General Contextual Evaluation of Ornamental Elements

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Introduction

This contribution analyses the spatial distribution and contexts of the various ornament types that were discovered at the Late Pre-Pottery Neolithic B (Late PPNB) site of Ba`ja in southern Jordan, from 1997 until 2019 (Gebel *et al.* 2020 with further references). It tries to answer one of the main questions arising out of the *Household and Death Project*; whether there were differences in access to raw materials for ornaments, and/or whether ornamentation may have been used as a diacritical means to differentiate between social affiliations – namely households or larger social entities. It is complementary to the in-depth analysis of ornament types (Alarashi a this volume) and to the empirical chapter on burials (Benz *et al.* this volume). A more detailed evaluation of different context types (Hermansen and Gebel 2004) may have been possible for selected contexts, but was out of the scope of this comprehensive, more general comparison, considering the spatial distribution of ornament elements. For the detailed description of ornament types the reader should refer to the contribution by Alarashi (a, this volume).

Material and Methods

During 13 field campaigns (for further references see Gebel *et al.* 2017, 2019, 2020) at least 4348 artefacts were uncovered that relate to ornament production and the ornamentation of bodies and possibly of other objects (Table 1; Appendix 1; Plates 1-4).[1] Plates 1-4 give an overview on some of the ornament elements that have been discovered in both burial and non-burial contexts at Ba`ja. The items of Plates 1-3 were unavailable for study, as they had been handed over to the storage facilities of the Petra Museum. They are presented here for supplementing the general information on Ba`ja's ornament spectrum. More than 91% were uncovered in burial contexts (n=3966) and probably a few more were dislocated from these contexts due to the reopening of graves, and the handling of human bones (Benz *et al.* this volume). The comparison of ornament types in burials is presented in the empirical description of the burials and the synthesis. We believe that the inclusion of adornments from burial contexts would distort the distribution significantly due to the uneven state of excavation. In contrast to all other areas, excavations in Area C continued beneath floors, uncovering a high concentration of burials only in this area (Gebel *et al.* 2017, 2019, 2020; Benz *et al.* 2019, 2020, 2023). Therefore, ornaments in graves are not considered here in detail, but serve as a comparison when it comes to the evaluation of contexts in which certain bead types were found. Segregating death and household related contexts must be considered a heuristic means and does not reflect Neolithic ideas. On the contrary, our investigations of the burial rituals have shown that the dead were an integral part of the early Neolithic communities at Ba`ja. Life and death were closely related, with the dead being buried beneath floors of basements, and personal and

[1] Evidently, this number only refers to the small amount of preserved artefacts, disregarding the possible great panoply of ornamentation that for sure existed during ancient times, including colouration with pigments, feathers, various forms of plant tissues. Three nerite shells, one bone pendant, and a mother-of-pearl fragment with four perforations, uncovered during the sounding in 1984, could not be considered here anymore. A very similar fragment (without an identifiable label) was uncovered during the excavation in 2000. Both items may represent fragments of a branch of a cross-shaped mother-of-pearl pendant, similar to the examples uncovered in the Burials CG11 and CG9. Unfortunately, both fragments that were uncovered during former excavation seasons lack clear contextual information.

Benz M., Gresky J., Purschwitz C. and Gebel H.G.K. (eds.), *Death in Ba`ja. Sepulchral Identity and Symbolism in an Early Neolithic Community of the Transjordanian Highlands. Household and Death in Ba`ja* 2.
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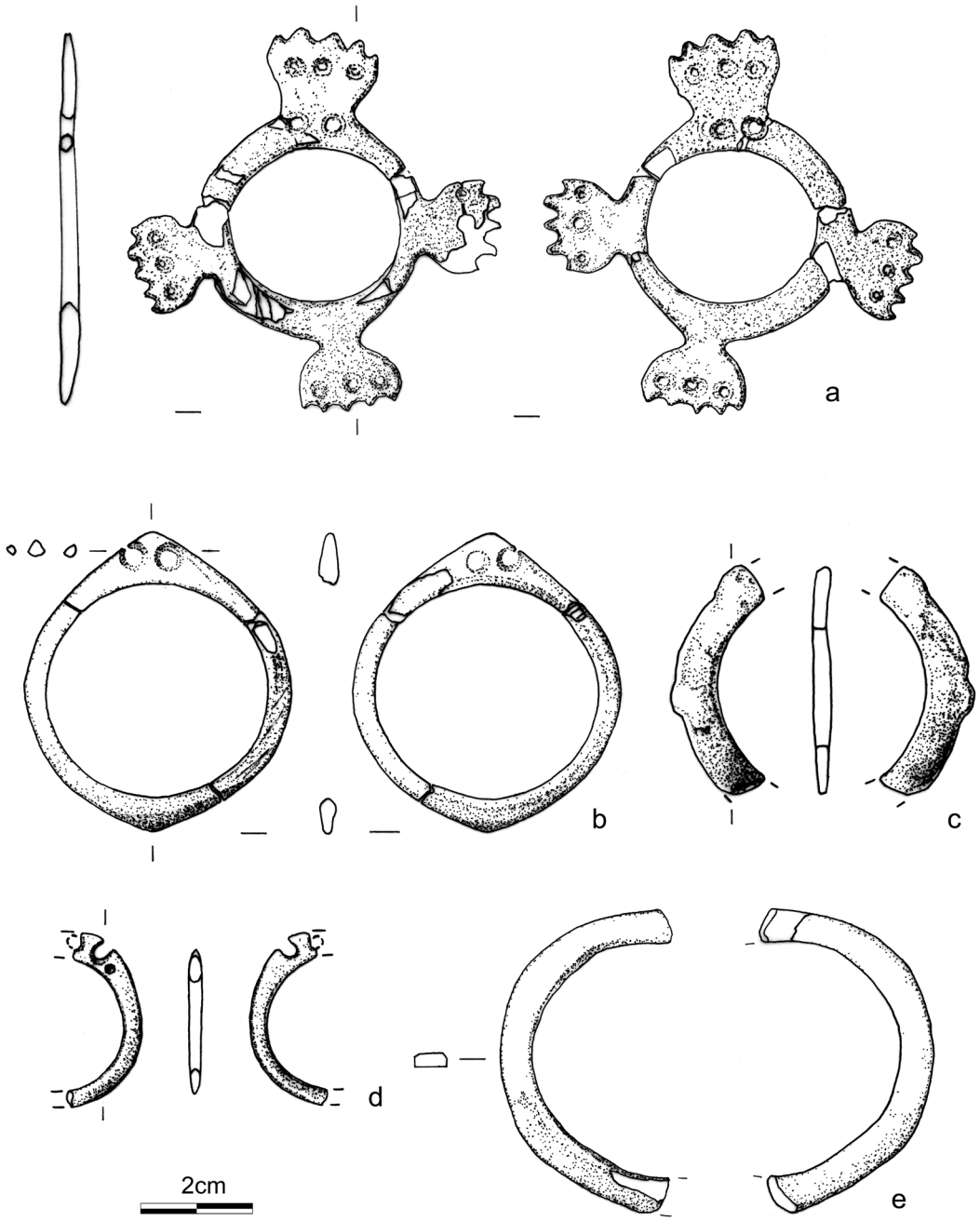

Plate 1 Selected ornament items (2000 and 2001 seasons, for contexts see Appendix 1): *a* engraved MOP ring found below an Infans I skull from collective Burial DG1; *b* pointed MOP ring with double perforations and traces of red stain from DG1; *c* flat MOP ring with protrusions on the outer perimeter; *d* broken? pointed MOP ring with double perforations; *e* broken flat? MOP ring. Corresponding find numbers: *a* (30408); *b* (30407-157); *c* (20415.2); *d* (20413); *e* (30400). (Drawings: B. Winkler, H.G.K. Gebel, Ba`ja N.P.)

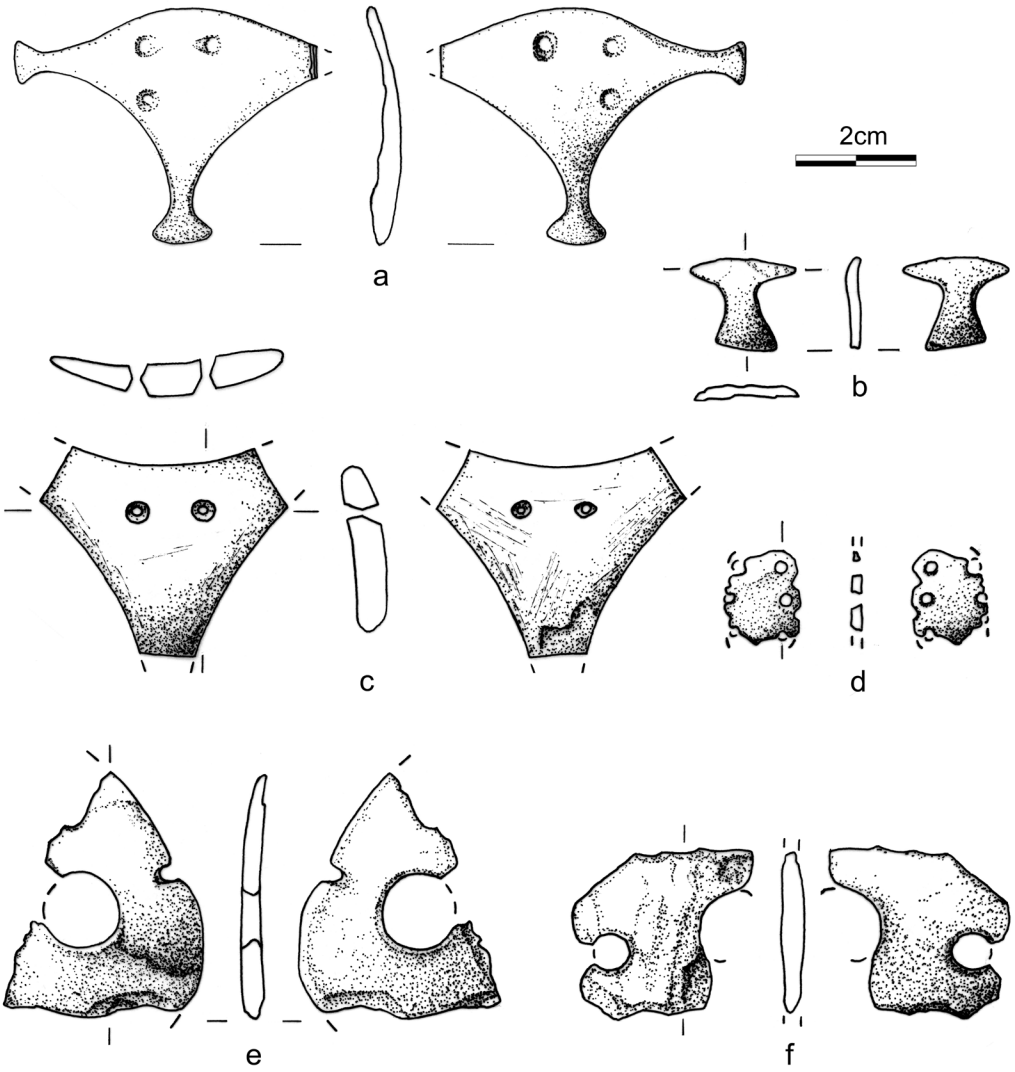

Plate 2 Selected ornament items (2000 and 2001 seasons, for contexts see Appendix 1): *a* MOP “spacer”?/ paillette with three perforations; *b* MOP paillette? without perforations; *c* MOP “spacer”?/ paillette with two perforations; *d* MOP “spacer”?/ paillette with six perforations; *e* MOP paillette? of unknown shape with large perforation and one notch; *f* MOP paillette? of unknown shape with two large perforations (broken on all sides). Corresponding find numbers: *a* (30406); *b* (20405); *c* (20417); *d* (20407); *e* (20412); *f* (20415.1). (Drawings: B. Winkler, H.G.K. Gebel, Ba`ja N.P.)

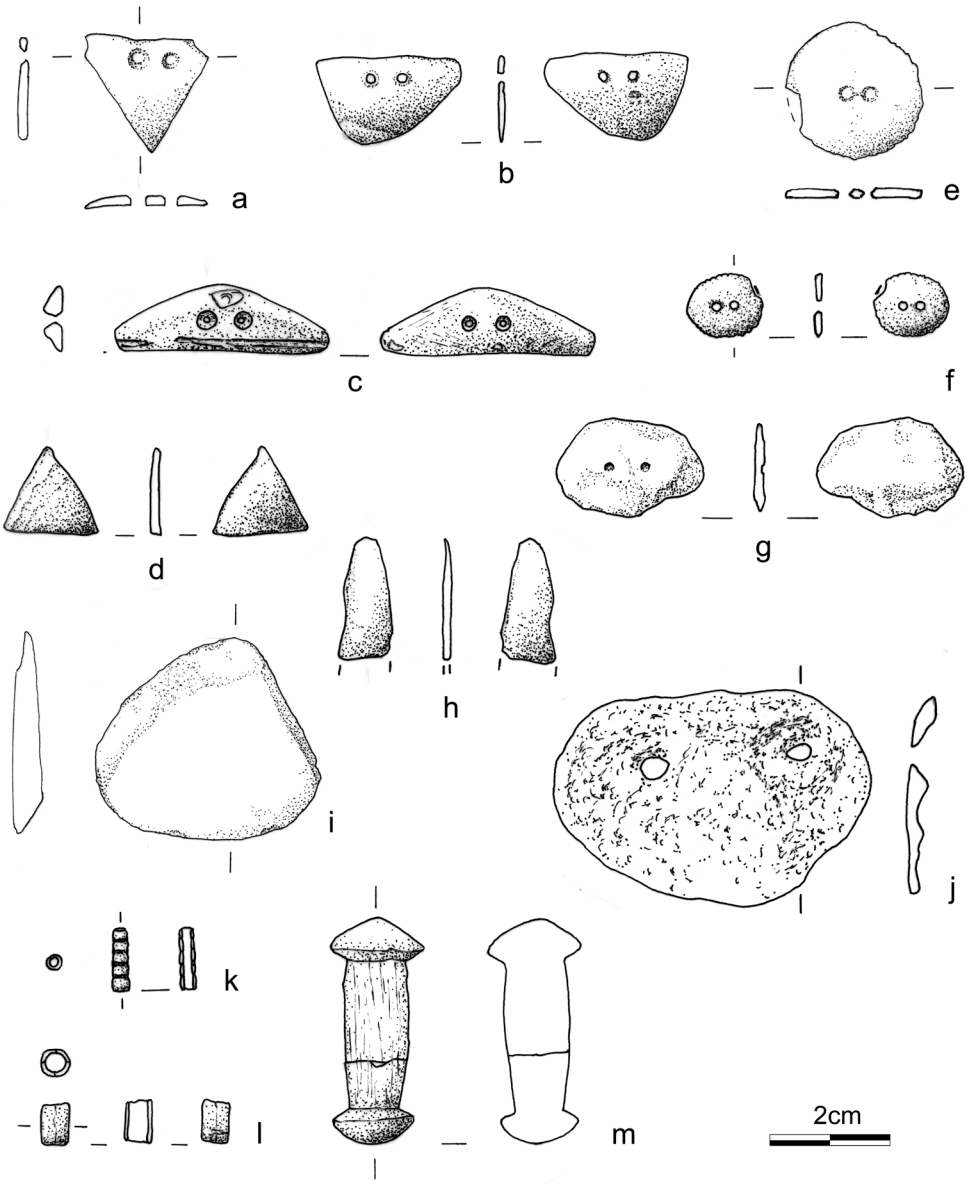

Plate 3 Selected ornament items (2000 and 2001 seasons, for contexts see Appendix 1): *a* MOP triangular paillette/ button? with double perforations; *b* MOP triangular paillette/ button? with double perforations; *c* flint triangular paillette, button? with double perforations, polished, 1-1.5mm wide grooves remain from cutting the flake raw material, faceted by grinding and polishing; *d* MOP triangular paillette/ button?, unfinished?; *e* MOP round paillette/ button; *f* MOP round paillette/ button, partial edge denticulation, red stain; *g* MOP round paillette/ button with unfinished, perforation on one side; *h* MOP worked fragment; *i* MOP worked blank, triangular shape; *j* MOP paillette with heavy calcareous crust; *k* tubular bone bead/ bone beads' blank; *l* tubular bone bead; *m* marl/ soft limestone "ear stud". Corresponding find numbers: *a* (30404); *b* (20414); *c* (20403); *d* (20411); *e* (30403); *f* (20409); *g* (20401); *h* (20406); *i* (30405); *j* (20402); *k* (20840); *l* (20805); *m* (20812.1-2). (Drawings: B. Winkler, H.G.K. Gebel, Ba`ja N.P.)

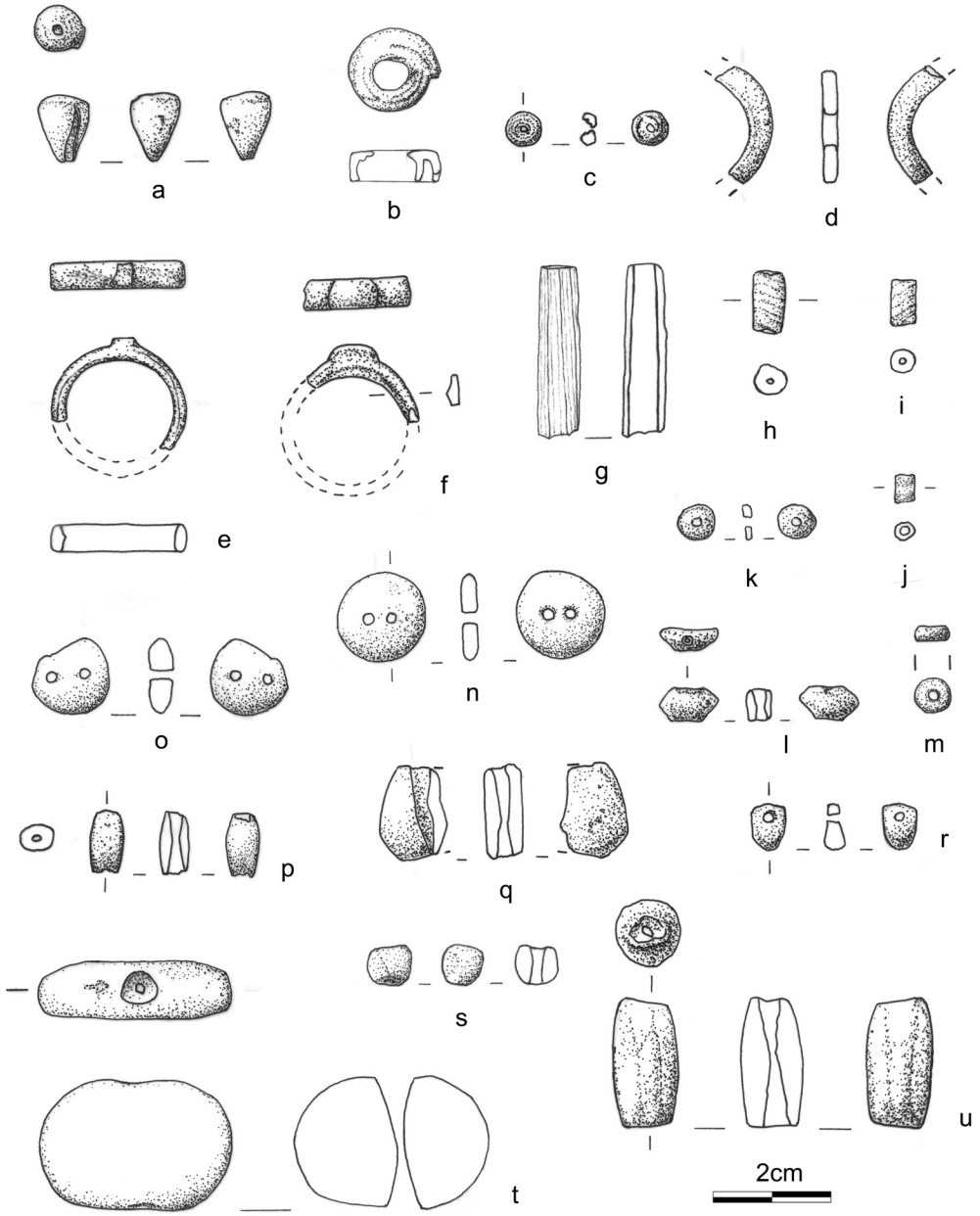

Plate 4 Selected ornament items (2000 and 2001 seasons, for contexts see Appendix 1): *a* small *Conus* sp. shell bead with apex perforation; *b Conus* sp. spire section bead with abraded apex; *c Conus* sp. spire section bead with abraded apex; *d* bone ring; *e* ring made from shell (*Conus* sp. spire section?) with a protrusion; *f* ring made from shell (*Conus* sp. spire section?), with a protrusion; *g* Dentalium bead, heavy use wear; *h Tridacna* sp. bead, tubular, facetted, from collective Burial DG1; *i Tridacna* sp. bead, tubular from DG1; *j Tridacna* sp. bead, tubular from DG1; *k* disc soft limestone or shell bead; *l* limestone? bead of pentagonal shape and with red stain, developed use wear, from DG1; *m* disc limestone bead with red pigment from DG1; *n* quartz paillette/ button with double perforations; *o* “greenstone” paillette/ button, with double perforations; *p* barrel-shaped bead made from red-orange material (carnelian?) with biconical drilling; *q* barrel-shaped bead made from red-orange material (calcite? or carnelian?) with biconical drilling: broken by length; *r* pendant (turquoise?) from DG1; *s* barrel-shaped bead (malachite?) with facetted surfaces; *t* quartz pebble with biconical perforation; *u* barrel-shaped bead from heavy mineral with natural perforation, facetted. Corresponding find numbers: *a* (20804); *b* (30805); *c* (20808); *d* (25000); *e* (20206); *f* (20207); *g* (30804); *h* (20839); *i* (20837); *j* (20838); *k* (20816); *l* (20836); *m* (20834); *n* (20408); *o* (20400); *p* (20832); *q* (20807); *r* (20835); *s* (30806); *t* (20813); *u* (20806). (Drawings: B. Winkler, H.G.K. Gebel, Ba`ja N.P.)

Table 1 Number of ornament elements distributed in different context types, segregated according to main raw materials.

	Shell	Stone	Foss. resin	Bone	Marly limestone beads	Marl objects	Ivory?	Indet.	Snail	Ostrich eggshell	Σ
Deposits	223	25	0	44	0	4	2	1	1	0	**300**
Floors	30	7	1	0	0	1	0	0	0	1	**40**
Graves	1158	2717	2	10	75	4	0	0	0	0	**3966**
Hearths	5	2	0	0	0	0	0	0	0	0	**7**
Walls	7	0	0	0	0	0	0	0	0	1	**8**
Topsoil/ indet.	22	3	0	0	0	2	0	0	0	0	**27**
Total	**1445**	**2754**	**3**	**54**	**75**	**11**	**2**	**1**	**1**	**2**	**4348**

Fig. 1 A complete bone bead ornament of at least 28 tubular hare (?) bone beads and one nerite shell was uncovered *in situ* in Area B-North, in 2007. Loci B-North CR17:102 and CR17:118. (Photo: C. Purschwitz, Ba`ja N.P.)

social identifications were probably at least partly made in relation to former generations (Goring-Morris 2005; Benz 2012; Khawam 2014; Gebel *et al.* 2022; Gebel and Benz forthcoming). A biographic approach describing the various ways how and where ornaments were produced, procured, used, discarded, deposited, and recycled was beyond the scope of this spatial analysis, and would be a major task for future evaluations. For the production- and use-wear trace analyses see Alarashi (a this volume).

In total, 265 shell, 42 mineral, and 44 bone items from household and related contexts were available for this evaluation (see Appendix 1). Beads from uncertain contexts or from topsoil, are listed in the tables but were not considered for the statistical description when it comes to the distribution of ornament types on the site. Beads of which the context type was uncertain (F.nos. 40800, 40802, 50800, 50801) were also excluded from the statistical description of context type.

Table 2 Contextual distribution of main shell species. Con: Conidae, Cow: cowry, D: Dentalium, MoP: mother-of-pearl; N: Neritidae, T: *Tridacna* sp.

Main Shell Types	Con	Cow	D	MoP	N	T	Varia	Σ
Room fills	31	11	2	98	47	8	26	**223**
Floors	1	0	0	15	11	0	3	**30**
Graves	129	271	2	20	184	548	4	**1158**
Hearths	1	0	0	3	1	0	0	**5**
Walls	1	1	0	1	1	1	2	**7**
Unidentified	1	1	0	4	1	0	1	**8**
Topsoil	2	1	0	7	0	0	4	**14**
Σ	**166**	**285**	**4**	**148**	**245**	**557**	**40**	**1445**
Percentage in Graves	78%	95%	50%	14%	75%	98%	10%	80%

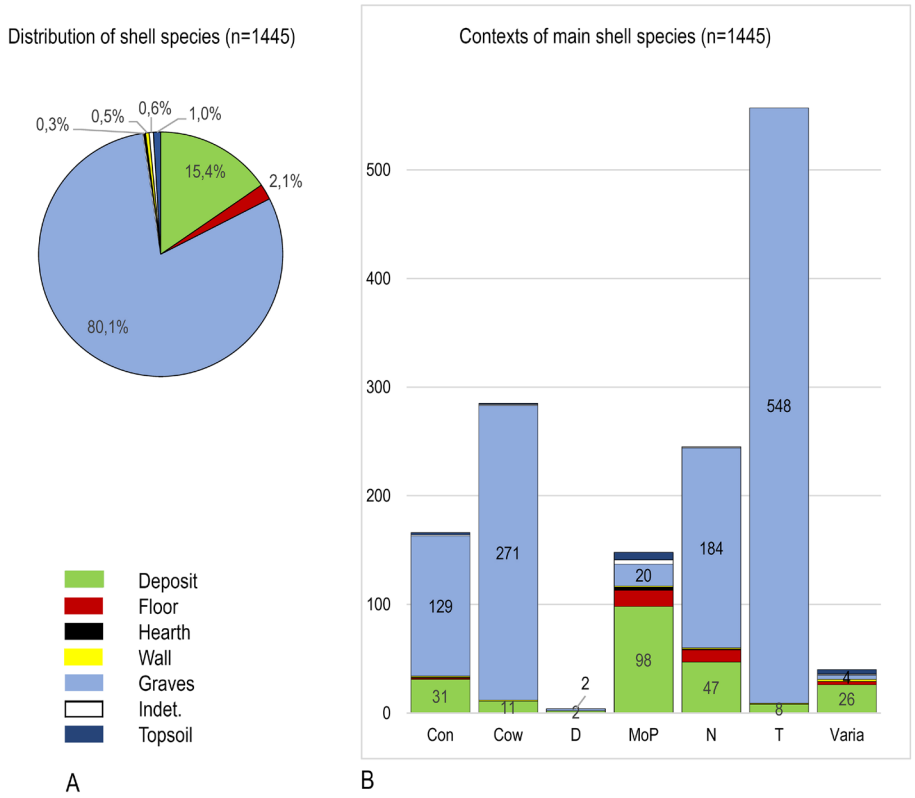

Fig. 2 Distribution of main shell beads and pendants in various contexts: *A* all shells in contexts, *B* main shell species according to contexts. Due to uncertain attribution (either grave or room fill) F.nos. 40800, 40802, and 50800 were excluded. (Graph: M. Benz, Ba`ja N.P.)

Generally ornament items come from all over the site and were rather evenly distributed, although the advanced stage of excavation in Area D and, as mentioned above, especially in Area C may distort the absolute number of items in favour of these two areas. Area B-North was excavated meticulously too, but not on such a wide surface as Area D and C (see Purschwitz and Kinzel 2007). Two fragments of ostrich shell, two possibly ivory ring fragments (Nielsen 2009), and a snail shell hint at the variety of the materials that may have been used, including

perishable ones that we may have missed due to either their rarity, or for not being used in grave contexts and therefore were subject to more intensive destruction. A good example, reminding us how biased our analyses are, is the complete bone ornament (F.no. 65004) that was found in Area B-North, Loc. BNR17:118 (Nielsen 2009; Fig. 1). It was made of at least 28 bone beads and one nerite shell. If it had not been lost or deposited by the inhabitants of Ba`ja and if it had not been uncovered, the number of bone items in Area B-North would have been at three instead of 31, or even less, considering that a further fragmented hare long bone (F.no. 65001.16) probably belonged to this ornament too. Except for this ornament, bone beads in domestic contexts are rare, but ring fragments were uncovered in several instances – yet never in graves (Nielsen 2009). Two sets of bone beads were uncovered in the Burials CG1 and CG6 (see Benz *et al.* this volume). Although a common repertoire of spherical, oval, and tubular bone beads was uncovered in other Pre-Pottery sites in the southern Levant (*e.g.*, Goring-Morris and Gopher 1983; Rollefson and Simmons 1984, 1986; Mahasneh 2001; Spatz and Baluh 2014; Hermansen n.d.), they had to be excluded from the statistical analyses for the spatial distribution at Ba`ja, due to their rarity at this site.

Distribution of Shell Ornaments

As shown in Fig. 2 and Table 2, the distribution of shell beads and shell fragments differs according to the taxa. Whereas cowries (95%) and *Tridacna* beads (98%) were almost exclusively found in burial contexts, with an overrepresentation in burials of 15% and 18% respectively above the total percentage of shell beads in burials (80%), the relation is reversed for mother-of-pearl items. Where mother-of-pearl items were part of the corpses' adornments, only a few exquisite items or tiny pendants were used. In addition to the 17 pendants/ buttons found in grave contexts, three items of the upper arm rings of the Burial of "Usaid" (CG10) (see Benz *et al.* this volume) were found, accounting in total to 20 mother-of-pearl ornaments in burials used for the adornment of the corpses. The great majority (n=117, 79% excluding elements of uncertain/ unidentified contexts) of the mother-of-pearl objects were found on floors, in hearths, in walls, or in room fills/ debris. Moreover, the taxonomic variety of shells in room fills is higher than in burials, supporting the idea that only specific shell beads were selected for the adornment of the dead, whereas in daily use, other shells were used as well.

This distribution of shell items let us suggest that *Tridacna* beads and cowries were primarily used for the ornamentations of corpses. Their very low number in other contexts suggests that people cared for them cautiously or wore them only rarely in daily activities. Clear evidence for the production of these beads at Ba`ja is lacking so far, but a few unworked shells (nerites and varia) suggest that they may have been worked on-site at least in small quantities.

In contrast, there is no doubt that mother-of-pearl objects were produced at Ba`ja. As outlined above, only a few, very sophisticated pendants and tiny pendants/ buttons were uncovered in grave contexts, but 79% come from domestic contexts, excluding mother-of-pearl items uncovered in unclear contexts and on the surface. Many items consisted of pieces related to the technical process: *e.g.*, fragments of different sizes, debris, unfinished, broken and repaired rings, and other elements (Alarashi a this volume). This leads us to surmise that mother-of-pearl items were produced locally, and that they may have been used not only for the adornment of people, but perhaps also for other *e.g.*, composite objects or even for decorative installations inside the house or on walls as it has been attested *e.g.*, for the PPNA site of Jerf el Ahmar on the Middle Euphrates (Alarashi 2014).

Furthermore, the ubiquitous distribution of mother-of-pearl items on the site (see below) suggests that access to the raw material was not restricted to a single group or household. It may be possible, that the shiny appearance of mother-of-pearl facilitated the discovery of items of mother-of-pearl, but this effect should not be so strong as to reverse the percentages of household and burial contexts. Moreover, fragile raw materials such as *e.g.*, ring beads of the top of the spire of Conidae, possibly suffered more from trampling and dumping in household contexts than harder materials such as nerite shells and thick mother-of-pearl items. However, this taphonomic effect cannot explain alone the overrepresentation of mother-of-pearl items in household contexts. Seen in this light, the low number of cowries in household contexts is all the more significant. Due to their rather hard shell, they should have resisted trampling much better than Conidae beads.

Table 3 Number of ornament elements distributed in different context types, segregated according to main raw materials; F.no. 50801 was excluded due to uncertain attribution of either grave or burial; F.nos. 91807 and 91806 were excluded too, since they possibly belong to the sandstone ring production. S=(calcareous) sandstone, Carb=various limestones, MarL=marly limestone; Mar=marl; Carn=carnelian; Q=quarz, Hydx=hydroxylapatite, F=feldspar?, H=hematite, A=amazonite, Chr=chrysocolla, Tq=turquoise, Green=unidentified "greenstones", V=volcanic rock, Indet.=unidentified.

Mineral	S	Carb	MarL	Mar	Carn	Q	Hydx?	F	H	A	Chr	Tq	Green	V	Foss. resin	Indet./ chert	Σ	Σ Green	Σ Varia
Room fill	5	8	0	4	1	1	0	0	0	0	0	8	0	0	0	2	**29**	8	8
Floor	0	0	0	1	1	1	1	0	0	1	1	1	1	0	1	0	**9**	4	5
Graves	22	2582	75	4	2	0	0	1	3	4	37	46	13	7	2	0	**2798**	100	19
Hearth	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	**2**	2	0
Wall	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0
Topsoil	2	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**5**	0	2
Σ	**29**	**2591**	**75**	**11**	**4**	**2**	**1**	**1**	**3**	**5**	**39**	**56**	**14**	**7**	**3**	**2**	**2843**	**114**	**32**

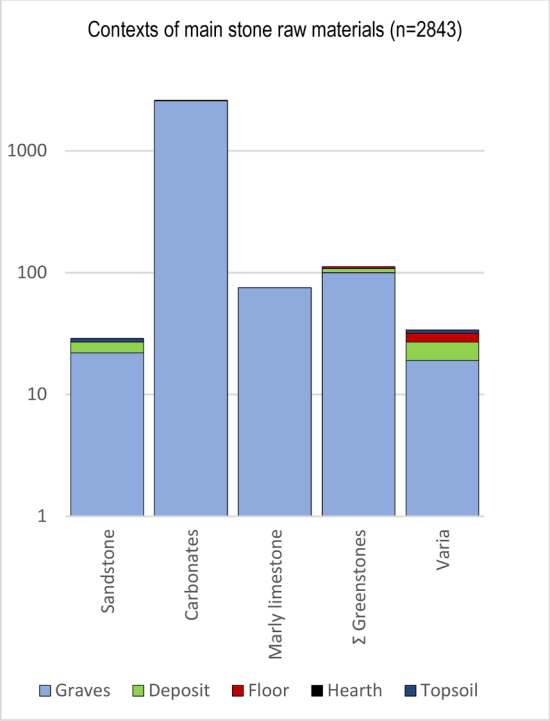

Fig. 3 Distribution of mineral based ornaments according to contexts. The almost insignificant number of mineral beads outside graves is remarkable. Note the logarithmic scale of the y-axis. (Graph: M. Benz, Ba`ja N.P.)

Contexts of Mineral Ornaments

The evaluation of the distribution of stone beads and pendants is fraught with problems, due to an insignificant number of beads coming from non-burial contexts. Therefore, a statistical analysis makes no sense. Only some interesting observations may be noted here (Table 3, Fig. 3). From seven marl objects, so-called "ear plugs" or "tokens" (Purschwitz and Kinzel 2007; Hermansen n.d.), six were found in topsoil or in sediments near the surfaces of Areas B-North, C, D, and in TU3. Only one example was uncovered on a floor in Area B-North (F.no. 10812.1-2). None of these objects was found in a burial context. It thus seems possible that these objects were possibly only used by the inhabitants of the latest settlement phase. Identical objects were uncovered at Basta (Hermansen 1991). Whether these objects were really some kind of adornment remains to be discussed. Similar objects, though made of stone, and with only one thicker end, were quite common in Northern Mesopotamia during the early Neolithic (Erim-Özdoğan 2011: 269; Karul 2011: 16; Özdoğan 2011: 257). *In situ* discovery of such objects from Boncuklu Tarla suggest that they were indeed worn near the head, and possibly also used as ear plugs (Kodaş 2019: 12).

The composite upper arm ring that was worn by the young man in Burial CG10, was made of four marl rings (F.no. 91264.1-4) and one mother-of-pearl ring (F.no. 90400). It is so far unique, although it should be mentioned that rings made of oil shist, which are rather similar in outward appearance to marl, were uncovered at the contemporary site of Basta (Crepaldi Affonso and Pernicka 2004). In contrast to the rarity of these marl object types (mar), 75 marly limestone (marL) beads were uncovered in the multiple Burial CG9.

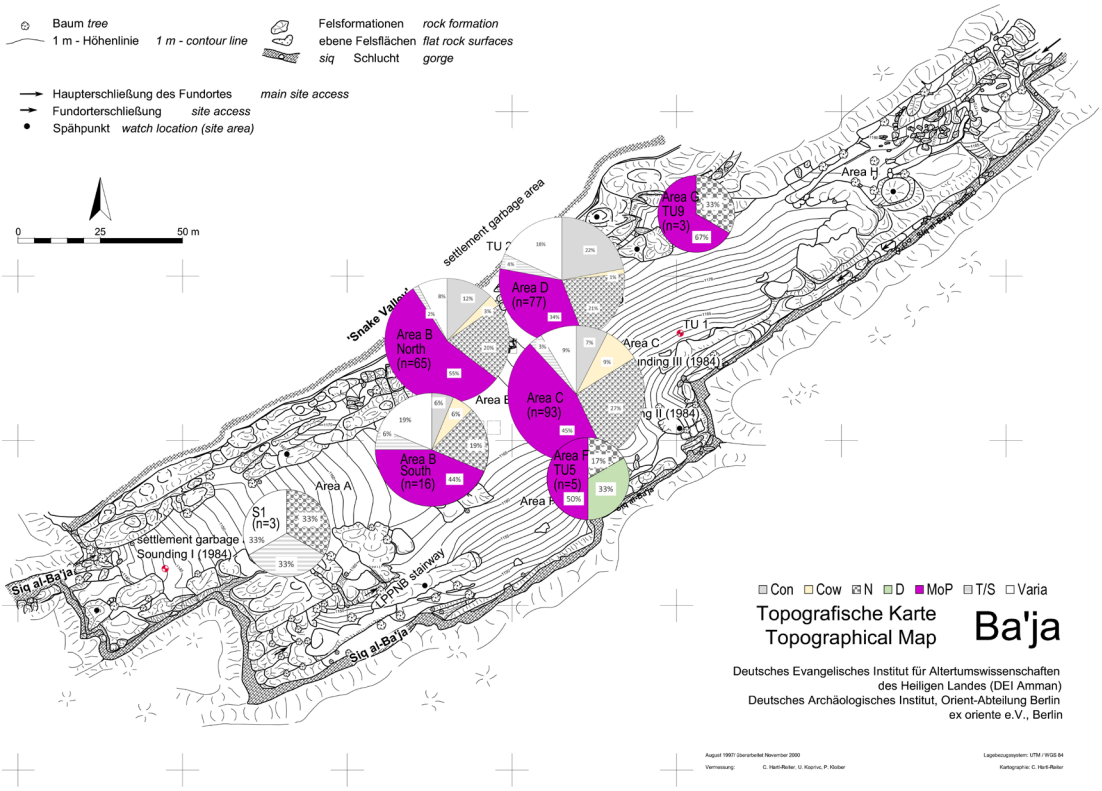

Fig. 4 Distribution of shell ornaments sorted according to area and shell species, excluding burial goods. (Graph: M. Benz, based on the plan by authors as indicated on the plan; Ba`ja N.P.)

The great majority (88%, n=100, n_{total}=114) of the "greenstone"[2] beads were uncovered in burials in Areas C and D. Only turquoises (n=8) were found in room fillings, but two chrysocolla, two turquoises, one amazonite bead and one unidentified "greenstone" bead were found on floors and in hearths. Pieces of "greenstone" raw materials, preliminarily identified as malachite, might hint at some "greenstone" bead production, but as already noted for the shell beads, neither remains of a bead workshop such as *e.g.*, in the sites of Beidha, 'Ain Abu Nukhayla, Nahal Issaron, Yiftahel, or Shkārat Msaied (Kirkbride 1966: 24-25, 1978: 7; Goring-Morris and Gopher 1983; Garfinkel 1987; Bangsborg Thuesen and Kinzel 2018), nor flint stone borers for the long beads and groundstone tools which had been unambiguously used for the production of beads (Qadi 1991: 25, Plate V.1; Mahasneh 2001: 133; Rollefson and Parker 2002; Purschwitz 2017) have been uncovered so far. However, this does not exclude that mineral beads may have been worked at Ba`ja too. A few unfinished beads (see Alarashi a this volume) and pieces of raw material might indicate production at the site. Moreover, as attested for the above-mentioned primary burial of a single young man (CG10), "greenstone" beads show intensive use wear traces, and were even recycled (Benz *et al*. 2019). And although some shell ornaments were found in wall contexts, not a single stone bead was found in a wall.

Distribution of Adornments According to Areas

As mentioned above, one of the main tasks of the *Household and Death Project* concerned the identification and constitution of households. The following passage is therefore of central importance for these questions, showing whether the distribution of bead types was balanced or not. It has been shown in the section on burials that the choice of beads and pendants, and their composition was almost unique for each ornament, but that hardly any type, with very few exceptions

[2] The term "greenstone" is used in the archaeological sense, not the geological sense (see Gerlitzki and Martin this volume).

Table 4 Distribution of shell ornaments outside burial contexts, sorted according to main shell species. For the abbreviations see Table 2. F.nos. 40800, 40801, and 50800 were excluded due to their uncertain contexts.

Main Shell Types	Con	Cow	N	D	MoP	T	Varia	Σ
B-South	1	1	3	0	7	1	3	**16**
B-North	8	2	13	0	36	1	5	**65**
D	17	1	16	0	26	3	14	**77**
C	7	8	25	0	42	3	8	**93**
F/TU5	0	0	1	2	3	0	0	**6**
TU3	1	0	0	0	1	0	0	**2**
TU9	0	0	1	0	2	0	0	**3**
S1	0	0	1	0	0	1	1	**3**
Σ	**34**	**12**	**60**	**2**	**117**	**9**	**31**	**265**

(hematite, plancheite and chlorite[3] beads (?); see Benz *et al.* this volume), was restricted to one area only. This equalised distribution may still be due to internal circulation and exchange of objects. Use-wear analyses have shown that some beads had been intensively used and recycled (Benz *et al.* 2019; Gebel *et al.* 2019; Alarashi a this volume). It therefore remained to be clarified whether the balanced distribution in burials also holds true for household contexts, or whether there were one or two households acting as centres of distribution or production of grave good ornaments. For the time being, until a more precise architectural differentiation of household contexts would be available, we decided to analyse ornament types according to excavation areas. Though we are aware that this is an arbitrary boundary, not necessarily related to household entities, it nonetheless provides rough preliminary evidence on the spatial distribution of ornament types outside sepulchral contexts.

Shell Ornaments

The distribution of shell beads, pendants, and fragments in household contexts shows that there was a remarkable similarity between the areas in which a significant number of objects were uncovered, namely Areas B-North, C, and D (Fig. 4, Table 4). In Area B-North the grand majority of ornament elements was made of mother-of-pearl (55%), followed by 20% of nerite beads and 12% of Conidae beads. Cowries and *Tridacna* beads are – as in all other areas too – very rare in non-burial contexts. In Area C, mother-of-pearl items in household contexts are only at 45%, whereas nerites (27%) and cowries (9%) are slightly more numerous than in Areas B-South, B-North and D. The higher percentage for the latter might be due to the existence of many sub-floor burials in Area C, from which cowries and nerites may have been dislocated. Interestingly, Area D has a wider variety of species (Varia 18%), including otherwise rarely found species, such as, *Ancilla* sp., *Conomurex fasciatus*, *Clanculus pharaonius*, *Nassariidae*, *Glycymeris*, along with two cardium shells (*Cerastoderma glaucum*). Compared to all other areas, the number of mother-of-pearl items in Area D is rather low (34%), whereas Conidae beads are relatively numerous (22%). However, *grosso modo* the choice of shell species for ornament elements in Area D also resembles a lot the other three areas.

The number of items in Areas G/ TU9, F/ TU5 and Sounding 1 (S1), in Area A, is far too low to give any clue to a specific selection of shell species for ornament elements. They are represented only for the sake of comprehensiveness. In Area F, the two – sole – dentalium shells of household contexts were uncovered, but

[3] These beads were identified only by macroscopical inspection. Geochemical analyses for these "greenstone" beads are outstanding and the preliminary visual identification may possibly be revised. Nonetheless, the main types, such as chrysocolla, turquoise or amazonite, can definitely be excluded.

Table 5 Spatial distribution of mineral based beads, pendants, and marl "ear plugs/ tokens" outside burial contexts, sorted according to main mineral taxa. For the abbreviations see Table 3; items from surface or unidentified contexts were excluded. F.nos. 91806-91807 were excluded because they rather represent unfinished items of the sandstone ring production.

Minerals	S	Carb	Mar	Tq	Chr	A	Hydx	Green	Carn	Indet./ chert	Foss. resin	Q	Σ
Area A TU7	1	0	0	0	0	0	0	0	0	0	0	0	**1**
Area B-South	0	1	0	0	0	0	0	0	0	0	0	0	**1**
Area B-North	2	3	2	3	0	0	0	0	0	1	0	0	**12**
Area C	0	2	1	3	2	0	1	1	0	0	0	0	**9**
Area D	2	2	1	4	0	0	0	0	2	1	1	1	**14**
Area F/TU5	0	0	0	0	0	1	0	0	0	0	0	1	**2**
TU3	0	0	1	0	0	0	0	0	0	0	0	0	**1**
Σ	**5**	**8**	**5**	**10**	**2**	**1**	**1**	**1**	**2**	**2**	**1**	**2**	**40**

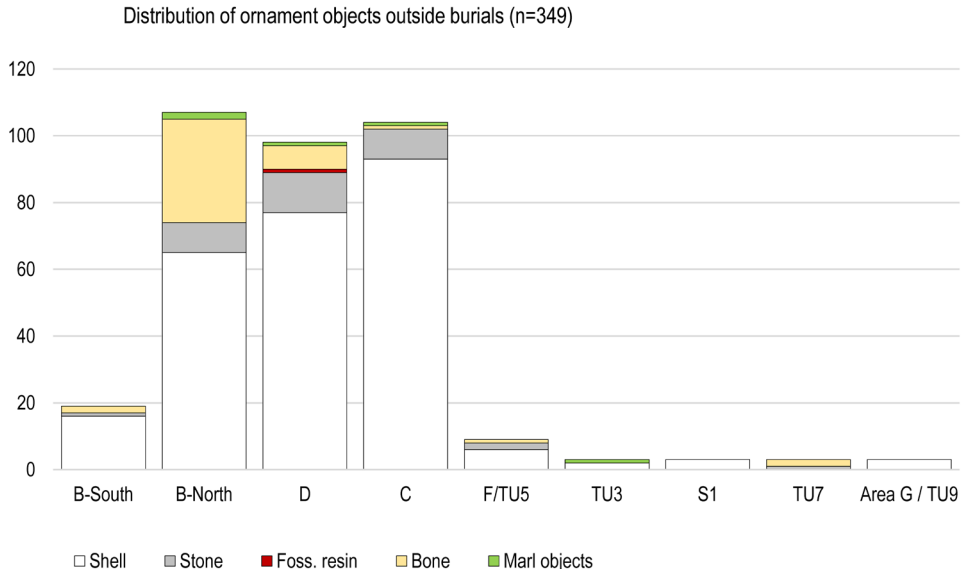

Fig. 5 Spatial distribution of main beads, pendants, and "ear plugs/ tokens" according to main raw materials; items from surface or unidentified contexts were excluded. (Graph: M. Benz, Ba`ja N.P.)

dentalium shells were generally very rarely used – also in graves – at Ba`ja. This trend to lower or reduced use of dentalium and an increasing diversification of taxa compared to the Natufian period (see Bar-Yosef 1991; Reese 1991), was also observed on other contemporary sites, such as Beidha (Reese pers. comm.), Nahal Issaron (Goring-Morris and Gopher 1983: 156), Basta (Hermansen 2004, n.d.), and es-Sifiya (Mahasneh 2001). However, at 'Ain Abu Nukhayla dentalium beads (n=130/ 10%) belonged to the most numerous taxa, but with Conidae and nerite beads exceeding all other taxa (Spatz *et al.* 2014: 248). The shell beads of TU7 either come from unclear contexts (burial or deposit) or from the surface/ unidentified contexts. They are therefore not considered.

Mineral Ornaments

The distribution of mineral ornaments outside burial contexts has no significant value, due to the low number of items per area (Table 5). It is only shown here for the sake of comprehensiveness, but one should be careful not to overinterpret the data. The state of excavation in the different areas is not equal. The total number of beads and pendants found outside burial contexts reflects this perfectly well (Fig. 5). Areas C and D are the most intensively excavated areas; in Area B-North

comprehensive excavations were conducted in some parts, and Areas A, B-South, and G were excavated less intensively. For Area G even only the top surface soil was removed in 2019.

In light of the high amount of mineral based ornaments, above all beads in burials at Ba`ja, the low number of beads and pendants made of stones (n_{total}=40) in non-burial contexts is remarkable. All the more it is interesting to note, that some of the turquoise beads (n=10) were found outside burial contexts in all intensively excavated areas. This supports once again, that access to exotic raw materials or ornaments respectively was not restricted to one area, and it does not seem that they had been exchanged from one central place in Ba`ja. It also supports the suggestion (see Benz *et al.* this volume) that the selection of bead types for the composition of ornaments was not a question of accessibility, but a deliberate choice to manifest personal and/ or social identities. The extremely low number of stone beads in Area B-South (n=1) is in contrast to the rather high amount of shell items from this area. Whether this is by chance or not remains to be answered by future excavations in this area.

Summary and Discussion

In light of the above made observations, the main results can be summarised as follows:

1. Except for one bone bead ornament, probably a necklace, the ornamental compositions[4] are exclusively found in burials, in association with human skeletal remains. Some of these ornaments were associated with specific individuals. This is consistent with the Late PPNB practices, whereby complete ornaments were systematically discovered in burials (Alarashi 2016a; Alarashi *et al*. 2018; Hermansen n.d.). Indeed, complete ornaments uncovered in "caches", in domestic or special buildings and/ or associated with non-human entities, like those documented at PPNA villages of the Middle Euphrates (Maréchal and Alarashi 2008; Alarashi 2014, 2016b), do not occur in Late PPNB contexts.
2. Not all the ornamental types discovered in non-funerary contexts are representative of those discovered in burials. However, there is a clear match between funerary and non-funerary contexts when considering large categories of raw materials (shells, minerals, *etc*.).
3. Generally, the number of the ornamental elements outside burials is remarkably low compared to burial contexts.
4. Whereas 98,6% of the mineral beads (n=2798) were found in burials, mainly due to the high number of reddish micritic limestone beads (n=2337) from the burial of "Jamila" (Alarashi b this volume), 18% (n=265) of the shell beads and pendants were found in non-burial contexts. The higher number of shells in non-burial contexts is almost due to the higher number of mother-of-pearl items. Moreover, some shell species were not uncovered in burials at all but in domestic contexts.
5. The variety of shell species in burial contexts is highly selective, with *Tridacna* and cowry beads being almost exclusively uncovered in burial contexts. This is in contrast to non-burial contexts, where a larger variety of shell beads were uncovered.
6. Despite specific compositions of ornament types, all types of beads and pendants made of shell and stone were uncovered in all intensively excavated areas. This means that access to ornament elements and raw materials was not restricted, but that the selection of elements was a deliberate choice due to other factors such as personal or social identities, or other criteria outside our knowledge.
7. It should be recalled here that the composition of ornaments as shown in the chapters on burials (see Benz *et al.* this volume), is almost unique to each burial, even within specific areas. An exception is Burial CG9, where two 3-4-year-old children wore almost identical hip decorations/ bags/ or belts. This observation was confirmed anew by the new excavations in autumn 2021. In Room CR17 an adolescent individual was uncovered wearing an ornament made of a great variety of beads and pendants, including new types, but also types of the known repertoire of other ornaments (Gebel *et al.* forthcoming).
8. Whether the near absence of mineral beads and pendants in Area B-South is due to the state of excavation, remains to be proven through future research.

[4] We prefer to use the term "composition" here instead of jewelry to focus on the process of selecting and combining various ornamental elements.

9. Bone beads, although uncovered to some extent in burials, seem to be restricted to adult individuals. A possibly distorting effect that needs to be mentioned here, is that, on the one hand, bone beads from the collective Burial CG1 could not be considered here,[5] and on the other hand, an almost complete ornament of at least 28 bone beads strongly enhances the number of bone beads in domestic contexts. The total absence of bone finger rings in burials is remarkable, even though fragments of them were uncovered on the site (Nielsen 2009). This absence is all the more striking, as children at Çatalhöyük have been found decorated in burials with up to eleven such rings on their fingers (Vasić 2020: 73).
10. So-called "ear plugs"/ "tokens" of marl have never been found in burials at Ba`ja. Most of them come from the surface or uppermost layers, except for one. This suggests that they may have been used only by the inhabitants of the latest occupation phase of Ba`ja. The only marl ornaments that have been found in a burial belong to the composite upper arm ring worn by "Usaid" (CG10), a young male adult buried close to "Jamila" (CG7) whereas small marly limestone beads (n=75) were uncovered in Burial CG9.

Last but not least, it should be mentioned that marly limestone beads have never been found outside burial contexts. However, this is most probably due to their very fragile raw material, which would probably not be preserved outside protected contexts.

Taken together, the contextual investigations show that adornments used in burial contexts were highly selective, but that access to ornaments, neither of local nor of exotic raw materials, was restricted to specific households. The suspiciously low number of mineral based ornamental objects outside burial contexts suggests that these beads were primarily used for burials and that the production of these beads was probably not located in the areas so far excavated at Ba`ja. This observation is all the more enigmatic since some of the beads had been used intensively and had even been recycled before they were used as adornments for the dead (Benz *et al.* 2019; Gebel *et al.* 2019). Unless they were not used outside of Ba`ja for a longer time and reached Ba`ja as objects with a long 'biography', it should be concluded – due to the low number of lost or broken beads in household contexts – that the people of Ba`ja cared for them meticulously.

Most of the beads and pendants were used for the decoration of subadults, which exclude the possibility that the intense use-wear traces had been caused by the subadults. This leads us to the conclusion that although subadults were adorned by these ornaments in burials, these compositions probably rather represent 'inherited' objects from older individuals of the community, or that the adornments for the dead were made explicitly for this event by re-combining available beads and pendants in a very specific way.

Contextual evaluations of ornament distribution have been an unusual investigation for PPN sites in the Levant so far. The spatial analyses conducted at the Middle PPNB site of Ayn Abū Nukhayla in Wadi Rum allowed fine-grained results regarding the distribution of activities, thereby providing reliable socio-economic interpretations at the household and community levels (Spatz *et al.* 2014). In particular, spatial analyses of body ornaments have shown that in all buildings, seashells, bones and stones were found as final products, as along with technical pieces representing the different stages of manufacture. However only seashells, present in sufficient high amounts, indicate large-scale production intended for exportation beyond the community of Ayn Abū Nukhayla. This settlement was indeed considered as a production and distribution centre; shells were obtained from the Gulf of Aqaba, transformed into ornaments at this settlement, and then distributed towards the north and possibly to the eastern steppe areas. At Ayn Abū Nukhayla, the production of shell body ornament is considered as resulting from a "cottage industry", a part-time craftwork practiced within individual autonomous households composed of "nuclear families" (Henry *et al*. 2014: 414). The standardisation of beads, which can be observed at Basta and Ba`ja, especially concerning *Tridacna* barrel-shaped and tubular beads but also the mother-of-pearl rings, might however hint at some regional specialisation, as has been suggested for Jilat 13 and 25 (Wright *et al.* 2008: 153-154). However, no centralised production, *i.e.*, that one household had specialised in producing beads and distributing them, as

[5] Bone beads were recorded in the diary and in preliminary reports (Gebel *et al.* 2006) but were not mentioned individually in the find lists.

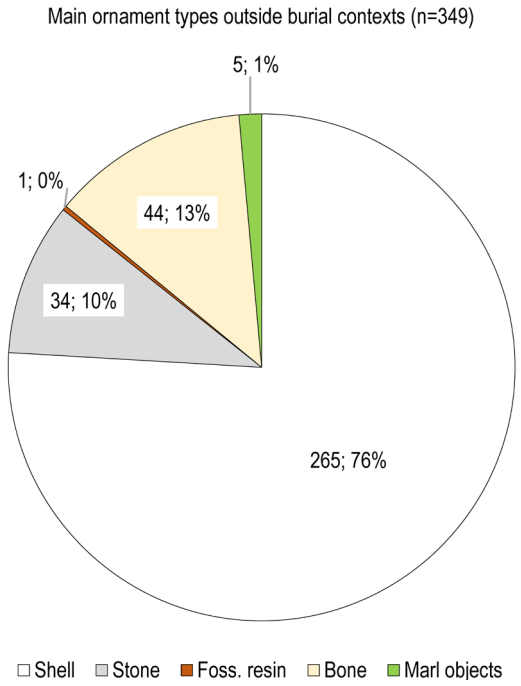

Fig. 6 Percentages of main raw material types in non-burial contexts. (Graph: M. Benz, Ba`ja N.P.)

it may have been the case at Beidha, has been uncovered at Ba`ja so far (*cf*. Byrd 2005: 117; Maier 2008).

At Ba`ja, body ornaments were mainly discovered in burials, and the rather even distribution of mineral and shell items in most of the excavated areas lead us to suppose rather egalitarian access to resources and products related to body ornamentation. Moreover it can be suggested that shell beads, especially mother-of-pearl items, were used in daily life for adornments, possibly not only for humans, but also for other artefacts or even as decoration for constructional elements, and that this raw material was processed at Ba`ja. However, the most sophisticated ornaments of mother-of-pearl from Ba`ja were uncovered in burials. These were rather standardised "paillettes", *i.e.*, perforated rings and cross-shaped pendants which possibly served as spacer. Although a similar – but much smaller – ring-shaped pendant with appendices was also uncovered at Basta (Hermansen 1991, n.d.), it was not as sophisticated as the two paillettes with appendices from Ba`ja. The cross-shaped pendants (see Benz *et al.* 2020; Alarashi a this volume) are unique for Ba`ja so far.[6]

Before closing this chapter, we should recall some drawbacks from our evaluation. The chronological development of the use of ornaments has been largely ignored due to a lack of a significant number of well dated contexts. Only the obvious late date of the use of so-called "ear plugs"/ "tokens" was suggested (see above). It will be a major task to correlate occupation phases in more detail in all areas, and to identify the chronological position of the burials with more radiocarbon dates (see Purschwitz and Benz forthcoming). Due to the lack of collagen in bones, a direct dating of the burials has not been possible. Their stratigraphic relations to each other can hardly be identified since most of them were dug into the paleosol without overlapping.

In general, our observations at Ba`ja confirm the trend that stone beads were of increasing importance, with a great variety of minerals used during the Late PPNB (Wright and Garrard 2003; Bar-Yosef Mayer and Porat 2008; Alarashi 2014; 2016a; 2016b; Spatz *et al.* 2014). This was not to the detriment of shell beads (Fig. 6). It rather seems that stone items were added in order to enhance the value of specific compositions of shells used for ornaments. Moreover, compared to earlier periods, an increasing number of shells were used to produce artificial forms of beads, namely the *Tridacna*, Conidae and mother-of-pearl beads and pendants, in contrast to earlier periods, during which natural shapes were preserved and beads or pendants were created by simply piercing or abrading the shell (as it was the case, for example, for nerite and cowry beads). As for the stone beads, these artificial shell beads did not replace naturally shaped shells but were added to the increasingly wide repertoire. In household contexts shell ornaments still outnumbered stone beads by far.

Whether the slightly different composition of ornament types and the more diversified raw materials used in Area D (Fig. 4, Table 5) were due to slightly later chronological positions, remains to be proven by further deep excavations in Area D. Further evidence for changes in time may be attested by the different types of "greenstones" from the collective Burial DG1 in Area D, compared to burials in Area C. It

[6] See Footnote 1.

should also be mentioned here that the slightly more recent burial of an infant (Burial DG2) contained a very bleached turquoise button. A similar button was uncovered in the upper layers of Area D. This very bleached type of turquoise might come from another source of raw material than the turquoises found in other burial contexts, which are still very bright in colour (see Gerlitzki and Martin this volume). However, geochemical analyses and identifications of possible sources of "greenstones" from Area D are pending. Only comprehensive geochemical analyses of all "greenstone" beads will help to understand the possible changes in procurement and sources of raw materials (for changes in chert procurement during the late occupation phases see Purschwitz 2017; Gebel *et al.* 2020). For the time being, it seems that there was a decline in the use of ornaments over time (see Benz *et al.* this volume), but this may be due to the lack of burials from the upper layers. As outlined above, several arguments let us suggest that the adornment of corpses seems to have been a main incentive for the use of ornaments.

It should also be emphasised that the number of items has not been the only decisive criterium for our evaluation, because one single necklace, such as the one of "Jamila" (Burial CG7), or the bone bead ornament uncovered in Area B-North, can distort all statistics. The conditions of recovery and the state of excavation as shown in Fig. 5 also have a strong influence. It remains a major task to evaluate well documented contexts according to a more detailed contextual analyses. As mentioned above, a detailed evaluation of different types of contexts was out of the scope of this contribution, but it might foster our understanding of the 'biographies' of ornaments, and of their meaning for personal or group identities in daily life. This is all the more important since ornaments may form – or at least express – personal or social identities and may connect people to their social and natural environments by the stories inscribed in the ornaments. At least some of them were worn for a very long time. By all this, we should keep in mind that ornaments may 'travel' with people, and that similar ornaments at different locations might not only hint at the exchange of goods, but also of people (*cf.* Knipper *et al*. this volume).

Despite these pending tasks, the rather similar distribution of beads and pendants in all primary, secondary and tertiary household contexts in all intensively excavated areas, let us suggest an almost equal access and use of ornamental items, albeit with a great liberty of combinations and selections from a common repertoire.

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Appendix 1

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