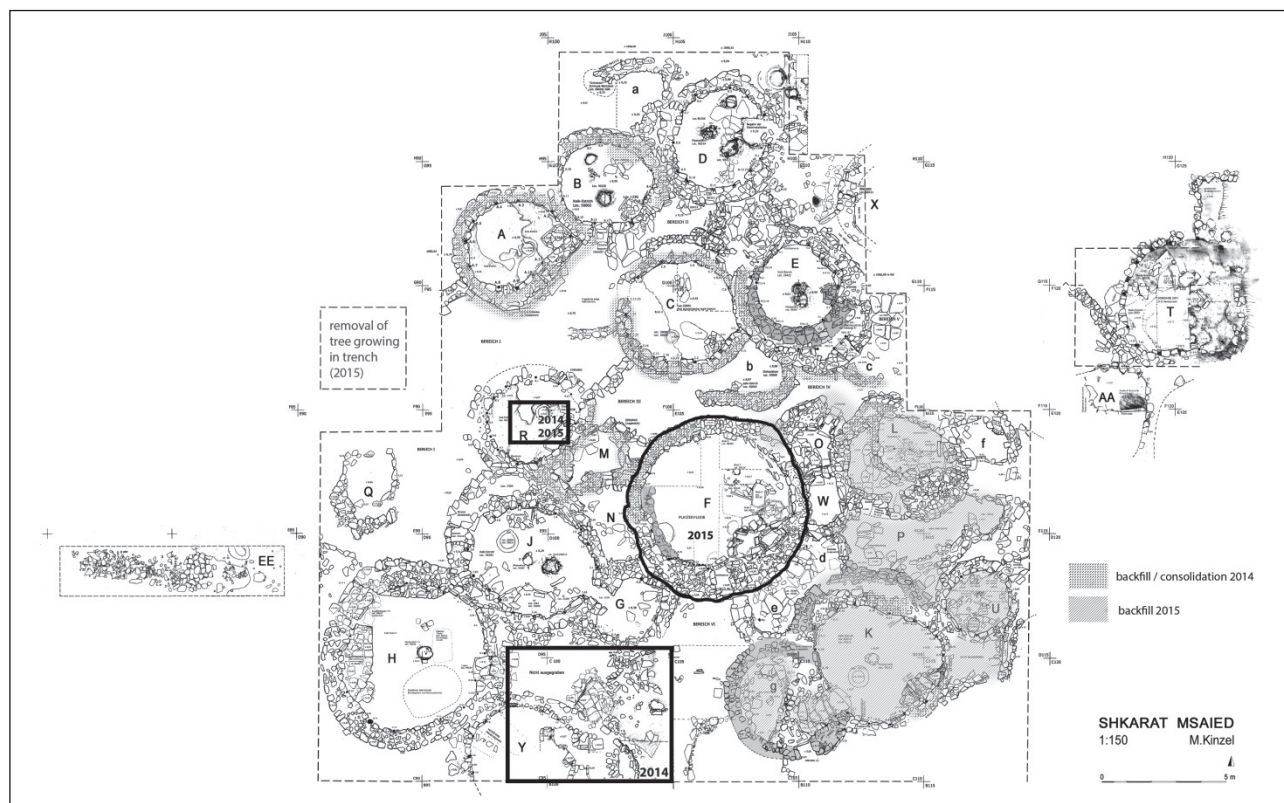
tion in excavating Unit F which was used as a communal burial ground (*cf.* Hermansen *et al.* 2006; Kinzel *et al.* 2010). Other investigations concerned the excavation of the southern area to clarify the functional and spatial relations of the area south of Unit F (Kinzel *et al.* 2015). In 2015 we returned to Unit F for further investigations (FIG.5 and FIG. 6). We continued excavating the interior of the unit removing later floors, walls and fill-material to expose fully an earlier plaster floor (*Loc.* 120.120) to identify remaining, additional burials. This was also meant to clarify the stratigraphic context in the building.

Unit R and the “Deeper Stratigraphy”

Unit R is a domestic building in the western part of the excavated area. Our excavations in 2014 revealed that the child burial which was found in 2010 here was interred when the building already was abandoned and in disrepair. Unit R is an example for a ruined building within the settlement structure. Located north of Unit J and west of Unit M was the southern

limits of the open space “area I“. The walls of Unit R were all badly preserved and it seems that the exterior wall of the building was removed intentionally. Only some stones of the wall base were left demarcating the limits of the interior plaster floor.

In 2013 an illicit pit was dug in the south-eastern part of Unit R cutting the stone cist and partly undercutting the buildings outer wall. The looting pit was dug *ca.* 1.5 m into the occupational layers of Unit R and into the layers below the building. The back-dirt of the pit showed an extraordinary density and richness of artefacts. Among others abundant land snails, few marine mollusc shells (Abu-Laban, pers. comm.), flint artefacts and tools (*e.g.* some Jericho-points), worked and unworked bones as well as relicts of a sandstone bead workshop were found. The majority of animal bones are from goats (both *Capra aegagrus* and *Capra ibex*), but also bones of fox (*Vulpes* sp.) and bird bones are well represented. Among the bird bones the third phalanges (talons) of raptors are particularly numerous and may indicate that these



1. Site plan Shakārat al-Masā'id 2015; grey-shaded areas of backfill and consolidation work in 2014 and 2015.

parts of birds may have had some ritual significance at Shakārat al-Masā'īd.

The section of the cleaned looting pit showed in its upper part a sequence at least five, probably six, plaster floors, which alternate with occupational deposits (FIGS. 2-3) and illustrate the complex and long lasting use history of Unit R. The lower sequence, which appears to predate Unit R, is characterized by a sequence of deposits that are generally ashier, often with spots of charcoal and burnt lumps of clay, and are marked by a high density of finds. A series of light brownish-reddish hard packed surfaces could be traced between the various layers of heterogenic roof (?) collapse material. In the lower sequence of the stratigraphy a dense concentration of land snails and (a few) marine mollusc shells was found embedded in a greyish-white ashy layer.

Southern Areas

The excavation continued in the area south of Unit F between the Units G, H, J, K, g, and Y, which had formerly been referred to as Area VI as it was assumed to be a courtyard area (Kinzel *et al.* 2011). After the initial investigation of Area VI in 2010 (Kinzel *et al.* 2011) the area showed several compartments with plaster floors and pavements, but no clear structure. Additionally, a pit (*Loc.* 90.307) filled with production waste from the reduction of 9 to 11 bidirectional blade cores was found south of a low partition wall (*Loc.* 90.311) in the eastern part of the area (Purschwitz in press, in prep. a, 2016). However, our understanding of use, function, architectural configuration and internal stratigraphic relation as well as the fine-scaled stratigraphic connection to adjacent buildings is still limited. The 2014 season revealed a small circular feature (*Loc.* 100.203; approx. 45 cm. in diameter) which appears to be a posthole in the middle between Unit Y and G (FIG. 4). The posthole was placed into a course plaster surface (*Loc.* 100.208/212) and might therefore indicate the presence of a roof. The shape and

dimensions of the posthole shows that the post was composed of multiple “trunks”. Evidence of multi-trunked posts was excavated at *e.g.* Unit K (Hermansen *et al.* 2016; Kinzel 2013) and may indicate a quite compact/solid/substantial roof construction. Some upright placed stone slabs might be relicts of an earlier circular structure. Findings in this area show a series of modifications and adjustments due to changed functions and needs over a long period of time.

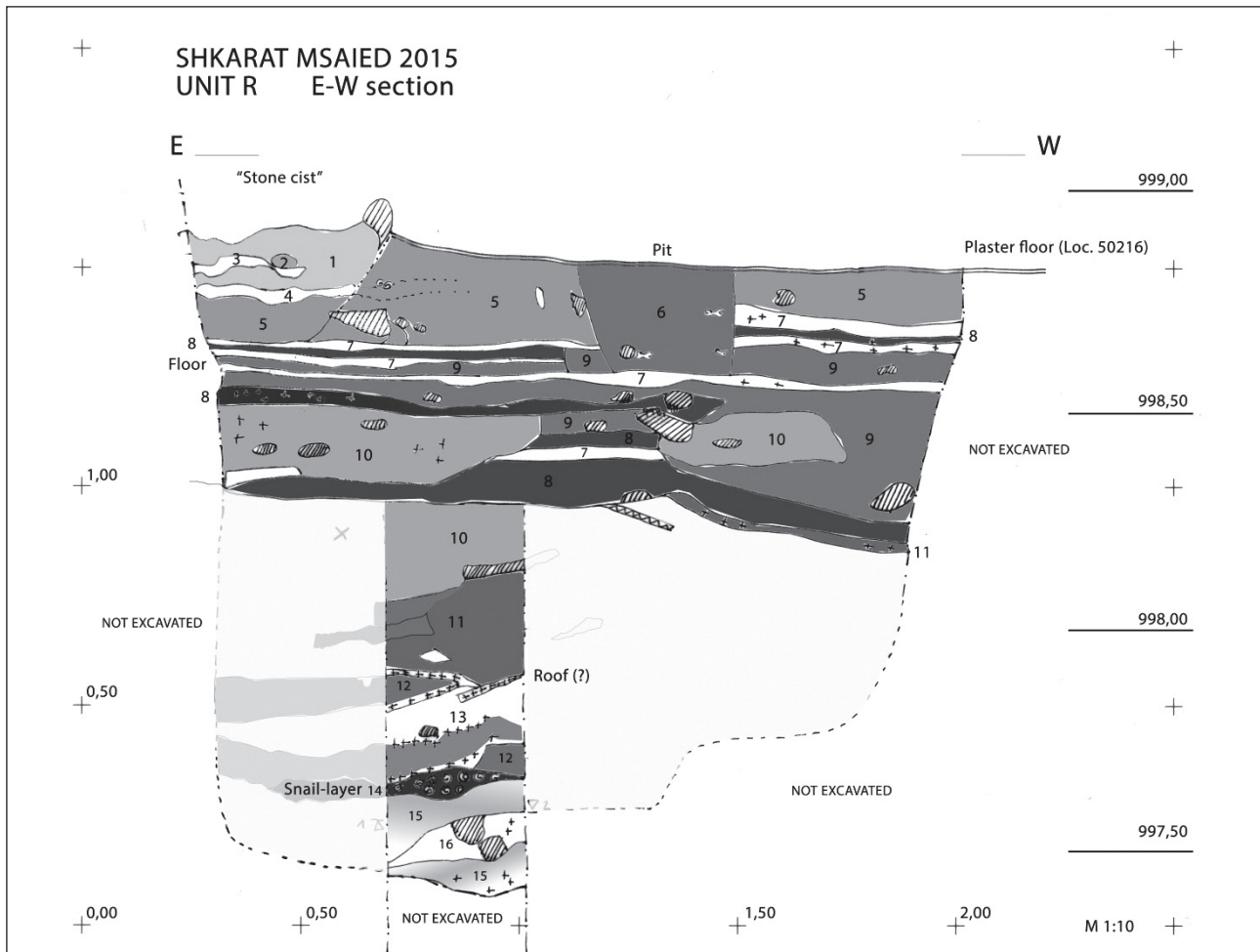
Unit F

Unit F has a long use history and a quite complex stratigraphy. There are at least four main building phases attested. Several modifications and repairs were carried out during these main phases making it difficult to define sub-phases. Very simplified we can describe the stratigraphy of Unit F as follows (FIG. 5, *cf.* Kinzel 2013):

- 1) Unit F is built as a single room round house structure with an entrance (*Loc.* 120.134) oriented to the SE. A lime plaster floor (*Loc.* 120.120) covers the interior of the building with a plaster “basin” (*Loc.* 110.130) located in line with the entrance. Into this floor some of the larger burial cists are placed into.
- 2) On the plaster floor (*Loc.* 120.120) we find the remains of a collapsed roof (*Loc.* 110.137/138) covering some articulated placed animal remains as well as ground stones. The layer is very densely packed.
- 3) The roof collapse material is covered by



2. Excavation trench in Unit R (2015) with the deep sounding following the outline of the illegal digging.



3. Unit R, east-west-section of deep sounding with occupation deposits (prepared by M. Kinzel after Harpelund and Nielsen 2014/2015). Stratum 1. Brown loose fill with yellowish-red inclusions of mortar; Stratum 2. Dark grey with reddish inclusions and lighter grey inclusions; Stratum 3. Plaster floor remain (?), light yellowish brown with small pieces of charcoal; Stratum 4. Very pale brown to pink plaster floor with inclusions of small charcoal pieces and white areas, two snails *in situ* (?) on floor; Stratum 5. Greyish brown (10YR 5/2) with inclusions tending to 10YR 4/2, dark greyish brown a lot of pieces of charcoal especially at the top of the layer, loose fill mixed with spots of brown reddish mortar; Stratum 6. brown loose fill with some bones and smaller stones, pit feature; Stratum 7. Hard packed (plaster) surface light greyish brown; Stratum 8. dark brown loose fill; Stratum 9. Mixed fill- dark brown with spots of brownish-reddish mortar (disturbed); Stratum 10. Compact fill light greyish-brown (in west: remains of a plaster feature?), in lower parts with small charcoal pieces and more ashy; Stratum 11. Brown-reddish loose fill with lumps of reddish-brown mortar and charcoal; Stratum 12. Grey ashy fill; Stratum 13. hard packed (mortar?) fill, brown-reddish; Stratum 14. Densely packed layer of snails with dark brown soil; Stratum 15. greyish-white ashy layer; Stratum 16. mixed matrix with greyish-brown to darker grey soil, charcoal in various sizes included; diagonal hatching= stones.

hard packed "Fill" material which also runs over the cut exterior wall (Loc. 110.111) of Unit F in the western part of the building.

- 4) Plaster floor (Loc. 90105/110.119) is placed on the hard compacted fill material and covers the entire house interior (Covering also the earlier plaster feature). In the floor most of the child burials (see below) are interred. The relationship to the larger burial cists is unclear as the burials are mainly covered

by a multi-layered and disturbed pavement (Loc. 90109/110) which is partly embedded or over-laid by this floor. On this floor the wall (Loc. 110.107/70209) was erected closing off the earlier entrance (Loc. 120.134).

- 5) Several layers of various plaster surfaces and repairs (Loc. 60114; 60110) underlying the plaster floor (Loc. 60100/-104/-105/80203).
6) Course plaster floor (Loc. 60100/-104/-105/80203) of a late phase of Unit F. The



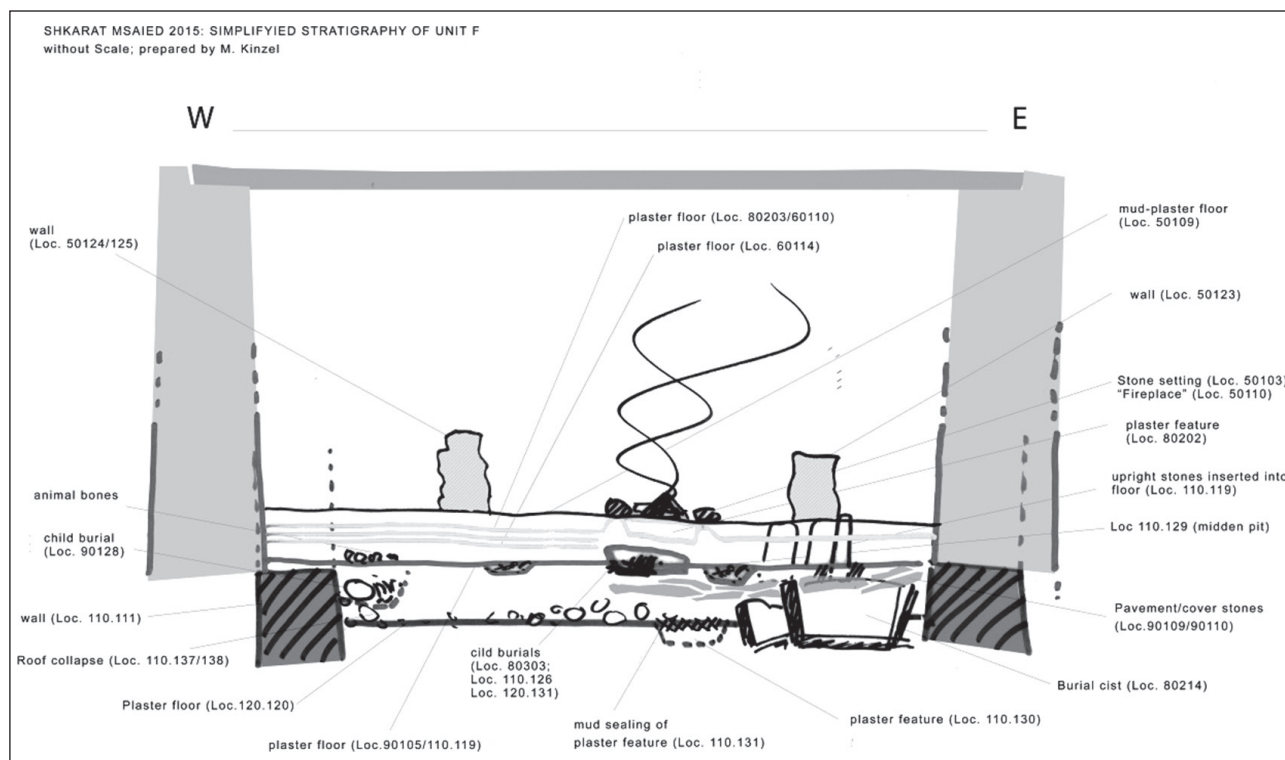
4. Southern Area (2014) with central posthole and various surfaces; facing north.

floor is related to the entrance oriented to the south (Loc. 120.133). It shows also a plaster feature (Loc. 80202) with a raised rim and a shallow basin.

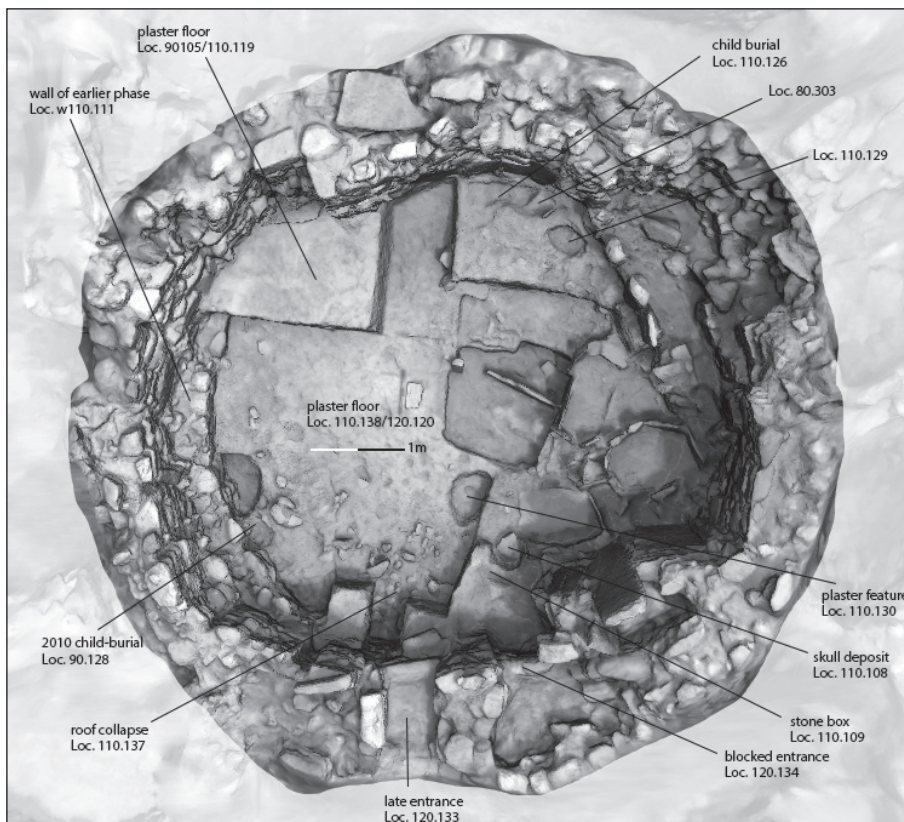
- 7) A layer of mixed fill material, most probably stemming from a roof collapse.
- 8) Hard packed mud floor (Loc. 50109) covering most of the interior of unit F. On the rim of the plaster feature (Loc. 80202) stones are placed to mark a possible fire place (Loc. 50103/50110). The Interior of the late Unit F is divided into three spaces by low partition walls (Loc. 50124/125 and 50123) trans-

forming the central area into a rectangular space. In the floor some larger ground stone tools were embedded.

The investigation in Unit F revealed a number of primary, secondary and tertiary burials as well as new information on the earlier use phases of Unit F and the remains of an older building (as partly explained above). East of the entrance to Unit F (Loc. 120.134) a stone cist (Loc. 110.108) containing three skulls was recovered at the bottom of wall (Loc. 70.209) (Kinzel *et al.* 2016). This feature is similar to skull caches from other Neolithic sites such as 'Ain Ghazal (Griffin *et al.* 1998), Jericho (Kenyon and Holland 1981:77), Yithahel (Slon *et al.* 2014) or Tall Ramad (Ferembach 1969). The plaster floor (Loc. 90105/110.119) was cut in order to build this stone cist. South of the skull deposit (Loc. 110.108) another stone feature (Loc. 110.109) was discovered which contained the remains of at least two foxes (*Vulpes* sp) (FIG.7) and might indicate a very close relationship between human and animal remains. Animal bones (although mostly goats, *i.e.* *Capra aegagrus* or *Capra ibex*) were often found



5. Unit F, simplified W-E-cross-section to understand stratigraphic relations; prepared by Moritz Kinzel.



6. 3D-model of Unit F with Loci mentioned in text (2015); prepared by Moritz Kinzel.

close association with human remains, or were deposited along the wall of Unit F.

An entrance (Loc. 120.134); approximately 65 cm wide; of an earlier use phase of Unit F was identified just east of the later entrance (Loc. 120.133) after wall Loc. 110.107 (same as Loc. 70209) was removed. As wall Loc. 110.107 was built this entrance became blocked and integrated into a niche-like feature (Loc. 2261).

The limeplaster floor (Loc. 110.138/120.120), which was exposed throughout the unit is obviously related to this earlier building phase. A plaster “basin” (Loc. 110.130) – as common

for most (domestic) buildings at Shakārat al-Masā‘īd – was found in the axis of the former entrance. The plaster basin was filled by a white-greyish powdery chalky material (Loc. 110.132) without showing traces of charcoal or charred material. A flint cache (Loc. 110.133) was found in the basin (FIG.8). The cache consists of seven bidirectional blades and is the first flint cache found at Shakārat al-Masā‘īd. Three of the blades were tooled into Jericho-points (FIG 9). All the blades and projectiles were manufactured from two flint types (FRMG 6



7. Jaw of a small fox (*Vulpes* sp) found on the floor surface (Loc.110.138) in Unit F.

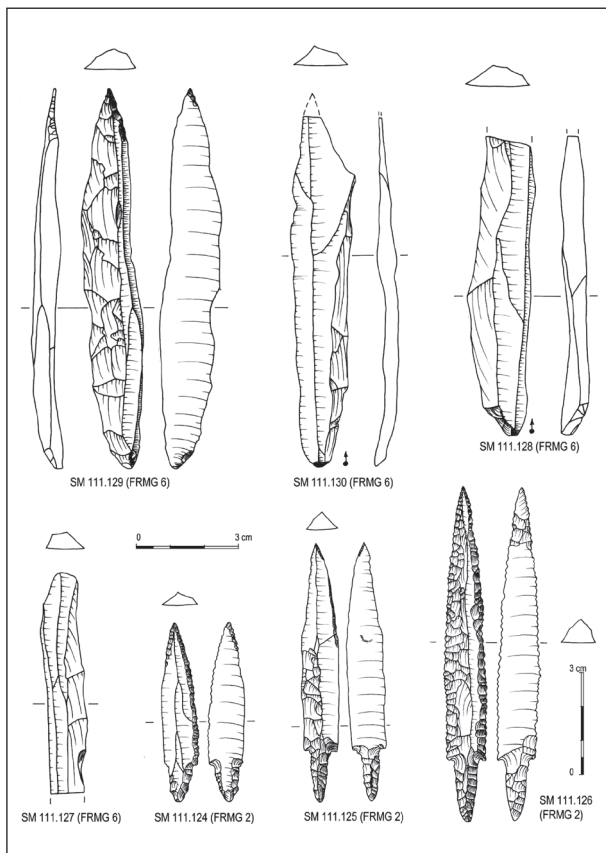


8. Plaster feature (Loc. 110.130) with flint cache under excavation (2015); Photo: Marie Louise Jorkøv.

and FRMG 2), which are not attested within the geological environment of the Greater Petra Region (Purschwitz 2013, in prep b) but are commonly used for core reduction at Shakārat al-Masā'īd and at the contemporary site of Beidha (Purschwitz 2017, in prep. a; Mortensen 1988; cf. Barzilai 2010). The plaster basin (*Loc.* 110.130) and the flint cache were sealed with clayish mortar material (*Loc.* 110.131) at a later point. This took place before the roof collapsed and fill material was compacted to establish the next layer of plaster floor (*Loc.* 90105/110.119).

In the southern part of the room roof collapse (*Loc.* 120.104/ 110.137) was found on the earlier floor level (*Loc.* 120.120) and confirmed the materials and construction methods attested by the roofs in other buildings (e.g. Unit K) at the site. Two pestles and a hammer stone were found *in situ* on the floor surface, indicating perhaps some normal day-to-day processing of food.

A wall, which belongs to an earlier build-



9. Flint artefacts from the flint cache (*Loc.* 110.133) in unit F; drawings: Christoph Purschwitz.

ing (*W Loc.* 110.111) was exposed in the western part of Unit F. Although it seems to form a bench-like feature/platform; it can be seen as the remains of an early building phase of Unit F with a slightly smaller size. The earlier building might have been demolished and the exterior wall was cut down to the preserved height. All the larger burial cists were cut into the earlier plaster floor (*Loc.* 110.138=*Loc.* 120.120) and covered by the pavement in the eastern part of the building (*Loc.* 90109/90110). Most of the child burials seem to be associated with a later plaster floor (*Loc.* 90105/110.119) but the burials may still have been contemporary.

Human Remains: Preliminary Results 2015

Three areas containing human remains were excavated in Unit F. In total a minimum of 12 individuals (10 sub-adults and two adults) were recovered. Against the northern wall west of stone cist (*Loc.* 80.303), excavated in 2005, infant remains were recovered in the fill. Another small stone cist was identified and contained the remains of a minimum of three individuals of which two were secondary burials (one was represented by a mandible [6-7 year old child, B115.102], one was the disarticulated remains of a 38-40 week old foetus/new-born [B115.104]). Finally, one individual was of a c. 4 year old child buried resting on its left side with flexed arms and legs with the back towards the north wall (B115.103). The head and first cervical vertebra were missing. No pathology could be observed on the remains.

To the southeast of locus 80.303, a deposit of mixed remains was uncovered in a very hard soil. The deposit contained completely mixed sub-adult remains of minimum six individuals: one juvenile eight years (represented by a mandible), a child of ca. 5 years, a child of ca. 3-4 years, a child of ca. 2-3 years, a child of ca. 2-2.5 years, and a child of ca. 1.5-2 years. They have been placed at the same time and are likely a tertiary deposit. No pathology could be observed on these remains.

The third excavated area was a stone cist (*Loc.* 110.108) in the southern part of the house, immediately north of stone cist locus 110.109 and next to locus 110.128. The stone cist contained three skulls all facing west. Skull #1 had been placed while soft tissue was still partly present. This was evident from the first neck vertebrae (cervical 1 and 2) still articulating to the base of the skull. Furthermore, the mandible was articulating with teeth in occlusion. The skull belonged to a male aged *ca.* 30-45. He had suffered periodontal disease and had calculus on the molar teeth. He had lost the second and third molar ante mortem. In their place a large abscess (healed) was seen, hence there was little wear observed on the occluding mandibular molars. Skull #2 and #3 had their left sides positioned against and partly underneath the southern stone slab separating locus 110.108 from locus 110.109. The stone slab had been pushed down after burial and after the construction of the stone cist (*Loc.* 110.109) as well as the erection of wall locus w70.209/110.107. This had resulted in crushing the left parietal bones of both crania. Skull #2 was located southwest of skull #1 (FIG.10). There was no mandible, but it had all its maxillary teeth present. It belonged to a 3 year old child. No pathology could be observed on this individual. The third skull (Skull #3) belonged to a 6-7 year old child. Enamel hypoplasia could be identified on the permanent maxillary incisors, indicating a disturbance in the enamel production as a consequence of malnutrition or other stress related instances around the age of 3-3.5 years.

East of Skull #3 a complete humerus of a fox (*Vulpes* sp) was found. A proximal epiphysis of an animal tibia which may have been from a small cat was found as a secondary deposit in Skull #1. In the fill of locus 110.108 a foot bone (a metatarsal) was found from a juvenile *ca.* 6-11 years old. In the fill of locus 110.128 an adult knee cap (a patella) was recovered. It showed initial stages of arthritis.

As the human remains of the 2015 season are

mainly from the same contexts excavated back in 2005 we will re-assess all the human remains to clarify the minimum number of individuals; especially in the case of the burial *Loc.* 80.303.

Conservation and Protection Activities

In addition to the above presented archaeological investigations the state of conservation of each building unit was assessed and documented. To improve the appearance of the site and also to protect the architectural remains, plants and litter was removed from all buildings. A comprehensive state of conservation report was handed over to the Department of Antiquities in 2014. In general the site was (in 2014 and 2015) in good condition and the fence around the site is in a decent state. Most damage seems to be related to the intense rainfall in winter 2013/2014, but also due to vandalism. However, the exposure of the archaeological remains to weathering, including intense sun and wind, has resulted in the loss of the Neolithic wall mortar as well as the disintegration of the (sand-) stone material itself. The sand stone slabs show flaking and detachment of layers.

The backfill put in place in 2010 and 2014 seems to fulfilled its purpose to stabilise the structures. The surface run-off water after heavy winter rainfall has created some drainage gullies in the backfill material. In Units J, K, P, single wall segments between the post channels (sockets) have collapsed due to the loss of bonding material and rainwater penetrating the wall core. To reduce the risk of wall collapse some



10. SM2015: Skull #2 from the skull cache (*Loc.* 110.108) in Unit F.

stabilization and consolidation works were executed in 2014 and 2015 (FIG. 1). In Units A, C, E, F, K, L, and M joints were re-pointed and voids filled using a (simple) soil mortar. This mortar is made out of the sieved spoil heap soil and water. Due to the high content of calcite (lime) in the soil the mortar is relatively stable but softer than the stone material and the Neolithic mortars containing partly burned lime. The same mortar was used to complete some wall capping to prevent water penetrating the wall core. The repair mortar has to be seen as a sacrificial layer that will need to be renewed on a regular basis. Regular monitoring will help to define maintenance cycles necessary to maintain the current state. In case of Units L, P and K substantial backfilling was carried out to prevent collapse and minimise water penetration. In Unit F and R only limited areas were back-filled to allow an easy continuation of our work again in 2016.

Compared to the number of damages reported in 2013/2014 only minimal further damage could be observed in 2015. The soil mortar used for the consolidation of some walls in 2014 seems to be efficient, but will need some maintenance work in the coming year.

We plan to rise additional funding for conservation and site presentation measures. The self-guiding track around the excavation area has proven to be a very good way of keeping visitors out of the actual trenches. Additional info panels could add considerably to the presentation of the site, but also more innovative techniques as mobile apps could help explain the various features with AR-3D-reconstructions of the buildings (Kinzel and Tanaka 2015).

Future Plans

In preparation of a final publication, covering the work since 1999, additional fieldwork is planned for 2017/18 to fully excavate Unit F. During the 2015 season we were joined in the field by the Greenlandic artist Nuka Godtfredsen who will produce visuals of interpretational

(graphic novel) scenarios in the future to discuss findings and contexts. In addition to the presentation of scientific results it is planned to undertake further preservation measures and to prepare the site for visitors and to promote the concept of the Neolithic Heritage Trail.

Acknowledgment

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