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New evidence of Iron Age ritual practices in central Oman: 2017 excavations in Muḍmār East, near Ādam

MATHILDE JEAN, MARIA PAOLA PELLEGRINO & GUILLAUME GERNEZ

Summary

In January 2017, the excavations of the French Archaeological Mission in Central Oman (FAMCO) at the Iron Age site of Muḍmār East (Miḍmār), near Ādam (al-Dākhiliyyah governorate), extended to the slope of the hill overlooking Buildings 1 and 2. The buildings have already revealed substantial architectural remains and a quantity of valuable copper objects that qualified the location as a relevant Iron Age II site, probably linked with cultic activities. The excavation on the slope of the hill led to the discovery of new features, including a large terrace wall and three post holes. Moreover, a remarkable quantity of potsherds and metallic artefacts provides new evidence to suggest that the whole hill could be part of the cultic site. The abundant pottery assemblage is discussed, highlighting a set of uncommon shapes that might reveal a regional cultural specificity in central Oman, on the margin of the Iron Age culture of eastern Arabia. Among the metallic objects, some of the arrowhead and dagger types are known in the region, while other weapons appear to be unique and may only have a votive function. Additionally, numerous snake representations (copper figurines and ceramic decorations) suggest a strong connection with a cult that flourished during the Iron Age in south-east Arabia.

Keywords: Oman, Iron Age, pottery, weapons, cultic site

Introduction

The ritual practices of the Iron Age in eastern Arabia

The cultic practices of the Iron Age are now well documented in eastern Arabia from several sites in the United Arab Emirates and in Oman, such as Biṭnah (Benoist 2013a), Masāfi (Masāfi-1 and 3; Benoist 2010b; Benoist et al. 2012), al-Qusays (Taha 2009), Sarūq al-Ḥadīd (Weeks et al. 2017), Salūt (Avanzini 2015), and now Muḍmār East, near Ādam, in central Oman (Gernez, Benoist & Jean 2017; Gernez, Jean & Benoist 2017).

The sites shared several ritual and cultural features that help to define a consistent regional Iron Age culture. The first significant find is the presence of a pillared room or pillared building, as evidenced in Masāfi-1 (Benoist 2010a), Biṭnah-b44 (Benoist 2013a), Rumeilah (Rumaylah) (Building G; Boucharlat & Lombard 2001), Muweilah (Muwayliḥ) (Building II; Magee et al. 2002), and Bidā bint Sa'ud (Al-Tikriti 2002).

Additionally, a number of these sites are closely associated with copper in different ways. Copper metallurgy is usually indicated by slags or ingots, for example in Masāfi-1 (Benoist et al. 2012), Biṭnah (Benoist 2013a), Muweilah (Magee et al. 2002), Sarūq al-Ḥadīd (Weeks et al. 2017), and Salūt (Degli Esposti,

Renzi & Rehren 2016). The discovery of copper weapons also seems to be an important indication of symbolic practices — especially when they are unfinished — as found at Sarūq al-Ḥadīd (Weeks et al. 2017), Muweilah (Magee et al. 2002), ‘Uqdat al-Bakrah (Yule & Gernez, forthcoming), and Salūt (Degli Esposti, Renzi & Rehren 2016). Moreover, snake figurines — whether copper objects or pottery decorations — were found at Salūt (Avanzini 2015), Masāfi-3 (Benoist 2010b), Biṭnah (Benoist 2013a), al-Qusays (Taha 2009), Rumeilah (Boucharlat & Lombard 1985), and Sarūq al-Ḥadīd (Weeks et al. 2017) and are usually interpreted as ex-votos or, at least, symbolic objects or offerings. Finally, two more features could help to identify ritual sites: indications of water management and animal sacrifices. Water management structures have been found at Biṭnah (Benoist 2013a: 295) and Masāfi-1 (Charbonnier, Purdue & Benoist 2017), where a water channel, probably used for irrigation, has been excavated. Evidence of animal sacrifices is more rarely observed and the main example of such a practice is at the site of Biṭnah, where several pits revealed quite specific faunal remains (Benoist 2013a: 237–270).

To sum up, the most characteristic shared features of ritual or symbolic meeting places at these sites are: a pillared building; the presence of traces of copper

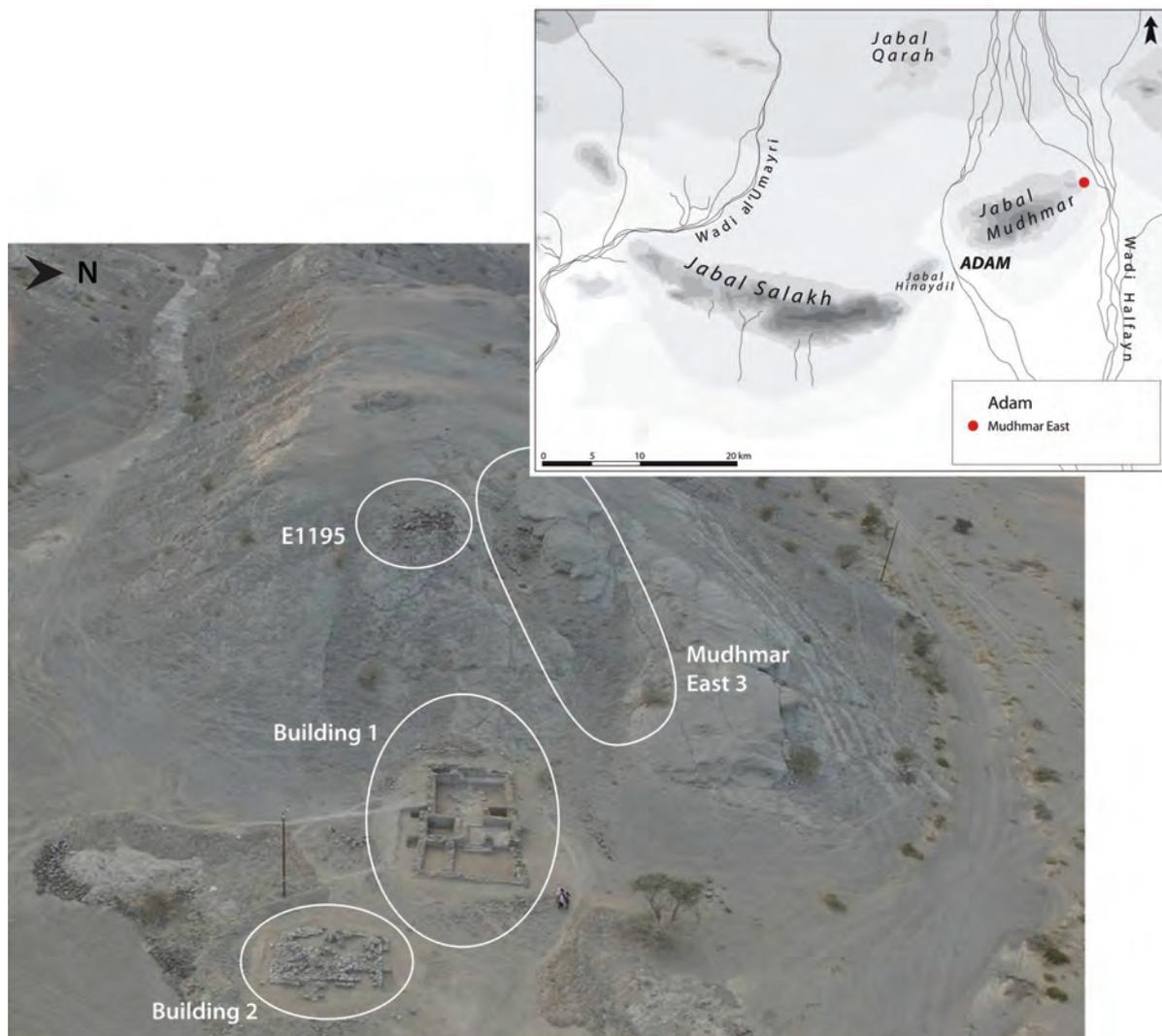


FIGURE 1. *The geographical location of the site of Muḏmār East on Jabal Muḏmār and the location of the main excavated areas (map G. Gernez; aerial view of the site R. Hautefort).*

metallurgy, copper weapons, and copper snake figurines; an association with water management structures and animal sacrifices or offerings. The identification of some of these features on a site might therefore indicate that the site was used as a meeting place or ritual site.

The site of Muḏmār East has already been identified as an Iron Age ritual site thanks to discoveries from its two main buildings. In order to evaluate further its inclusion in the regional ritual culture of that time, this paper presents the results of the 2017 campaign of excavation in a new area of the site, Muḏmār East 3, and discusses the meaning of the most recent discoveries.

Muḏmār East: presentation of the site

The site of Muḏmār East is in central Oman, 20 km from the oasis of Ādam (al-Dakhiliyyah Governorate). It lies at the very eastern tip of Jabal Muḏmār (Jabal Miḏmār), opening on Wādī Ḥalfayn, and thus in a strategic place on an important nomadic route (Fig. 1). Excavated since 2015, the site consists of several buildings and areas.

Building 1 includes seven spaces delimited by stone and mud-brick walls. In the main room, several stone pillar bases were found inserted into the floor, revealing the presence of structures supporting a roof. In the

north-eastern corner of this room, a structure about 1 m deep was discovered under the floor level. According to geomorphological and hydrological experts, it seems very likely that this structure was somehow related to water management, probably catching an ephemeral and limited underground flow (Gernez, Jean & Benoist 2017: fig. 4). Moreover, in Building 1, a small square room revealed an exceptional set of copper/bronze weapons, including bows, arrowheads, axes, daggers, and miniature weapons, all quite valuable but unusable, which have been interpreted as votive and/or symbolic offerings (Gernez, Jean & Benoist 2017). As mentioned above, Building 1 presents a number of characteristics identified at other meeting or cultic sites in eastern Arabia.

Building 2 is less well preserved and seems to consist of at least two successive strata, the upper one being a filling of large stone blocks while the lower one is made of a number of post holes. The materials associated with this building are fairly characteristic and include some bronze snake figurines and faunal remains whose analysis revealed a strict selection process. The bones are those of cow, goat, and sheep — mostly legs — and frequently bear burn marks: this assemblage is not compatible with any domestic installation and probably has a ritual purpose.¹ The identification of animal sacrifices is thus another feature that connects the site to the cultic community of Iron Age eastern Arabia.

Additionally, the area of Muḍmār East 3 revealed an unusual installation on the mountain slope, associated with rich and diverse artefacts, presented below and further supporting the notion that the site had a ritual purpose.

Muḍmār East 3: an Iron Age installation on the slope of the hill

Presentation of the area

The area of Muḍmār East 3 is located on the hill slope overlooking Building 1, in a gully incised into the slope's bedrock, which ends a few metres north of the building (Fig. 1). In 2016, during the survey, a stone wall was identified in the middle of the slope along with an unusually high stratigraphy for such a steep location. A small area was excavated there, about 50 x 50 x 20 cm, revealing a large amount of ceramic remains (exactly 454 sherds), a lot denser in quantity than in the two buildings. The extended excavation of the area started in January

2017 in the upper part of the slope, upstream of the wall (Figs 2–3) and revealed many more important deposits than expected.

Description of the archaeological structures

The excavation uncovered a complex set of structures and deposits that are still difficult to understand. The archaeological remains and the stratigraphy will therefore first be described in detail before some hypotheses for interpretation are put forward.

At the beginning of the excavation, the upper layers revealed a large amount of collapsed stone blocks (Loc 5001) that might come partly from the E1195 structure located on the hill's crest (Fig. 1), but probably not only from it. This massive heap of stones occupied the whole width of the gully and was about 1 m high. Under it, three post holes were found aligned perpendicularly to the slope (Figs 2–3). The three post holes look very similar: they are of circular shape, made of medium-sized blocks of local limestone, 50 cm wide at the top and 60 cm deep (St 5006, 5007, and 5013). Excavation of the post holes did not reveal any archaeological artefacts. A set of thin limestone slabs laid flat is associated with the post holes (Loc 5005). The alignment of the post holes and their similar structure suggest a synchronous construction.

The main structure uncovered in the area is the wall (Wall 5009) which crosses the slope from north to south (Figs 2–3). Already noted in 2016, the wall appears to be preserved over its full length and provides important evidence of a human-made installation in Muḍmār East 3. The wall is about 8 m long and 1.30 m wide in its southern part; it is made up of large blocks of local limestone, from 30 to 80 cm long, disposed in one or two rows in the current state of preservation. The exact height of the wall is not yet known, but its width suggests an important purpose, clearly not as the wall of a dwelling, but more probably as a terrace or fortification wall. To date, the post holes and the wall are the only archaeological structures found in Muḍmār East 3. They are associated with important and complex deposits which contain many artefacts.

A complex stratigraphy

The stratigraphy of Muḍmār East 3 is more developed and complex than might have been expected. Two different filling processes have been attested, in the upper part of the excavated area (zone A) and in the lower part (zone B) (Figs 2–3).

¹ The archaeozoological study was carried out by Delphine Decruyenaere and Marjan Mashkour (Museum d'Histoire Naturelle, Paris).



FIGURE 2. *Ortho-photograph of Muḍmār East 3 at the end of the 2017 excavation. The three post holes and the wall crossing the slope are clearly visible (R. Hautefort).*

The fill of zone A is made entirely of colluvial deposits including stone blocks of different sizes (from 5 to 30 cm) and gravel in a sandy-silty brown-reddish matrix (Section 1, Fig. 4/a). According to the geomorphological analysis led by T. Beuzen-Waller, the filling is torrential and is evidence of several episodes of strong runoff. A large set of copper weapons was found within these colluvial strata, including hundreds of arrowheads, daggers, and bow strings as well as shell medallions. Interestingly, the torrential fill is limited to zone A and stopped on the massive heap of stone blocks (Loc 5001) that covered the post holes.

Downhill, in zone B, very different deposits have been excavated (Section 2, Fig. 4/b). The general organization of the layers is much more horizontal than in zone A and the strata seem directly associated with the wall (Wall 5009). Moreover, the layers hold a very large number of potsherds (several thousand; see the pottery study) that were not found in zone A, and almost no metallic remains. The difference in the deposits observed in Muḍmār East 3

may be explained by several hypotheses that may help to understand the area and connect it to the whole site.

Interpretation of the structures and deposits

In zone A, colluvial deposits were found, containing an important set of metallic artefacts but no archaeological structure. The collapsed stones (Loc 5001) and the post holes which were under it mark the limit with zone B, where more horizontal strata were excavated revealing thousands of remains of ceramics, along with a north-south wall. Several hypotheses could explain the differences between the fills of the two zones.

Zone A

As the colluvial deposits were only found in the upper part of the slope and stopped on the collapsed stones (Loc 5001), it is likely that the accumulation of blocks obstructed the gully prior to the torrential event. Hence,

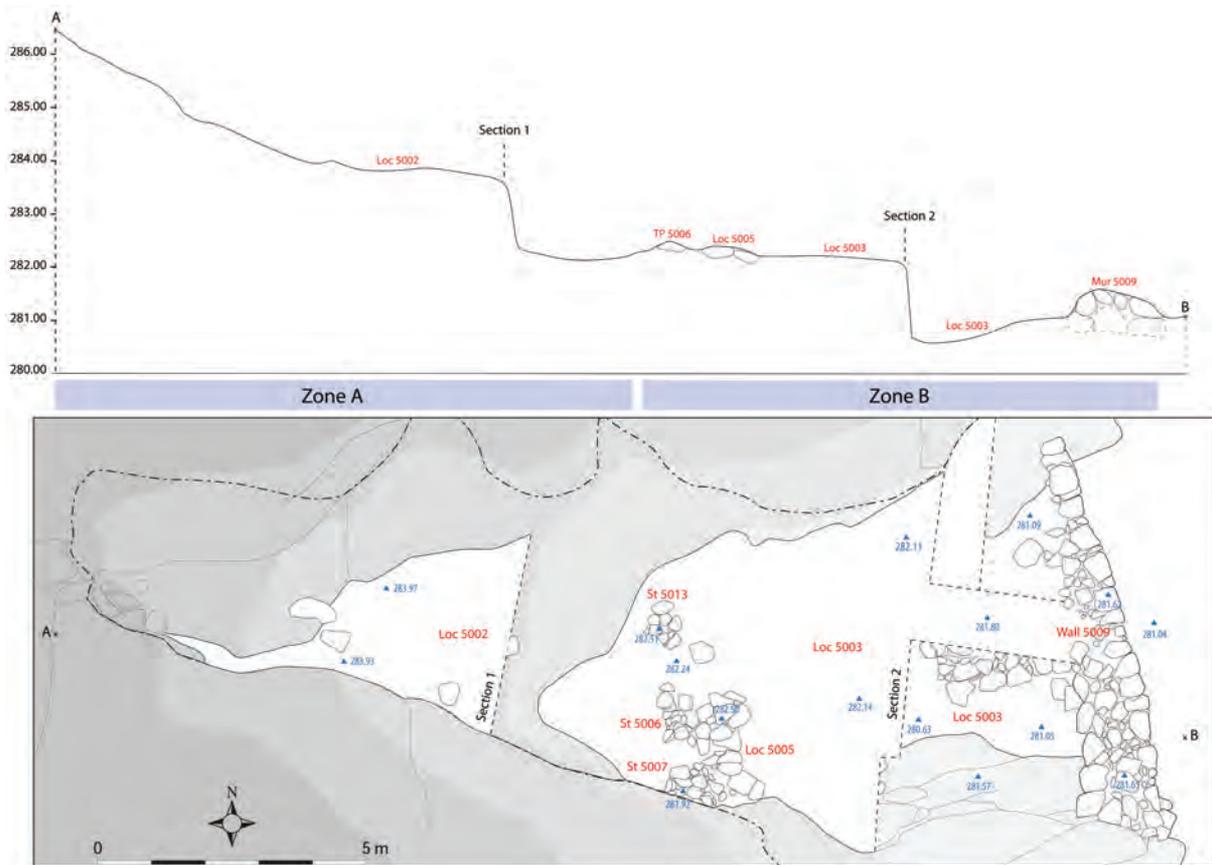


FIGURE 3. Plan and section of Muḏmār East 3 at the end of the 2017 excavation (M. Jean).

when the torrential event occurred, the colluvial deposits accumulated in the upper part of the slope, in zone A. In this hypothesis, the presence of the numerous blocks over the post holes still needs to be explained: whether the posts stopped the stone blocks when they collapsed, or the stones were placed there intentionally, possibly at the end of the occupation of the site.

In the colluvial deposits, an important set of valuable objects was discovered, including metallic weapons and shell medallions. Considering the presence of several karstic cavities all along the slope and the absence of any structure at the very top of the hill, it seems possible that the artefacts were hidden in cavities and were then mixed with the torrential sediments during the runoffs.

Zone B

In zone B, the wall seems to delineate a terrace on the slope, made of horizontal strata of pottery sherds and

limestone pebbles in a beige sandy-silty matrix. The purpose of this anthropogenic fill was probably for drainage, which is consistent with an installation on the hill slope. Moreover, the post holes seem to be dug into the anthropogenic fill: they were thus probably built just after the terrace. It is likely that the wall was originally as high as the post holes (at least 15 cm higher than in the current state of preservation). In a second hypothesis, if the wall was used as a fortification as well as a terrace wall, it could have been much higher.

To date, and in the light of the current data, it is difficult to understand what this area looked like during its occupation. The post holes are evidence of a perishable construction that is probably not an actual building. The posts may have supported a roof that would need to rest partly on the bedrock as the wall was most likely too low to be part of a building. The posts could also have been part of a palisade or platform, or used as poles to make the site more visible.

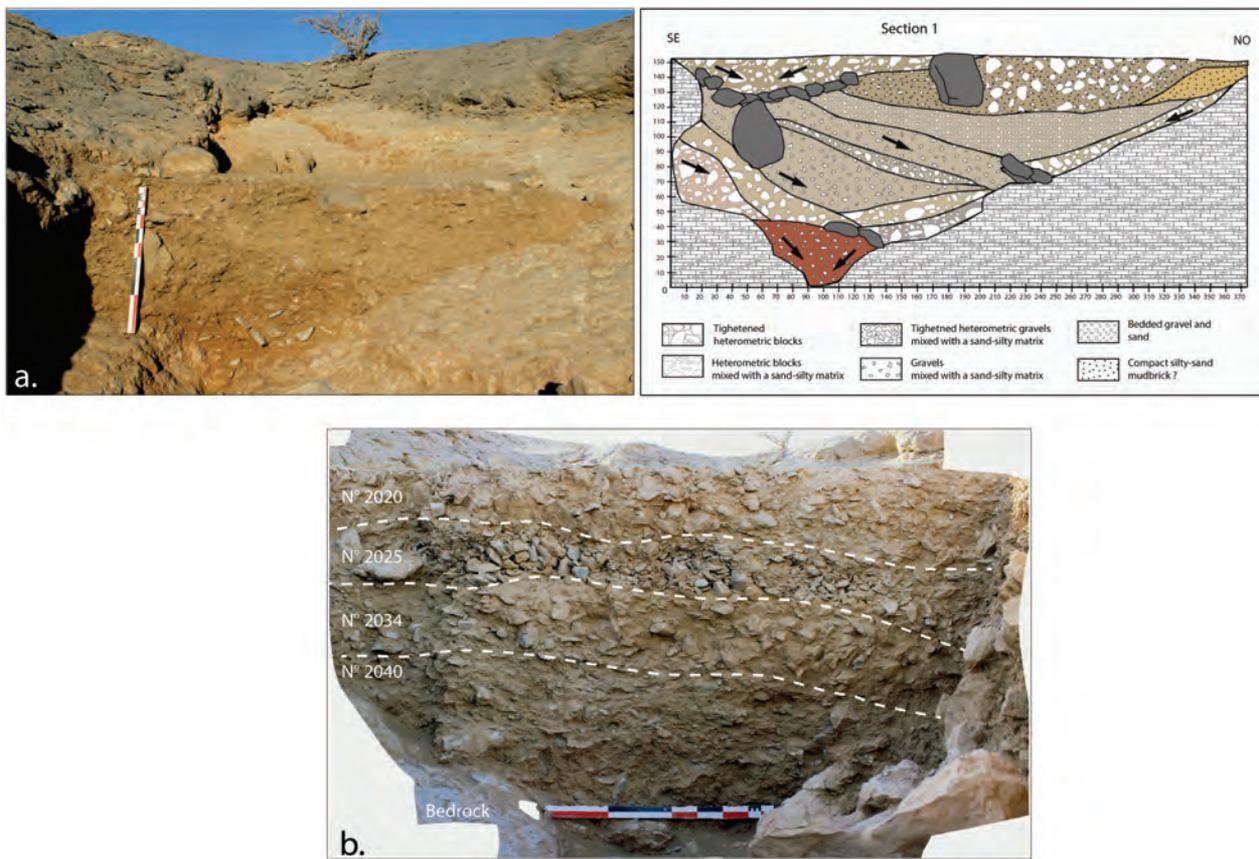


FIGURE 4. Sections of Muḍmār East 3: **a.** section 1 (T. Beuzen-Waller); **b.** section 2 (M. Jean).

Interpretation of archaeological remains

To sum up, Muḍmār East 3 revealed several unexpected features: first, the installation of a terrace on the slope overlooking Building 1, with a terrace wall and a draining fill containing a large amount of pottery remains. Furthermore, episodes of runoff occurred subsequently to the occupation and led to a developed stratigraphy including very rich artefacts — mostly copper weapons. The most plausible chronology of the installation and abandonment of the area may be summarized as follows:

1. construction of the terrace wall (Wall 5009);
2. anthropogenic filling of the terrace, including thousands of Early Iron Age potsherds (see ceramic study);
3. digging of the post holes into this fill, on the limit between zones A and B;
4. occupation of the area and deposit of valuable objects (mainly metallic weapons) in the karstic cavities in the slope;
5. abandonment of the area and formation of the heap of collapsed stone blocks (Loc 5001), whether intentionally or not;
6. torrential event draining sediments from the hill and karstic cavities, including the metallic objects mixed with colluvial deposits.

From the current data, it seems likely that the Muḍmār East 3 installation is contemporaneous with the occupation of the two buildings already excavated on the site. The whole site could thus be a consistent occupation phase from the Early Iron Age, as evidenced by the study of the rich artefacts discovered in the area.

The pottery: characteristics of the Muḍmār East 3 assemblage

The excavation of Muḍmār East 3 provided a huge quantity of pottery, which according to the fabrics and shapes can be dated back to the Early Iron Age, between 1100 and 600 BC. Eighty-five per cent of the pottery assemblage² presented here comes from a specific accumulation excavated in the south-eastern quarter of the excavation, against the wall. The whole pottery collection was not *in situ* but held in an anthropogenic fill. Specifically, 8261 potsherds were collected, which is more than anywhere else on the site.³ Among them, 1685 are diagnostic fragments on which our study is based. The pottery assemblage presents a high degree of homogeneity and mostly includes Iron Age common wares. The majority of the fragments are made of common orange ware, a common fabric of bright orange to brownish colour, sometimes with a grey core and presenting a moderate to abundant amount of black, white, and red grits often with some vegetal prints. Most of the pots were probably handmade using the coiling technique and some of them present traces of finish, indicated by tiny horizontal lines visible on the surface. Surfaces are usually matte. Some potsherds have a thin red, black, or brownish slip, generally with a matte finish and only four fragments show traces of red painted decoration. The whole pottery assemblage is highly fragmented and eroded; no match was found.

Typological study

The pottery shapes collected in Muḍmār East 3 can be divided into three typological groups: domestic ware that represents 62% of the total of the identifiable shapes, cultic ware (24%), and ‘uncommon shapes’ (14%; provisional name) which correspond to a group for which we have few to no parallels as yet.

Domestic ware

Domestic ware includes open shapes such as bowls and large open vessels, which are the most frequent, followed by storage jars, necked and hole-mouth jars, and a small number of dishes, spouted bowls, and lids. Bowls are

largely predominant, including simple convex bowls (Fig. 5/1–6) and some undulated and carinated bowls (Fig. 5/7–8) that are similar to examples from Rumeilah I (Benoist 1998: fig. 1/15–16), Lizq (Kroll 1998: fig. 2/22), Rafaq 1 (Phillips 1998: fig. 2/6,9,13), Biṭnah (Benoist 2013a: fig. 38/5–6), and Salūt (Iamoni 2009: fig. 7/18–20). Rims can be flattened, rounded, everted, and flared.

Among the open shapes, the large open vessels are mostly straight-sided basins, fairly deep, with a flat or concave rim and sometimes with a non-pierced lug, for which parallels are known in Shimāl (de Cardi 1985: fig. 10/68–70) and Husn Mudhab (Ḥiṣn Madhab) (Benoist & Corboud 1998: fig. 5/5).

Closed vessels include large storage jars with flat and triangular rims (Fig. 5/9–10) and hole-mouth jars with overhanging rims of different sizes (Fig. 5/11). Comparisons may be found in many Iron Age settlement sites throughout the Oman peninsula, such as Rumeilah I (Benoist 1998: fig. 4/4), Nud Ziba (Nawd Zubā/Zabā) (de Cardi, Kennet & Stocks 1994: fig. 7), Ḥiṣn Madhab (Benoist & Corboud 1998: fig. 3/1,3,5), Lizq (Kroll 1998: fig. 8/66), and Salūt (Iamoni 2009: fig. 8/1–3).

Painted and incised decorations are uncommon, although some incised decorations of wavy lines do occur.

Cultic ware

The second pottery group is that of cultic ware. This group is almost exclusively composed of long-handled bowls along with a few potsherds decorated with snakes.⁴ The bowls with handles seem to be restricted to cultic areas (Benoist 2010a; Benoist, Pillault & Skorupka 2012); they consist of a shallow bowl with a solid horizontal handle fixed on the base.⁵ Some of them are undecorated while others show geometric incised patterns on the handle (two rows of symmetrical oblique lines or circles) or applied snake decoration (Fig. 6). Long-handled bowls are known in Biṭnah-44 (Benoist 2007: fig. 15/2–4, 6), al-Qusays (Taha 2009: pl. 52/A–B), Salūt (Avanzini et al. 2007: fig. 19/1–2), and Masāfi-3 where they were particularly numerous (Benoist et al. 2012: fig. 14). One of the most interesting finds is an almost complete long-handled bowl bearing a crawling snake decoration on the handle, with small incised circles on its body and the head

² Quantities are expressed in percentage of the total number of diagnostic fragments from Muḍmār East 3.

³ A total of 651 potsherds were collected during the excavations of Building 1, while Building 2 yielded only 180 pottery fragments.

⁴ They have been identified on seventeen pottery fragments. The snakes often have a body decorated with small impressed circles, with an oval or triangular head (Fig. 6).

⁵ With reference to Figure 6, for 6/2 and 6/3 the bowls are not preserved; 6/1, 6/4 and 6/5 present part of the broken bowl.

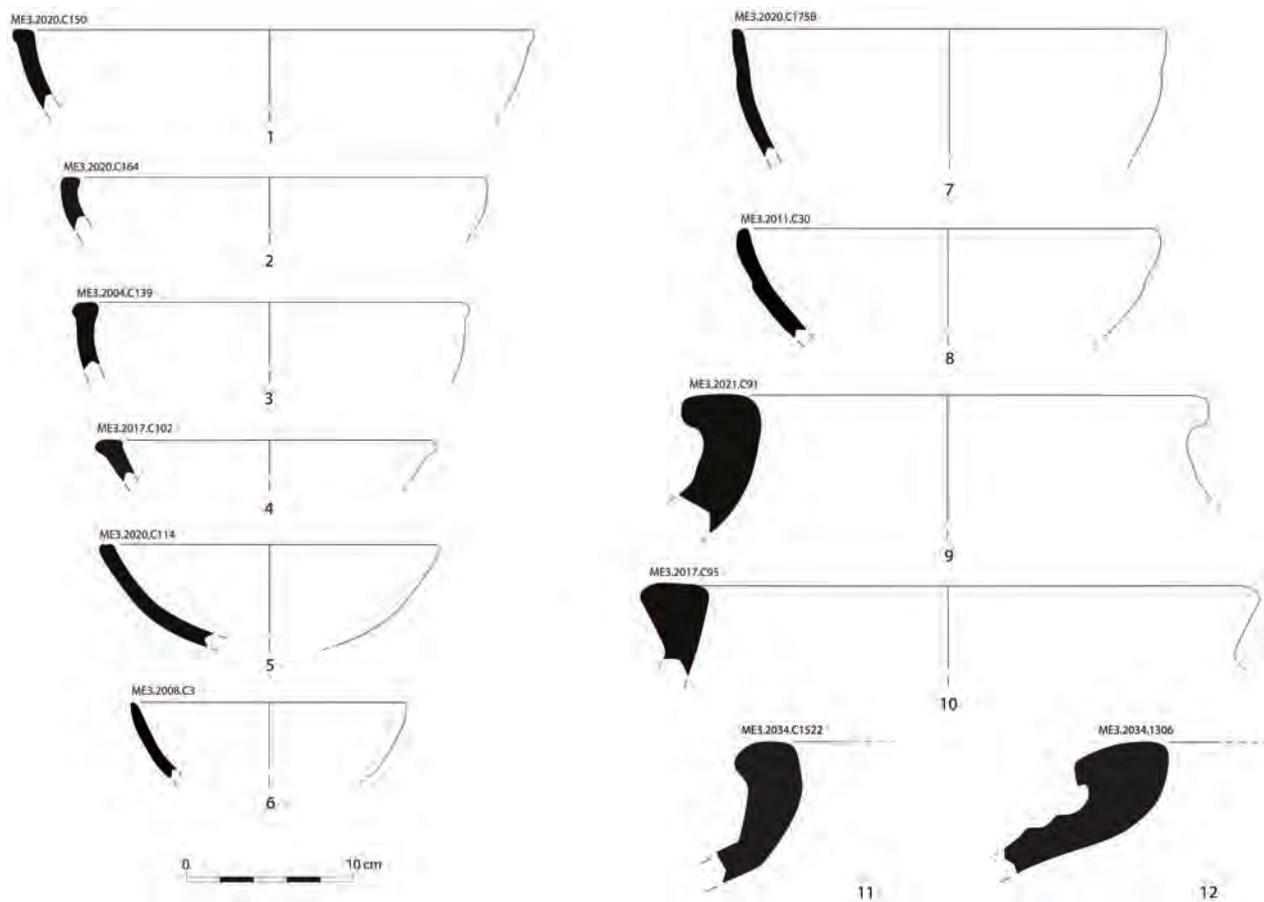


FIGURE 5. Domestic ware: examples of bowls and jars from Muḍmār East 3 (M. Jean and M.P. Pellegrino).

pointing above the end of the handle, which also displays a smiling snake face (Fig. 6/5). The bowls with handles from Muḍmār East 3 seem to have been used regularly, most of them presenting traces of burning inside the bowl.

Thus, the cultic ware from Muḍmār East 3 may be linked to pottery from Masāfi, Biṭnah, al-Qusays, Sarūq al-Ḥadīd, and Salūt, which are all sites related to the cult of snakes (Benoist 2010a; Karacic et al. 2017), highlighting the strong cultural unity of the Iron Age society in eastern Arabia.

Uncommon shapes

This assemblage is also remarkable because of the uncommon shapes that were collected, including twenty-one suspension bowls⁶ and seventy-two hole-mouth jars

⁶ Some potsherds of the same shape had already been collected in Building 1.

with two or four lugs and sometimes a spout (Fig. 7).⁷ These shapes are not represented so far in other Iron Age ceramic assemblages in the UAE and Oman with the notable exception of Salūt, significantly located in central Oman, in the same region as Muḍmār East. There, a considerable number of similar examples have been discovered in layers belonging to the foundations of the earlier Iron Age phase of Husn Salut (Ḥiṣn Salūt), the fortified structure that dominates the site, and dated between 1250 BC and 1100 BC (Degli Esposti, forthcoming).⁸ Further specimens have more recently

⁷ Including the only complete vessel discovered in Muḍmār East 3.

⁸ This result predates the commonly accepted chronology for the Iron Age II period. The issue of central Oman's chronology in relation to the three-fold periodization of south-east Arabia Iron Age has been concisely discussed by Philips (2010) and Schreiber (2010) and is one of the main focuses of the forthcoming publication of Ḥiṣn Salūt's excavations (Degli Esposti, forthcoming). These considerations will



FIGURE 6. *Cultic ware: examples of long-handled bowls from Muḍmār East 3 (M.P. Pellegrino).*

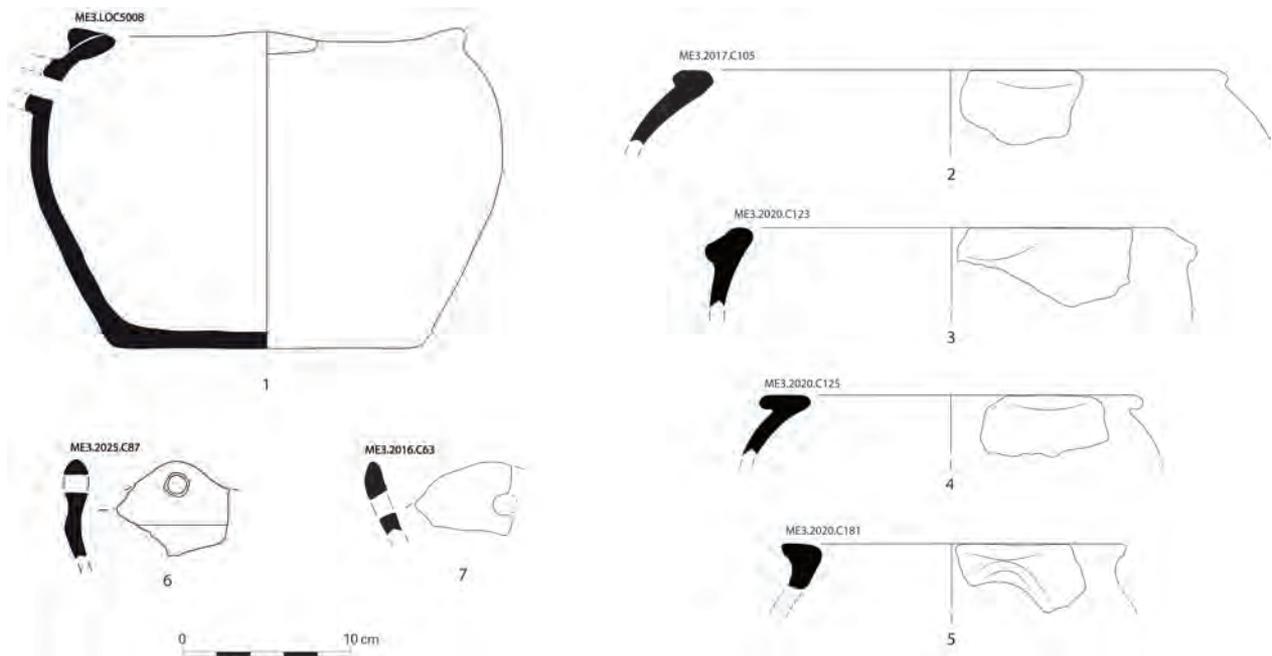


FIGURE 7. *Uncommon shapes from Muḍmār East 3 (M. Jean and M.P. Pellegrino).*

been discovered by the Italian Mission of Oman in the associated settlement, although in this case no direct ¹⁴C date was obtained from the context (E. Tagliamonte, personal communication).

Fabrics: preliminary remarks

Although homogeneous in quality, the common wares from Muḍmār East 3 include several fabrics. At a macroscopic scale, at least seven fabrics of Iron Age common wares have been identified. None of them is similar to those found in the UAE and, on the other hand, the descriptions of pottery collected on other central Oman sites are currently not detailed enough to offer proper comparisons and consistent discussion. The forthcoming publication of Hiṣn Salūt's main contexts (Degli Esposti, forthcoming) will, it is hoped, provide fundamental comparison data. In Muḍmār East 3, the identification of different fabrics may reflect the presence of local or regional ceramic production centres in the region during Iron Age II. This hypothesis still needs to be further investigated and could be confirmed by petrographic analyses and direct comparisons between the Muḍmār fabrics and other Iron Age pottery assemblages in the region (e.g. from Salūt, Lizq, etc). Unfortunately, petrographic analyses are still lacking on the regional Iron Age assemblages; they could provide evidence for a debate on possible short- and long-distance exchanges.

The pottery: first conclusions

In general, the Muḍmār East 3 pottery assemblage comprises a range of fabrics, shapes, and decorative motifs typical of an Iron Age assemblage and comparable to others found throughout south-east Arabia. More precisely, based on the typological considerations, parallels as well as differences exist between Muḍmār East 3 and the Iron Age II ceramic horizon in the UAE. The discovery of new types⁹ that are well known at Salūt but not represented in any other Iron Age II ceramic assemblage may be due to the existence of a particular ceramic tradition of Oman that was only to be found in the region. It could also highlight a chronological issue, presuming that the uncommon shapes mainly belong to an earlier phase within the Iron Age II horizon or suggesting the existence of an even earlier phase, possibly Iron Age I according to the UAE chronology. In any case, further archaeological data corroborated by ¹⁴C are needed to

provide a more detailed chronology of the stratigraphic contexts that contained the unknown ceramic types.

The precise purpose of common and coarse ware vessels on cultic sites is not yet understood. The daily subsistence of people living on the sites, however, must be taken into account. It seems likely that jars simply served for storage, while bowls and jugs could have been used for daily meals; they could also be dedicated to the preparation and storage of 'ritual' offerings and meals — like the Masāfi-1 jars (Benoist et al. 2015). These vessels probably entered the archaeological record at the end of their functional life, after breakage and discard, or intentionally as part of the offerings, as observed in Salūt (Degli Esposti, forthcoming).

Finally, the preliminary ceramic study supports the hypothesis of Muḍmār East being an Iron Age II ritual complex dedicated to religious practices and centred on the symbol of the snake.

Metallic artefacts

General considerations

One of the important features in Muḍmār East 3 is the abundance of metallic artefacts, most of them weapons. They were mainly discovered within colluvial deposits, in the upper part of the area, and it seems significant that most of the artefacts were complete, with very little corrosion. Although some of the longest and thinnest objects can be a little bent due to torrential filling and soil pressure, this corpus is surprisingly well preserved compared to the similar objects from Buildings 1 and 2. Their location, close to the top of the slope and thus drier than at the bottom, may partly explain their good state of preservation.

Weapons

Among the 303 identified objects, 294 were made of copper/bronze including 247 weapons (84% of the total).¹⁰

Daggers

Two daggers were found, corresponding to well-known Iron Age II types. The first is a bronze 'rim-flanged' dagger with crescentic pommel and elongated triangular sharpened blade

obviously be of great relevance for assessing Muḍmār's chronology.

⁹ Hole-mouth jars with two or four lugs.

¹⁰ 2018 excavations in Muḍmār East 3 yielded more copper/bronze artefacts, including new snake figurine types and about 4000 arrowheads. These materials are now under study (Gernez et al., forthcoming).



FIGURE 8. *Rim-flanged dagger with crescentic pommel and elongated triangular sharpened blade in situ (M. Jean and G. Gernez).*

(Fig. 8). It belongs to the same type as most of the daggers discovered in Building 1, despite some minor differences. Exact parallels of the rim-flanged dagger were discovered at al-Buhais 18 (al-Buḥayṣ) in graves BHS 27 and 30 (Jasim 2012: figs 127, 350). This type, quite common throughout eastern Arabia during the Iron Age, is also attested in the Ibrī/Selme hoard (Yule & Weisgerber 2001: 43, pl. 2, 14–19) and Dabah (Genchi et al., this volume) and, with some differences in shape, in other sites in the Levant, Mesopotamia, and most of all, Iran.

The second dagger is smaller and has a narrow blade with a mid-rib and a flat handle; no other object of that type was found on the site. Similar small daggers with mid-rib, simple grip, and flattish heel are mostly known in ʿUqdat al-Bakrah (as-Saffah; Yule, in press). Only a few other items come from Masāʿif-3 (Benoist et al. 2012: fig. 12) and Sarūq al-Ḥadīd (Weeks et al. 2017: 49). It could be a specific production from ʿUqdat al-Bakrah, exported from there to the north-west and the south-east.

Archery

All the other weapons are associated with archery. A total of 247 arrowheads come from colluvial deposits, in the uphill excavated area. The set is quite homogeneous:

the two main types are foliated arrowheads and shorter arrowheads with parallel edges (Fig. 9). They are all tanged and some of them present incised marks on the flat mid-rib. The arrowheads may have been used, but they may also have been part of a deposit, as they seem intact. The arrowhead types may be compared to those found in ʿUqdat al-Bakrah (al-Saffah; Yule, in press) and in most other Iron Age sites in eastern Arabia, for instance al-Buḥayṣ (Jasim 2012: 149) and Jabal al-Buḥayṣ tomb BHS 30 (Jasim 2012: 103, fig. 128). Incised arrowheads are also typical of this region from the Late Bronze Age (Magee 1998; 1999).

Moreover, votive objects related to archery were found, which are also probably linked to the discoveries from Building 1 (Gernez, Jean & Benoist 2017). The votive objects include some miniatures, along with one complete copper arrow with foliated head and feathering, which seems to be a reduced model, close to the size of a real one, 41 cm long (Fig. 9, right). Another arrow feathering was found, but the shaft and point are missing; according to the size of the feathering, the original arrow was possibly even longer than the previous one.

Three bow strings were also found in the area, wound at each end. They were identified by comparison with similar ones associated with the five complete bows

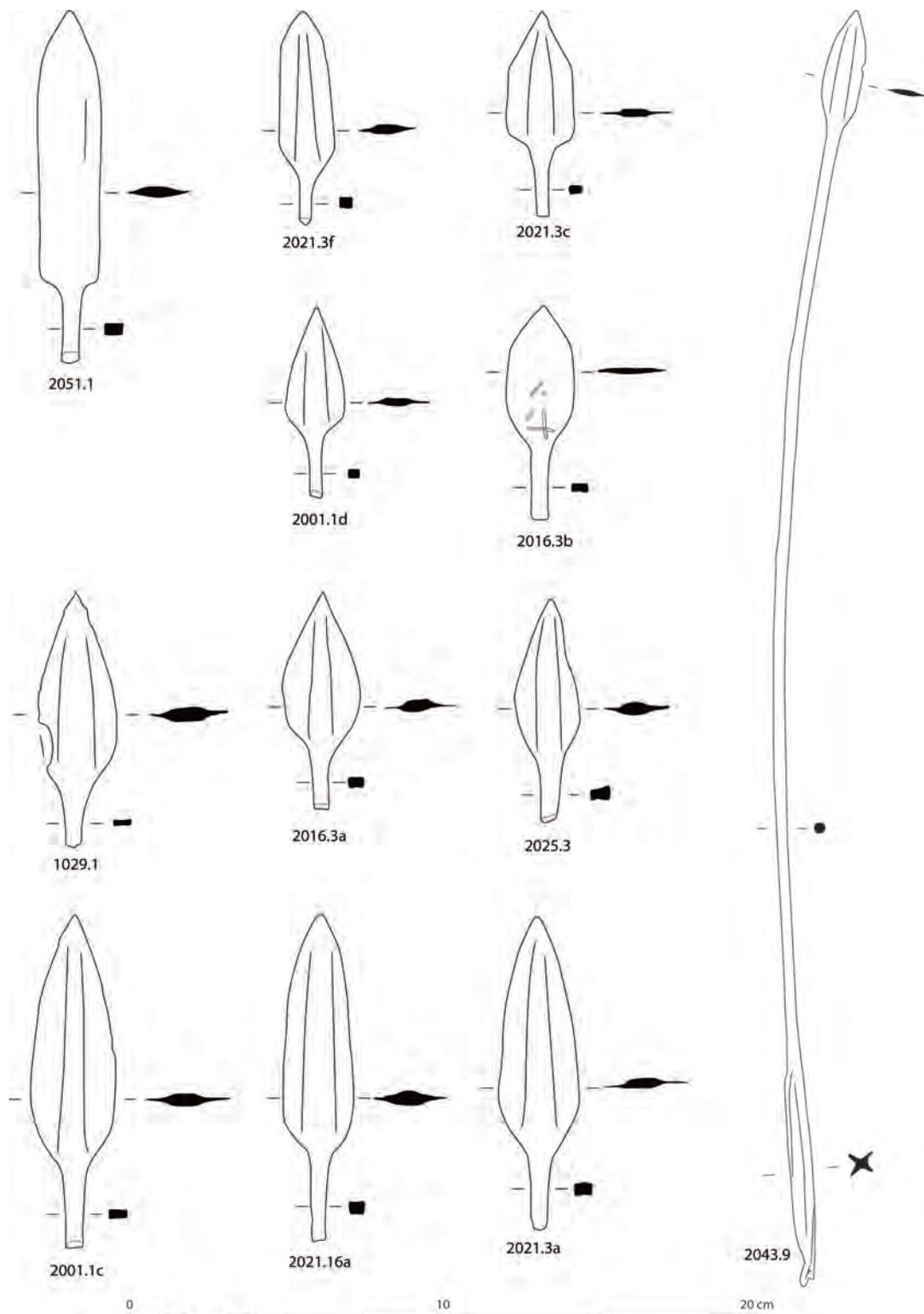


FIGURE 9. Arrowhead types and a complete arrow from Muḍmār East 3 (*G. Gernez*).



FIGURE 10. Snake copper figurines discovered in Muḍmār East 3 (G. Gernez).

from the second deposit in Building 1 (Gernez, Jean & Benoist 2017: 109). They also emphasize the importance of archery in the military and ritual Iron Age practices in Muḍmār East.

Snake figurines

Along with the weapons twenty-eight copper snake figurines were found, all different. Most of them are made from a sheet of copper alloy, while some are cast. Some have specific decorations on the body (dots, incised circles, or dashes), eyes and, more rarely, an open mouth with a tongue, or horns (Fig. 10). These anatomic details suggest the representation of different snake species, including the horned viper. The snake figurines are typical of the Iron

Age cultic sites in the whole region (Mouton, Benoist & Cordoba 2012), even if two were also found in Susa (Iran) where they belong to a twelfth-century BC layer (Amiet 1966: 384). In the UAE and Oman, they are known at Salūt, Uqdat al-Bakrah (Yule, in press), al-Qusays (Taha 2009:13, pl. 59), Masāfi (Benoist 2013b: 154, figs 11–12), and Sarūq al-Ḥadīd (Weeks et al. 2017: 49, fig. 19).

The only other animal copper figurine is a unique flying peacock made from a sheet of metal. One bird is represented in Muweilah, on a pot (Magee et al. 2002). To our knowledge, no metallic bird has up to now been found in the region, except a possible fragment from Sarūq al-Ḥadīd.

Only a few other copper artefacts, sometimes difficult to identify, complete this assemblage, including a very small copper cup. Hundreds of miniature copper cups or discs were discovered in Sarūq al-Ḥadīd, some being exactly similar to those from Muḍmār East (Weeks et al. 2017: 45, fig. 19).

To sum up, the metallic materials discovered in Muḍmār East 3 clearly belong to the Early Iron Age material culture of eastern Arabia and confirm the importance of copper, snakes, and archery in ritual practices and symbols of that time. Moreover, they represent convincing evidence of the functional relation between the three main excavated areas of the site of Muḍmār East.

Other findings

Aside from metallic artefacts and pottery there are a few other objects (3%). Among them are five carved shell medallions of different types. Such shell medallions, with or without inlays, are typical of Iron Age II and primarily come from the north: al-Buḥays (Jasim 2012: fig. 83), Daba (Genchi et al., this volume), Sarūq al-Ḥadīd (Weeks et al. 2017: 35, 56, figs 3 and 24).

Four round pebbles of fossiliferous limestone were also found and are clearly non-local; they could have been brought from Wādī Ḥalfayn. Their greenish colour with white dots is very specific and echoes the colours and decorations of the snake figurines; they could thus be an evocation of the snake. These pebbles may have been used as modest offerings related to ritual activities¹¹ and

¹¹ A few other examples of this kind of stone are known in Arabia and the Middle East: a similar pebble was found on the surface in Ra's al-Ḥamrā' RH-6 (D. Frenéz, personal communication) and in Tello, ancient city of Girsu, Mesopotamia (Desset et al. 2016). It is likely that these occurrences are not connected but it is interesting to note that this kind of stone was selected a couple of times for its peculiar aspect. Many

are part of the unusual and rich set of materials found in Muḍmār East 3.

Conclusion

The excavation in Muḍmār East 3 revealed an Iron Age installation on the hill slope overlooking Building 1. A terrace wall was built, associated with three post holes set perpendicularly to the slope. This installation was probably perishable, perhaps supporting a roof, a palisade or platform, or even just poles. The occupation layers seem to be contemporaneous with the rest of the site and, considering the artefacts, are also probably linked to cultic activities. Abundant and valuable copper objects were discovered, including weapons — mainly linked to archery: hundreds of arrowheads, a complete arrow, bow strings — and snake figurines. As they were found in colluvial strata, it is likely that the metallic objects were deposited in karstic cavities along the slope and then carried along with colluvial material during torrential episodes that occurred after the Iron Age occupation. The occurrence of snake representations — both on pottery and copper figurines — and the presence of metallic deposits, however, are strong indications of ritual practices. No organic remains were found for radiocarbon dating, but given the results of the pottery study and the similarity between the weapons from Building 1 and Muḍmār East 3, the occupation of the area may also be dated back to the Early Iron Age.¹²

Finally, the whole site of Muḍmār East appears chronologically and functionally consistent, being a ritual complex from the early Iron Age. As a matter of fact, several typical features of the cultic areas of that time in eastern Arabia have been evidenced, which indicates the strong integration of the site into a larger regional cultural sphere. Building 1 includes a large pillared room and a structure linked to water management. Animal sacrifices or offerings have been evidenced in Building 2, while copper was found on the whole site. Unique copper weapon deposits were discovered in Building 1 and the area of Muḍmār East 3 now provides new information on copper weapons, especially linked to archery. Moreover, an impressive set of copper snake figurines of various species and qualities was found there. The snake appears to be an essential expression of ritual practices in Iron Age eastern Arabia, and was also found in Muḍmār East

3 on several pottery sherds and bowls with handles. Among the characteristic features evidenced on cultic sites, only one is missing in Muḍmār East: an indication of copper metallurgy, slags, or ingots. This absence may be explained by the distance from Jabal Muḍmār to the production sites; either there were no metallurgical remains at all on the site, or they have not yet been found. The excavation of Muḍmār East 3 still needs to be extended towards the bottom of the slope in order better to understand the Iron Age occupation; it is also essential that other areas be investigated in order to define the actual extension of the site.

Nonetheless, during the three seasons of excavation the site of Muḍmār East provided sufficient material to confirm its integration into the ritual culture of Early Iron Age of eastern Arabia. According to current knowledge, Muḍmār East is now the southernmost site belonging to this cultural sphere. As a peripheral site, it presents some original characteristics from central Oman, but also displays reliable connections with the northern sites in the UAE. Moreover, the site is located on the interface between the sedentary and nomadic worlds, outside the oases and on the important nomadic route of Wādī Ḥalfayn. It thus extends the southern boundaries of the Early Iron Age ritual culture of eastern Arabia and provides a missing link between the sedentary world of the oases and nomadic spaces.

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References

Amiet P. 1966. *Elam*. Auvers-sur-Oise: Archée.

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¹² See ¹⁴C dating from Building 1 on samples associated with the metallic deposits (Gernez, Jean & Benoist 2017: 102).

- Avanzini A. (ed.). 2015. *In the heart of Oman: The castle of Salut*. Rome: 'L'Erma' di Bretschneider.
- Avanzini A., Phillips C.S., al-Jahfali M., Condoluci C., Cremaschi M., Iamoni M. & Santon R. 2007. *Salut. Preliminary Report (February–March 2007)*. Pisa: IMTO — Italian Mission to Oman and University of Pisa.
- Benoist A. 1998. Rumeilah. In M. Mouton (ed.), *Assemblages céramiques des sites de l'Âge du Fer en péninsule d'Oman*. (Documents d'Archéologie de l'Arabie, 1). CD-Rom, Maison de l'Orient, CNRS, Lyon.
- Benoist A. 2007. An Iron Age II snake cult in the Oman peninsula. Evidence from Bithnah (Emirate of Fujairah). *Arabian Archaeology and Epigraphy* 18/1: 34–54.
- Benoist A. 2010a. Authority and religion in south-east Arabia during the Iron Age. A review of architecture and materials from columned halls and cultic sites. Pages 109–142 in A. Avanzini (ed.), *Eastern Arabia during the First Millennium BC*. Rome: 'L'Erma' di Bretschneider.
- Benoist A. 2010b. Fouilles à Masāfi-3 en 2009 (Émirat de Fujayrah, Émirats Arabes Unis): premières observations à propos d'un espace cultuel de l'âge du Fer nouvellement découvert en Arabie orientale. *Proceedings of the Seminar for Arabian Studies* 40: 119–130.
- Benoist A. (ed.). 2013a. *La vallée de Bithnah au cours de l'âge du Fer*. (BAR International Series, 2510). Oxford: Archaeopress.
- Benoist A. 2013b. A green paradise. Economic strategies, collective practices and local ancestors of the Iron Age community of Masāfi (Emirate of Fujairah, UAE). *Proceedings of the Seminar for Arabian Studies* 43: 47–62.
- Benoist A. & Corboud P. 1998. Husn Mudhab. In M. Mouton (ed.), *Assemblages céramiques des sites de l'Âge du Fer en péninsule d'Oman*. (Documents d'Archéologie de l'Arabie, 1). CD-Rom, Maison de l'Orient, CNRS, Lyon.
- Benoist A., Pillault S. & Skorupka M. 2012. Rituels associés au symbole du serpent en Arabie orientale au cours de l'Âge du Fer (1200–300 avant J.-C.): l'exemple de Bithnah (Émirat de Fujairah). Pages 381–429 in I. Sachet & C. J. Robin (eds), *Dieux et déesses d'Arabie: Images et représentations*. Paris: De Boccard.
- Benoist A., Bernard V., Charbonnier J., Goy J., Hamel A. & Sagory T. 2012. Une occupation de l'âge du Fer à Masafi. *Chroniques yéménites* 17.
- Benoist A., Le Carlier C., Goy J., Degli Esposti M., Armbruster B. & Attaelmanan G. 2015. Snake, copper and water in south-eastern Arabian religion during the Iron Age: the Bithnah and Masafi evidence. Pages 21–36 in M. Arbach & J. Schiettecatte (eds), *Pre-Islamic South Arabia and its neighbours: New developments of research. Proceedings of the 17th Rencontres Sabéennes held in Paris, 6–8 June 2013*. Oxford: Archaeopress.
- Boucharlat R. & Lombard P. 1985. The Oasis of al-Ain in the Iron Age. Excavations at Rumeilah, survey at Hili-14. *Archaeology in the UAE*. 4: 44–73.
- Boucharlat R. & Lombard P. 2001. Le bâtiment G de Rumeilah (oasis d'Al Ain). Remarques sur les salles à poteaux de l'âge du Fer en péninsule d'Oman. *Iranica Antiqua* 36: 213–237.
- Charbonnier J., Purdue L. & Benoist A. 2017. Taming surface water in pre-Islamic southeast Arabia: archaeological, geoarchaeological and chronological evidence of runoff water channeling in Masafi (UAE). *Journal of Field Archaeology* 42/1: 13–28.
- de Cardi B. 1985. Further archaeological survey in Ras al-Khaimah, UAE, 1977. *Oriens Antiquus* 24: 164–240.
- de Cardi B., Kennet D. & Stocks R.L. 1994. Five thousand years of settlement at Khatt, UAE. *Proceedings of the Seminar for Arabian Studies* 24: 35–95.
- Degli Esposti M. (ed.). (forthcoming). *Husn Salut and the Iron Age of south east Arabia. Excavations of the Italian mission to Oman 2004–2014*. (Arabia Antica, 14). Rome: 'l'Erma' di Bretschneider.
- Degli Esposti M., Renzi M. & Rehren T. 2016. Iron Age metallurgy at Salūt (Sultanate of Oman): A preliminary note (poster). *Proceedings of the Seminar for Arabian Studies* 46: 81–88.
- Desset F., Marchesi G., Vidale M. & Pignatti J. 2016. A sculpted dish from Tello made of a rare stone (Louvre-AO 153). *Journal of Near-Eastern Studies* 75/1: 71–84.
- Genchi F., Fattore L., Nava A. & Maini E. (this volume). The sacred area of Dabah (Musandam, Oman, second to first millennium BC). The LCG-2 complex: structures, materials, osteological elements. *Proceedings of the Seminar for Arabian Studies* 48: 99–117.
- Gernez G., Benoist A. & Jean M. 2017. The Iron Age in Adam: the discovery of a ritual complex near Jabal Muḍmār. In G. Gernez and J. Giraud, *Taming the Great Desert: Adam in the prehistory of Oman. The archaeology and heritage of Oman*. Muscat: Ministry of Heritage and Culture, Sultanate of Oman.
- Gernez G., Jean M. & Benoist A. 2017. The discovery of a new Iron Age ritual complex in central Oman: recent excavations near Adam. *Proceedings of the Seminar for Arabian Studies* 47: 101–116.

- Gernez G., Jean M., De Castéja V., Bigot L., Goy J. (forthcoming). Of snakes and arrowheads: Early Iron Age copper-based ritual artifacts from Mudhmar East 3, Oman.
- Iamoni M. 2009. The Iron Age ceramic tradition in the Gulf: a re-evaluation from Omani prospective. *Proceedings of the Seminar for Arabian Studies* 39: 223–236.
- Jasim S.A. 2012. *The necropolis of Jebel Buhaish. Prehistoric discoveries in the Emirate of Sharjah, United Arab Emirates*. Sharjah: Department of Culture & Information, UAE.
- Karacic S., Boraik M., Qandil H. & David-Cuny H. 2017. Snake decoration on the Iron Age from Sarūq al-Ḥadīd: a possible ritual centre? *Proceedings of the Seminar for Arabian Studies* 47: 139–150.
- Kroll S. 1998. Lizq. In M. Mouton (ed.), *Assemblages céramiques des sites de l'Âge du Fer en péninsule d'Oman*. (Documents d'Archéologie de l'Arabie, 1). CD-Rom, Maison de l'Orient, CNRS, Lyon.
- Magee P. 1998. The chronology and regional context of late prehistoric incised arrowheads in southeastern Arabia. *Arabian Archaeology and Epigraphy* 9: 1–12.
- Magee P. 1999. A proposed function for late prehistoric incised arrowheads in southeastern Arabia. *Isimu* 2: 353–363.
- Magee P., Thompson E., Mackay A., Kottaras P. & Weeks L. 2002. Further evidence of desert settlements complexity: Report on the 2001 excavations at the Iron Age site of Muweilah, Emirate of Sharjah, United Arab Emirates. *Arabian Archaeology and Epigraphy* 13: 133–156.
- Mouton M., Benoist A. & Cordoba J. 2012. Le serpent, gardien du cuivre et des eaux de la montagne d'Oman? Pages 387–404 in J. Giraud et G. Gernez (eds), *Aux marges de l'archéologie. Hommage à Serge Cleuziou*. (Travaux de la maison René Ginouvès, 16). Paris: De Boccard.
- Phillips C.S. 1998. Rafaq 1. In M. Mouton (ed.), *Assemblages céramiques des sites de l'Âge du Fer en péninsule d'Oman*. (Documents d'Archéologie de l'Arabie, 1). CD-Rom, Maison de l'Orient, CNRS, Lyon.
- Phillips C.S. 2010. Iron Age chronology in south east Arabia and new data from Salut, Sultanate of Oman. Pages 71–80 in A. Avanzini (ed.), *Eastern Arabia in the first millennium BC*. (Arabia Antica, 6). Rome: 'L'Erma' di Bretschneider.
- Schreiber J. 2010. The Iron I-period in South-eastern Arabia — a view from Central Oman. Pages 81–90 in A. Avanzini (ed.), *Eastern Arabia in the first millennium BC*. (Arabia Antica, 6). Rome: 'L'Erma' di Bretschneider.
- Taha M.Y. 2009. *The Discovery of the Iron Age in the United Arab Emirates*. Abu Dhabi: Ministry of Culture, Youth and Community Development.
- Al-Tikriti W.Y. 2002. The south-east Arabian origin of the *falaj* system. *Proceedings of the Seminar for Arabian Studies* 32: 117–138.
- Weeks L., Cable C., Franke K., Newton C., Karacic S., Robert J. ... Zein H. 2017. Recent archaeological research at Saruq al-Hadid, Dubai, UAE. *Arabian Archaeology and Epigraphy* 28: 31–60.
- Yule P. (in press). The finds. In P. Yule & G. Gernez, *Early Iron Age metal-working workshop in the Empty Quarter, al-Zāḥīrah Province, Sultanate of Oman*. Bonn: Rudolf Habelt GmbH, Universitätsforschungen zur prähistorischen Archäologie.
- Yule P. & Gernez G. (eds). (in press). *Early Iron Age metal-working workshop in the Empty Quarter, al-Zāḥīrah Province, Sultanate of Oman*. Bonn: Rudolf Habelt GmbH, Universitätsforschungen zur prähistorischen Archäologie.
- Yule P. & Weisgerber G. 2001. *The metal hoard from 'Ibrī/Selme, Sultanate of Oman*. (Prähistorische Bronzefunde, 20/7). Stuttgart: Franz Steiner Verlag.

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