

Stone Beads from Shkārat Msaied

Mette Bangsberg Thuesen and Moritz Kinzel

Shkārat Msaied (30°26'38"N, 35°26'21"E) is an E/MPPNB settlement situated on a plateau in the sandstone desert of the Petra region of southern Jordan, close to contemporary sites such as Beidha and Ba'ja. Since 1999, the site has been excavated by a team from the University of Copenhagen (Hermansen *et al.* 2006; Kinzel *et al.* 2011, 2015). The settlement consists of several clustered circular structures, enclosures, open spaces and passages that seem to have been constantly modified through five major building phases (Kinzel 2013). The site is interpreted as a semi-sedentary settlement and seems to have relied on hunting and gathering; the presence of wild plants, grasses, emmer wheat, legumes and wild pistachio in the archaeobotanical assemblage suggests that no systematic farming took place here, but an intense exploitation of wild crops (Jensen *et al.* 2005: 131; Hermansen 2017).

Excavation of the settlement has revealed an assemblage of beads made from various types of stone and marine shell. The latter have been studied by Abu-Laban (2010, 2014) and the stone beads have recently been investigated as part of M.B. Thuesen's MA-thesis, as a point of comparison to stone bead production at PPNA Shubayqa 6. In total, forty non-organic beads have been recovered during the campaigns conducted by the University of Copenhagen at Shkārat Msaied (Fig. 1). In November 2017, the author undertook macroscopic analysis of eighteen beads and some of the sampled raw material held by the Petra Department of Antiquities. The following variables were recorded: type, raw material, colour, size, production marks, preservation and use wear. Nine of the beads were categorised as a type of greenstone, five as unknown stone, and two as sandstone. One pierced marine shell and one plaster bead were also present among the recently excavated assemblage. The raw material used for the greenstone beads had formerly been identified as turquoise and malachite (Jensen 2004, 2008: 333), and this was confirmed by our reassessment. The unknown stones were either red, white, brown or black in colour, and require further examination.

The assessed raw material samples of malachite and turquoise are tiny fragments that appear to be debris from the production process. The nearest source for these greenstones would have been the Wadi Faynan/Wadi Fidan area, located 25 km north of the settlement, the Sinai, or the Negev desert (Purschwitz 2017: 134-135). The most common type of bead were disc beads, but barrel beads, pendants and one-cylinder beads were also present (see Figs. 2 and 3). This is typical of other PPN stone bead assemblages, and the greater abundance of disc beads is often explained by the fact that these types have fewer manufacturing steps and

can be produced *en masse* (Wright and Garrard 2003; Critchley 2007; Bar-Yosef Mayer 2013). Only two bead roughouts were found amongst the analysed assemblage. These were both made of sandstone, and one had five variously situated perforations (see Fig. 4). One can imagine that this was a preform used for practicing drilling techniques. The rest of the beads were identified as finished products, except two specimens that were indeterminate. The vast majority had evidence of biconical drilling – the roughouts were drilled in a cone shape from both sides. Production marks were also left from the polishing and the abrasion process. Seven of the finished products were registered as possibly worn, because part of their surfaces appeared to have been flattened.

Production Contexts

Most of the beads (excluding marine shells) were found in the northern area of the site, where two production areas have been identified. These areas have been interpreted as workshops specifically related to greenstone bead manufacturing. One of these was situated in the middle of the outdoor space, referred to as *Area I*, and the other was found just north of Building B and west of *Enclosure a* (Fig. 1). These areas revealed clusters of drills and other types of chipped stone, debris of greenstone raw material, and unfinished and broken beads (Jensen 2004, 2008: 333). Both clusters appear to have been associated with dump or midden contexts, but these are perhaps of later origin.

Of the two clusters, Area I contained the largest abundance of finds and appeared to be a pit just west of a dumping area (Loci 305; 2705; 2950; 2951; 2952; and 3000). The pit included 2,454 chipped stones, representing the entire *chaîne opératoire*. 418 were drills or borers (Jensen 2004). Besides evidence of bead manufacturing, including 348 chipped stones, of which 50% were drills, this pit also included other stone and bone artefacts (Jensen 2004). The waste debris is characterised by small chips, which suggests that the roughouts were probably reduced by chipping (Jensen 2008: 334). The other cluster was deposited over an area of approximately two-by-two meters, after the construction of the main architectural units, but before the construction of *Enclosure a* (Loci 1114 and 1118; 50604; 50606; 50607, and 50608). The number of beads is generally low, but the high density of drills and waste from the production area suggests that more were produced than the recovered finished products account for. Later excavations have also revealed a production area for chipped stone in the south of Area VI, just south of Units G and F (Kinzel *et al.*

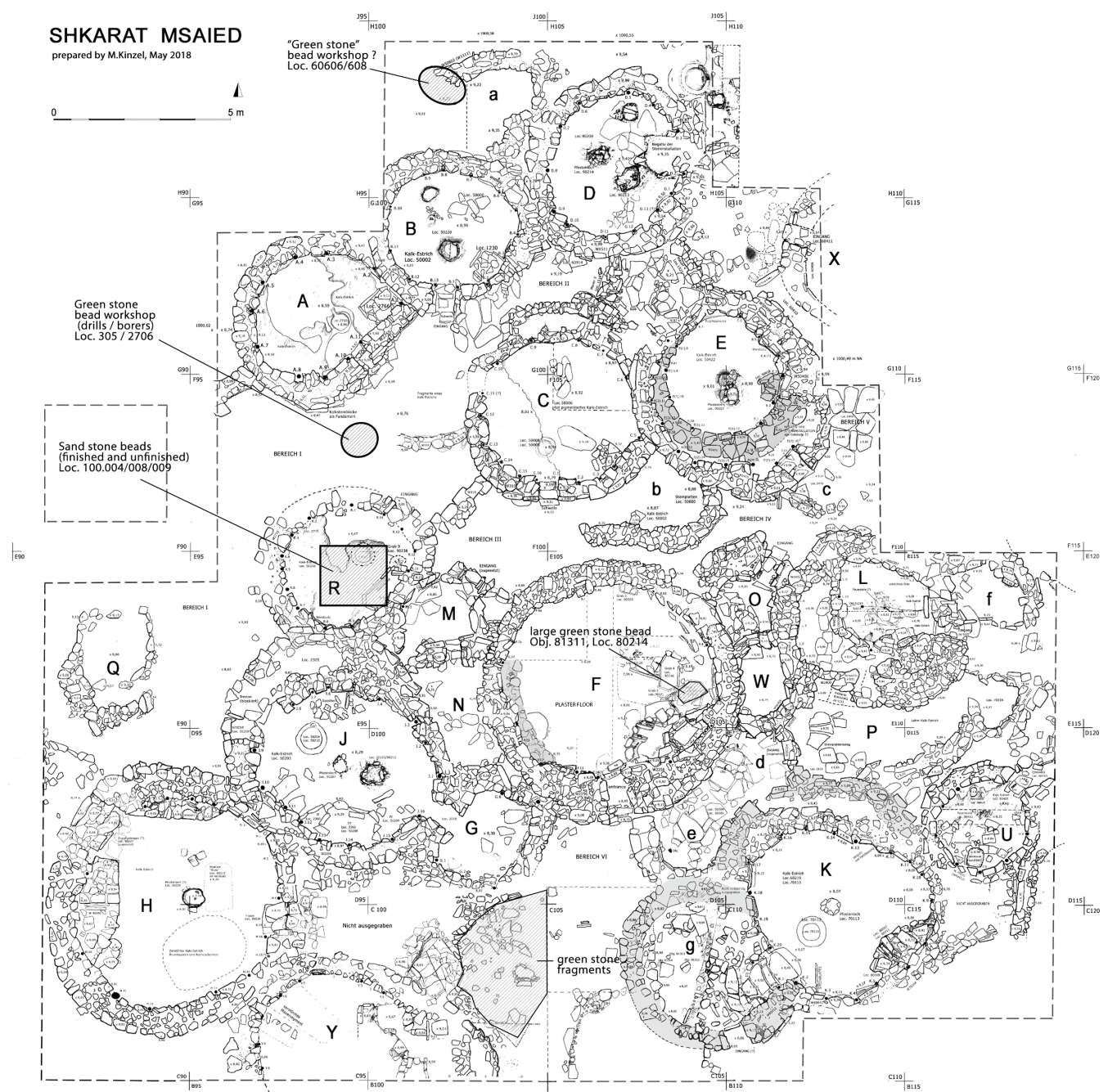


Fig. 1 Plan of Shkärat Msaied with contexts marked with bead finds: The two clusters of bead manufacturing debris in Area I and in Enclosure a; the beads from Unit R and the large green stone bead in Unit F. (plan prepared by M. Kinzel based on Kinzel *et al.* 2017: fig.5)

2015; Purschwitz 2017). Fragments of greenstone were also found in this area during the excavation campaign of 2014, but otherwise there is no apparent evidence for bead manufacturing in this part of the settlement.

In the 2014 and 2015 seasons, three beads were found in the backfill of an illegal sounding (Loc. 100.004) in Unit R, and two more were recovered from a surface layer (Loc. 100.009) and from just below a floor (Loc. 100.008, Kinzel *et al.* 2015). Since the modern backfill contained mixed deposits, the original stratigraphic context is unclear. Two of the beads from Unit R were finished products made of sandstone; one bead is possibly made of bone and the two others were perforated stones of indeterminate material.

In Unit F, one large stone bead of greenstone (Obj. 81311), possibly of the mineral chrysoprase or chalcedony, was found in the fill of an almost empty burial cist (Loc. 80214). The burial cist contained only a few human and animal bone fragments (Hermansen *et al.* 2006: 4-5). The greenstone bead surface is nicely polished and is translucent. It measures 60.7 mm in length, 54.1 mm in width, and is 31.3 mm thick. The bead was longitudinally pierced with a 11.8 to 12.9 mm wide cylindrical shaft (Fig. 5). Another stone bead of unidentifiable raw material has also been found within this unit, as well as an unfinished pendant resembling a miniature axe. Greenstone and cowrie shells also appeared occasionally in some of the burial fills (Kinzel *et al.* 2017: 14-15).

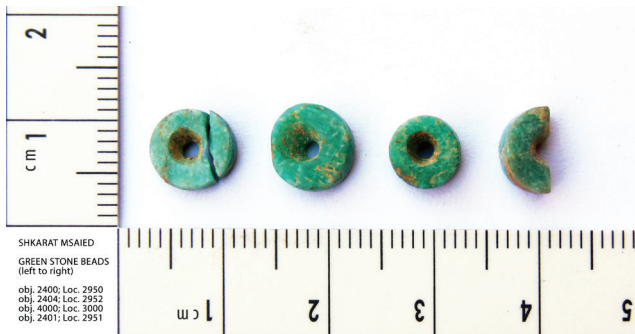


Fig. 2 Disc beads made of greenstone (Photo: Shkārat Msaied Neolithic Project/M.Bangsborg Thuesen, edited by M. Kinzel)



Fig. 3 Sand stone beads from Unit D and R. (Photo: M.B. Thuesen, edited by M. Kinzel)



Fig. 4 Multiple perforated rough-out (Photo: Shkārat Msaied Neolithic Project/M. Bangsborg Thuesen, edited by M. Kinzel)



Fig. 5 Large greenstone bead from one of the burial cists in Unit F, Obj. 81311; Loc.80214. (Photo: Shkārat Msaied Neolithic Project/M. Kinzel)

Discussion

The density of artefacts related to stone bead production, in comparison to the amount of final products, suggests that the finished beads were utilised outside the settlement (Jensen 2004). As marine shells and fragments of obsidian provide evidence of a long distance trade relationship, the stone beads could have been used as trade goods as part of this exchange (*c.f.* Spatz 2017). It could also be argued that the beads were carried by the settlers when they were travelling. At Shkārat Msaied, there is evidence that structures were blocked and

burned as part of the abandonment process; the inhabitants might therefore have removed their most valued items, such as their stone beads. This is also attested by the large greenstone bead found in the burial cist of Unit F, which could have functioned as a treasured item in the funerary rites meant to venerate the dead (Hermansen 2017). Bar-Yosef Mayer and Porat (2008) have hypothesised that the preference for greenstone in the PPN societies of the southern Levant goes along with the emergence of sedentism and agriculture, arguing that the colour of the greenstone beads had a certain – today not provable – meaning or symbolic value to the

Obj. No	Unit	Locus	Raw material	Colour	Typology	Production marks	Production stage	Size dia.	Usage wear
2400	2050	2950	Turquoise	Blueish green	1A	Biconically perforated, polished	Finished	0.8 cm	n/a
2401	2050	2951	Turquoise	Blueish green	3B	Biconically perforated, polished	Finished	0.8 cm	n/a
3509	2351	2709	Turquoise	Green	Indeterminate	Biconically perforated, polished	Indeterminate	n/a	Possibly
3601	2375	2751	Malachite	Green	4B	Biconically perforated, abraded, polished	Finished	1.6 cm	Possibly
3602	2375	2751	Limestone	Greyish brown	n/a	indeterminate	Indeterminate	2 cm	n/a
4000	2475	3000	Turquoise	Blueish green	1A	Biconically perforated, polished	Finished	0.7 cm	Possibly
24104	2050	2952	Turquoise	Blueish green	1B	Biconically perforated, polished	Finished	0.8 cm	n/a
61219	C115	60205	Turquoise	Blueish green	1B	Biconically perforated, polished	Finished	n/a	n/a
91209	D	90214	Stone	Black	1C	Polished	Finished	0.5 cm	n/a
101.003	R	100.008	Stone	Red/ brown	1A	Polished	Finished	0.5 cm	n/a
101.004	R	100.004	Sandstone	White	Roughout	Biconically perforated	Unfinished	1.4 cm	n/a
101.005	R	100.009	Stone	Red	1A	Biconically perforated, polished	Finished	0.5 cm	n/a
101.007	R	100.004	Stone	Green/black	4B	Polished	Finished	0.8 cm	Possibly
101.009	R	100.004	Stone	Red	1A	Biconically perforated, polished	Finished	0.7 cm	Possibly
111.020	R	110.034	Sandstone	White	12	Biconically perforated	Unfinished	1.7 cm	n/a
111.106	F	110.104	Plaster	White	4E	n/a	Indeterminate	0.7 cm	n/a
121.106	F		Stone	Green/black	Pendant	Polished	Finished	1.8 cm	Possibly

Table 1 Beads from Shkārāt Msaied studied in 2017.

bead makers and the consumers of the finished beads, perhaps associated with vegetation and fertility (Bar-Yosef Mayer and Porat 2008: 5549; Maier 2008; Weisgerber 2009). However, the greenstones might also have been chosen for their mineralogical properties – both turquoise and malachite have a lower score on the Mohs scale making them suitable for drilling and working of the stone – or merely for aesthetic reasons.

Conclusion

Our study of stone beads from Shkārāt Msaied has revealed that the majority of the raw material used for bead manufacturing was identifiable as malachite or turquoise. Roughouts of sandstone also appeared. The types of beads produced were mostly disc beads, but a few barrel beads and pendants have also been recovered. Further microscopic studies of the beads and lithic tools may help determine the exact drilling techniques used for perforating the roughouts, but this preliminary analysis has provided evidence for the reduction and shaping of the beads. Most case studies on stone beads in the Neolithic of Southwest Asia locate stone bead production to contexts (usually indoor) where other sorts of domestic activities took place (Wright *et al.* 2008; Bains 2012; Thuesen 2018). At Shkārāt Msaied, however, production areas were only recognised in open spaces related to middens. But since both production clusters are interpreted as secondary contexts,

the workshops were possibly located elsewhere on the site, if not outside the settlement. It is also possible that the debris consists of remains that were brushed off the roofs; these are viewed to be the main activity areas of the site (Kinzel 2013: 51-52). Further excavation and examination of the remains of the bead assemblage will hopefully shed further light on the nature of bead manufacturing at Shkārāt Msaied, and their role in exchange networks in the southern Levant in the near future.

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Mette Bangsberg Thuesen
Centre for the Study of Early Agricultural Societies (CSEAS)
University of Copenhagen
lkh294@alumni.ku.dk

Moritz Kinzel
Department of Cross-Cultural and Regional Studies
University of Copenhagen
zdr147@hum.ku.dk

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