DMP II: 2008 fieldwork on burials and identity in the Wadi al-Ajal

By David Mattingly, John Dore, and Marta Lahr

With contributions by Muftah Ahmed, Franca Cole, Jon Crisp, Mireya Gonzalez Rodriguez, Matt Hobson, Misbah Ismayer, Victoria Leitch, Farès Moussa, Efthymia Nikita, Ian Reeds, Toby Savage, and Martin Sterry

Abstract

The second season of the Desert Migrations Project took place in January 2008, with work following several substrands. The Burials and Identity component of the project is the subject of this report. Excavation and survey work were concentrated in the Watwat embayment, expanding on, and completing the work begun in 2007. Forty burials have now been excavated from the approximately 2,500 surveyed by the project team in a series of different cemeteries and burial zones within the closed valley that cuts back into the escarpment of the Massak, approximately 3 km southwest of Jarra. The most exciting discovery this year was the recovery of two mummified bodies from the UAT08 cemetery, along with further well-preserved textiles, including some exquisitely woven multi-coloured fragments. Another major discovery was a richly furnished Garamantian burial (UAT050.T5), containing numerous imported vessels (fineware, glass and amphorae) from the Roman world. Additional excavations included two child burials from GSC048, located in a modern quarry due south of Jarra, and a preliminary investigation of one of the Taqallit cemeteries, located approximately 30 km to the west (to be the subject of the main excavation effort in 2009).

Introduction

By David Mattingly and Marta Lahr

The Desert Migrations Project (or DMP) held its second season of fieldwork in January 2008. The work comprised a number of separate substrands, following the programme agreed with the Department of Antiquities (DoA) and enshrined in the permit granted to us. These are reported on in a series of separate reports below, each prefixed by a sequential DMP preliminary report number (for this purpose DMP I = Mattingly et al. 2007).

The work in 2008 comprised the following elements:

- Excavation of burials in the Wadi al-Ajal near Jarra and full osteological and finds analysis. Work was focused this year in the Watwat embayment, continuing on from the 2007 season, and near the Taqallit promontory approximately 20 km west of Jarra (led by David Mattingly);

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6 Department of Antiquities, Tripoli, Libya.
7 Institute of Archaeology, University of Oxford, UK.
8 Department of Archaeology, University of Edinburgh, UK.
• Geographical examination of dried up lake formations of varying date (from Pleistocene and Holocene contexts), with an emphasis on reconstructing the contemporary environment and on obtaining the most accurate dates possible (led by Kevin White and Nick Drake);

• Continued exploration of Prehistoric activity sites on the main routeways across the Sahara, with a focus on the northern Edeyen Ubari (led by Marta Lahr);

• Pioneering survey of historical sites (Garamantian and Islamic) in Wadi ash-Shati and the Dawada, to provide comparative data to set against the picture derived from the Wadi al-Ajal (led by Stefania Merlo);
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• Study of the rock art complex of Fazzan, with a particular emphasis on themes relevant to the migration theme – such as studies relating to the appearance and disappearance of particular species of wild beasts and of domesticated animals (led by Tertia Barnett);

• Follow up survey in collaboration with the DoA, to make a fuller assessment of the nature of a number of the sites identified by the preliminary survey carried out in 2006–2007 by the oil company OXY Libya LLC (led by Marta Lahr);

• Survey and catalogue of funerary stelae and offering table collections from the DMP, Fazzan Project (FP) and others held in the Jarma museum (carried out by Farès Moussa).

The 2008 work commenced with further exploration of the Watwat embayment area, where excavations in 2007 had focused on the major shaft burial cemetery UAT008. At the close of the 2007 season, the excavation of two burials was left incomplete due to the discovery of unusual preservation conditions in the last days of work. It had been decided to partially backfill these burials and to return to them with more time this season to make a full assessment. The decision was a good one, as one of the two burials proved to contain a mummified body, while the other showed signs of semi-mummified remains, with superb textile preservation (see below). In widening the access for the lifting of the mummy, a second mummified body was located. The original plan for the season had envisaged the team moving on after the first week to investigate further cemeteries in the Taqallit area, approximately 20 km west of Jarma (Fig. 1). In the event, the extraordinary nature of the discoveries at UAT008, and significant discoveries also in the other Watwat cemeteries, led to a re-planning of the work strategy, with the bulk of the team remaining in the Watwat embayment throughout the season and only a small intervention being made in the Taqallit area this year (see below, TAG012). The Taqallit work will be continued and developed in the 2009 season.

The funerary landscape within the Watwat embayment

By David Mattingly, Muftah Ahmed, Franca Cole, Jon Crisp, Mireya Gonzalez Rodriguez, Matt Hobson, Misbah Ismayer, Victoria Leitch, Farès Moussa, Efthymia Nikita, Ian Reeds, Martin Sterry

The Watwat embayment is a small valley-like indentation in the front of the Massak escarpment situated a few kilometres southwest of Jarma. In the mouth of the embayment lies the well-known mausoleum known as Qasr Watwat (UAT001), with surrounding cemetery UAT002, but the whole valley is densely packed with funerary monuments of a remarkable range of types. This complex funerary landscape has now been recorded in much greater detail than hitherto (Fig. 2). The funerary monuments were mapped systematically using a Total Station. Observation of cemetery morphology and tomb type was supplemented by surface collection of a sample of pottery sherds from all the cemetery areas and selected excavation. Earlier investigation of the valley by Charles Daniels, which formed the basis for the gazetteer entries in *Archaeology of Fazzán 2*
Figure 2. Overall distribution of burials in the Watwat embayment (drawing: M. Sterry).
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Table 1: Dating periods for DMP Burials and Identity sub-project.

<table>
<thead>
<tr>
<th>Code</th>
<th>Period</th>
<th>Dates BP</th>
<th>Dates BC/AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPast</td>
<td>Late Pastoral</td>
<td>5,000–3,000</td>
<td>3000–1000 BC</td>
</tr>
<tr>
<td>Past</td>
<td>Pastoral (undifferentiated)</td>
<td>7,500–3,000</td>
<td>5500–1000 BC</td>
</tr>
<tr>
<td>EGAR</td>
<td>Early Garamantian</td>
<td>3,000–2,500</td>
<td>1000–500 BC</td>
</tr>
<tr>
<td>PUGAR</td>
<td>Proto-urban Garamantian</td>
<td>2,500–2,000</td>
<td>500–1 BC</td>
</tr>
<tr>
<td>CGAR</td>
<td>Classic Garamantian</td>
<td>2,000–1,600</td>
<td>AD 1–400</td>
</tr>
<tr>
<td>LGAR</td>
<td>Late Garamantian</td>
<td>1,600–1,300</td>
<td>AD 400–700</td>
</tr>
<tr>
<td>GAR</td>
<td>Garamantian (undifferentiated)</td>
<td>3,000–1,300</td>
<td>1000 BC–AD 700</td>
</tr>
<tr>
<td>POSTGAR</td>
<td>Post-Garamantian</td>
<td>1,300–900</td>
<td>AD 700–1100</td>
</tr>
</tbody>
</table>

(Mattingly 2007, 105–114), had separately identified the cemetery areas in the valley centre, but had tended to lump together the funerary structures along the eastern and western margins (listed in Mattingly 2007 as UAT006 and UAT010). In reality, these generalised escarpment ‘cemeteries’ can be broken down into a number of quite discrete burial areas.

A basic distinction can be made concerning the topographic location of the various cemeteries. One group lies on relatively level, or gently sloping, ground in the centre of the embayment. These features (mapped in 2007, Mattingly et al. 2007, 140) comprise linear alignments of cairns (UAT004 and UAT007), along with the large cemetery (UAT002) around the mausoleum UAT001 and the major shaft burial cemetery UAT008, located on a gravel ‘island’ between two deep gullies running out from the southern escarpment. Topographic survey in 2008 focused on the rising fans around the sides of the embayment and the slopes of the escarpment itself, with tombs being recorded at a considerable height up the steepest inclines. A rough count of funerary monuments can be made from the surveyed points, though this must be taken as an absolute minimum number of burials, as many additional features are obscured by fallen rubble and we have undoubtedly missed some high level cairns on the precipitous upper slopes. The burials date to various periods, but until detailed analysis of all finds is complete, the main use of each cemetery area is best expressed in terms of the broad periodisation scheme devised by the Fazzan Project (Table 1).

This one shallow embayment in the escarpment of the Massak Sattafet contained approximately 2,500 burial monuments within its 0.5 km frontage, facing the Wadi al-Ajal (Table 2; Figs 2–3). This was arguably an exceptional location, but if that density were replicated all along the Wadi, the total burials would number over 700,000 (compare Caputo’s estimate of 60,000 burials – and Daniels correction to 120,000 – for the entire 140 km extent of the Wadi al-Ajal, Mattingly 2003, 187).

To complement the burials previously excavated in the centre of the embayment in UAT004 and UAT008 (Mattingly et al. 2007, 140–44), a sample of burial types in the cemeteries along the south and east sides of the embayment (Fig. 3) were excavated (sites UAT009, UAT010, UAT050, UAT051, UAT052, UAT055, UAT056). The results strongly indicate that the peak
### Table 2: Surveyed cemeteries and excavated burials in the Watwat embayment. Numbers in final column followed by * indicate features that proved on excavation to be not funerary in nature.

<table>
<thead>
<tr>
<th>Cemetery No.</th>
<th>Cemetery type</th>
<th>Tomb types</th>
<th>Number of burials</th>
<th>Dating</th>
<th>Excavated burials</th>
</tr>
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<tbody>
<tr>
<td>UAT001</td>
<td>Mausoleum</td>
<td>1</td>
<td>CGAR</td>
<td>Caputo</td>
<td></td>
</tr>
<tr>
<td>UAT002</td>
<td>1b, 2a/b</td>
<td>165</td>
<td>CGAR</td>
<td>Caputo</td>
<td></td>
</tr>
<tr>
<td>UAT003</td>
<td>Funerary enclosure</td>
<td>3b</td>
<td>1</td>
<td>PUGAR/ CGAR</td>
<td>Caputo</td>
</tr>
<tr>
<td>UAT004</td>
<td>1a/b</td>
<td>259</td>
<td>(EGAR), CGAR</td>
<td>Caputo; DMP 2007: Cairn 11</td>
<td></td>
</tr>
<tr>
<td>UAT006</td>
<td>1a/b</td>
<td>29</td>
<td>PUGAR?, CGAR</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>UAT007</td>
<td>1a/b</td>
<td>73</td>
<td>PUGAR?, CGAR</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>UAT008</td>
<td>1b, 2a/b/c</td>
<td>517</td>
<td>CGAR</td>
<td>Caputo; DMP 2007: T16, T17, T19, T20, T22, T23, T30, T32, T33, T35, T38, T40, T41, T42, T43, T74, T77, T80, T82, T83, T85; DMP 2008: T84, T86, T87</td>
<td></td>
</tr>
<tr>
<td>UAT009</td>
<td>1b, 2a/b/c, 4b</td>
<td>283</td>
<td>CGAR</td>
<td>Caputo; DMP 2008: T1, T2</td>
<td></td>
</tr>
<tr>
<td>UAT010</td>
<td>1a/b/e</td>
<td>127</td>
<td>PUGAR, CGAR</td>
<td>DMP 2008: T1*, T2, T3, T4, T5, T6, T7</td>
<td></td>
</tr>
<tr>
<td>UAT023</td>
<td>Ashlar blocks – mausoleum?</td>
<td>0</td>
<td>CGAR?</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>UAT050</td>
<td>1b/e, 2a/b/c, c, 5a</td>
<td>59</td>
<td>PUGAR?, CGAR</td>
<td>DMP 2008: T1, T2, T5, T6, T7</td>
<td></td>
</tr>
<tr>
<td>UAT051</td>
<td>1b, 2a/b/c</td>
<td>257</td>
<td>(EGAR), CGAR</td>
<td>DMP 2008: T1, T3, T5</td>
<td></td>
</tr>
<tr>
<td>UAT052</td>
<td>1b/e, 3a</td>
<td>135</td>
<td>PUGAR?, CGAR</td>
<td>DMP 2008: T2, T3, T4, T5*, T6*</td>
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<tr>
<td>UAT055</td>
<td>1b, 2a/b/c</td>
<td>168</td>
<td>CGAR</td>
<td>Caputo; DMP 2008: T1</td>
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</tr>
<tr>
<td>UAT056</td>
<td>1b, 2a/b/c</td>
<td>92</td>
<td>(EGAR), CGAR</td>
<td>DMP 2008: T1, T3*</td>
<td></td>
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<tr>
<td>UAT057</td>
<td>1b</td>
<td>111</td>
<td>PUGAR?, CGAR</td>
<td>-</td>
<td></td>
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<tr>
<td>UAT058</td>
<td>1b, 2a/b/c</td>
<td>47</td>
<td>PUGAR?, CGAR</td>
<td>-</td>
<td></td>
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<tr>
<td>UAT059</td>
<td>1b, 2a/b/c</td>
<td>50</td>
<td>CGAR</td>
<td>-</td>
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<tr>
<td>UAT060</td>
<td>1b, 2a/b/c</td>
<td>18</td>
<td>PUGAR?, CGAR</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>UAT061</td>
<td>1b, 2a/b/c</td>
<td>46</td>
<td>CGAR</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>UAT062</td>
<td>1b, 2a/b/c</td>
<td>42</td>
<td>CGAR</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2,480</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Table 2: Surveyed cemeteries and excavated burials in the Watwat embayment. Numbers in final column followed by * indicate features that proved on excavation to be not funerary in nature.
Figure 3. Watwat burials excavated in 2008 (drawing: M. Sterry).
of activity here was in the Classic Garamantian phase (first to fourth centuries AD), at least as regards the main nucleated agglomerations of tombs (Table 2).

The varied morphology of these cemeteries is striking – from the strongly nucleated ‘honeycomb’ patterns of the main shaft burial cemeteries such as UAT002, UAT008, UAT009, etc. (type 4), to cemeteries where more monumental tomb types occur alongside shaft burials (type 3), to the strongly linear disposition of UAT004/007 (type 6), to the dispersed distribution with some clustering of corbelled cairns (type 2). Many tombs were recorded using rectified overhead photographs (see Fig. 6, for an example).

The mix of tomb type also varied from cemetery to cemetery – and it must be admitted that excavation is already adding complexity to the outline typology advanced in *Archaeology of Fazzān 1 and 2* (Mattingly 2003, 187–234; 2007, 6–8; cf. also the work of di Lernia and Manzi 2002, 25–37; Liverani 2005, 25–28). The vast majority of burials in UAT002, 008 and 009 were simple type 2 shaft burials (often unlined, though with some examples of subterranean slab linings). In some cases these were evidently covered with corbelled cairn structures or built tombs – largely destroyed in subsequent robbing action. The mausoleum UAT001 represents an architectural import from the Mediterranean world (Fig. 4) and is the best preserved of a number of such ashlar funerary structures in the vicinity of Jarma (Mattingly 2003, 189–92). The other known examples are three near Tuwash (TWE001) and two at Fugar (FUG001), so the solitary example in the Watwat embayment stands out as unusual among the small group of cemeteries where mausolea are known (Mattingly 2007, 149–51; 162–64).

Figure 4. General view of burials in mouth of the Watwat embayment looking north over UAT055, UAT010, past isolated burial UAT003, towards mausoleum UAT001 ringed by UAT002 (photo: D. Mattingly).
Indeed the possibility that there were further ashlar mausolea in front of the Watwat embayment merits further consideration, not least because a series of ashlar blocks (UAT023) lies adjacent to a modern farm just to the northwest (Fig. 5). Although these were interpreted in *Archaeology of Fazzān 2* as evidence of Garamantian quarrying close by (Mattingly 2007, 114), in fact there is no conclusive evidence at this location for ancient quarry works and we should not exclude the alternative possibility that the blocks were moved from a location just to the north when the land was cleared in modern times to make way for the farm. If so, they almost certainly represent a lost mausoleum (there are also a few further blocks another 100 m to the east in the Jarma Escarpment sector (near GSC001/2).

UAT003 is a singular monument – comprising a very large drum tomb, within a rectangular funerary enclosure (Mattingly 2003, 179; 2007, 107–09) and apparently in isolation from other burials (Figs 2, 4). It has been interpreted as a monument for a significant ancestor. The presence of proto-stelae and various stone basins and ceramic vessels on the east side of the tomb suggest origins in the proto-urban Garamantian phase, but some of the offerings indicate continuing ritual use into the Classic Garamantian period.

The linear ‘cemeteries’ UAT004 and UAT007 comprised low, wide cairns (up to 8 m diameter), with signs of central burial cists or structures of generally shallow depth. Although these were originally thought to perhaps contain multiple burials on the evidence of numerous holes visible in their surface, it now seems more likely that they were normally intended for a single, centrally placed burial (Mattingly *et al.* 2007, 141–42). Along the low terraces that form the east and west sides of the embayment there is a dispersed pattern of small to medium cairns (2–5 m diameter), normally of corbelled form, with a central shallow subterranean burial structure formed from larger blocks, the whole being covered in small stones of between 0.10 m and 0.20 m in size. The date of these cairns may cover more than one of the FP phases, but some finds suggest that their construction extended into the Classic Garamantian period. The numbers assigned by Daniels to all the tombs on the east side (UAT010) and west side (UAT006) were retained in the 2008 work in reference to these dispersed lower terrace cairnfields.

Higher up the east, south and west escarpments we have identified a number of cairn cemeteries with a degree of clustering as well as strongly nucleated concentrations of shaft and corbelled cairn burials. Most of these cemeteries have been heavily robbed in the past,
with considerable damage to tomb superstructure, especially grievous for the more significant monument types. One addition to the original tomb typology recognised in several cemeteries is the ‘type 1e crevice burial’. This is a form of simple cairn, making use of large natural boulders to form one or more sides of the burial, with the body placed in a shallow scoop in the ground and being covered with a rough pile of small stones, occasionally with larger stones lining the burial cut.

Although many of these higher escarpment cemeteries contained relatively similar types of tomb, the exact proportions varied between them, with some cemeteries comprising a larger percentage of shaft burials (UAT062), others a predominance of corbelled cairns (UAT052, UAT057), others a more equal balance between the two (UAT051). Some of the corbelled cairns were quite large and imposing structures, in excess of 5 m diameter and standing up to 2 m high, but many were smaller-scale structures of less than 2 m diameter, erected over shafts or sunken ‘cists’ formed of large stone slabs (Figs 6–7). UAT050 contained a number of higher-status tomb types, including a well-preserved circular/oval stepped tomb (type 5a/5d) and the richly furnished excavated burial UAT050.T5 was probably also of this type (see below and Figs 12–13).
The density and range of surface finds at the various sites varied considerably – despite the fact that all seemed to have suffered equally at the hands of grave robbers. Some cemeteries yielded only a few sherds from surface collection (UAT057, UAT058, UAT060), others produced large quantities of material (UAT051). The implications of this are hard to gauge. Nonetheless, most of the cemeteries within the embayment yielded surface finds of imported Roman pottery, notably amphora sherds and other wheel-made forms, including finewares. Roman period pottery was noticeably less in evidence around the more dispersed cairns. This suggests that the use of the various nucleated cemeteries reached its apogee in the Classic Garamantian phase – broadly the first to fourth centuries AD – while the dispersed burials perhaps originated earlier in the Garamantian period. No definitely Pastoral period pottery or diagnostic finds were found with the excavated burials, so the overall complex of funerary monuments appears to have been Garamantian. There was a general paucity of earlier Garamantian material, with the possible exception of a few isolated pottery scatters (UAT053 and by UAT056) and a much larger concentration at UAT051. The material from UAT051 was such a striking exception to the normal pattern of limited early Garamantian pottery at cemetery sites that it seems likely to represent some activity that predates the Classic Garamantian cemetery there and has been accorded a separate site number UAT063. Indeed, in view of the large quantity of ceramics here, it is possible that it relates to an escarpment edge settlement area rather than an early cemetery (and is thus not included in Table 2).

Cemetery UAT008 and the mummified burials
UAT008 is the largest of the cemeteries in the embayment with over 500 shaft or cairn tombs crammed on to a narrow promontory between two gullies running down from the escarpment.
Figure 8. UAT008.T84, overall view of the mummified body (SK413) covered in textile shroud. Scale: 10 cm (photo: T. Savage).

Figure 9. UAT008.T84, detail of toes of mummified body. Scale: 5 cm (photo: T. Savage).
face. Twenty-two shafts were excavated in 2007, which though very disturbed by robbing activity contained a mass of organic material (textile, leather, matting, wood, etc., see Mattingly et al. 2007, 140–44). The 2008 work focused initially on the complete excavation of two deep shafts that had been started in 2007, UAT008.T84 and T86. When a mummified body was found at the bottom of T84, the adjacent shaft to the south was also partially excavated as T87 and the dividing natural earth wall between the two demolished to allow side access for the lifting of the mummy. Subsequently, the remaining fill in T87 was removed, revealing a second mummified burial, which was also lifted. T86 had been partially disturbed by robbing activity, but contained evidence that the body had been in a mummified condition when the intrusion occurred. Subsequent to the robbing disturbance, further decomposition took place, leaving skeletal remains. The portion of the burial that had escaped the robbers was carefully excavated and yielded a wealth of textiles and other organic material. These burials were in an area of the cemetery where the shafts were larger and deeper than the average (up to 1.60 m deep – requiring stepping of the excavation) and this may have contributed to the extraordinary preservation conditions and to the (presumably natural) mummification. Each of these burials is described in detail below.

**Tomb 84:** excavation commenced in 2007 of an apparently robbed shaft, approximately 1.35 m in diameter and 1.30 m deep. The robber fill (315) contained pottery sherds and fragments of disarticulated human bone, also some leather and hair (possibly human). On the west side of the tomb a large fragment of coloured textile was recovered, suggesting that part of the burial survived intact, protected by a large rock. Excavation in 2008 started by clearing the area surrounding the tomb and removing backfill from the previous season. Pre-excavation photographs were taken for photo-rectification. Due to the depth of the feature, the area of excavation was widened to allow access to the tomb – extending approximately 0.40 m beyond the original cut on the east side. A broken (Garamantian handmade) pottery vessel (approximately 0.10 m in diameter) was recovered from the upper fill. As excavation progressed within the shaft, small fragments of textile were found in the east side of T84, along with human hair.

After removing fill (315), fragments of well-preserved plain textile were exposed on the northwest and northeast side of the tomb. A skull was then exposed on the northeast side, protruding through the textile covering. This skull retained well-preserved traces of skin and hair of what appeared to be a mummified body (SK413). Further cleaning of the sandy fill revealed the limits of the rectangular textile sheet covering the rest of the body, with the pelvis, legs and feet plainly visible through it and confirming that SK413 was the mummified remains of an adult (Figs 8–9). A detailed photographic record of the excavation process was kept with multiple photographs of the textile and body.

The body was lying on the northern side of the tomb and had been completely missed by the original robbing activity. Judging by the position of the skull the head was positioned to the east, face down. The body was in a crouched position on its left side, facing south. Both the legs and arms are flexed with the hands possibly by the side of the head. The remains are
completely enclosed in a very well-preserved plain textile shroud-like sack. In addition to the skull, the only visible bones are the right toes which exhibited good preservation of tissue and nails. After removal of the fill around the body a large organic layer in a circular shape was uncovered in the abdominal region. It is not clear if this represents the outwash of body fluids or a trace of an organic container in front of the body. A sample of this material was taken for environmental analysis. A second sample of a small amount of sand containing three vertebrae was also taken from behind the head – two very small, possibly related to a small animal, and a disarticulated cervical vertebra (uncertain at this point if it belongs to SK413). There are no finds, so far, associated with the body – though no attempt has been made to explore beneath the textile shroud.

In situ conservation was carried out by Franca Cole. A separating layer of foil was wrapped around the exposed surface of the textile shroud and its undercuts. A rigid facing of layered cotton bandage in PVA emulsion was applied to prevent damage during lifting. In order to excavate the mummy and facilitate the lifting, the grave cut was extended south digging into T87 (see above). The mummy was successfully lifted on 17 January.

Tomb 87: excavation was carried out in relation to the extension of T84 during the operation to lift the mummified body. At the surface, the visible robbed shaft of T87 was approximately 1.70 m in diameter and this was emptied initially to a depth of approximately 1.45 m. Removal of the loose stone and sandy fill (414) yielded some disarticulated human bone, along with small fragments of decayed coloured textile and small number of Ostrich eggshell
beads. Some leather and hair (possibly animal) was also recovered from the top fills. In the lower fill (approximately 1.10 m deep), various ribs and vertebrae were recovered along with human hair and organic material. Our expectation was thus that we would find a disturbed burial at the base of the shaft. In the event, further investigation revealed a covering layer of well preserved, creamy-beige textile and an inner layer of very poorly preserved, red-brown coloured textile (see Fig. 20 below) folded together over a second substantially preserved mummified body. The robbers appear to have only disturbed the skull and the upper neck area – perhaps in the search for beads – and left the burial largely intact (Fig. 10). The disarticulated bone recovered from the upper part of the shaft fill appears to relate to a second (female) body – either interred above the preserved mummy or dumped into the robbed shaft from another adjacent shaft during the robbing. Large stones, probably part of the grave structure, were removed to facilitate the lifting of the body.

Further fragments of the red-brown coloured textile were exposed on the northeast and east side of the tomb. The skull was exposed on the northeast side, looking up with jaw open (some teeth, presumably maxilla, showing through the textile) and the rest of the skull presumably in situ covered in textile. Small amounts of hair visible from the north section have been sampled along with fragile textile. Further cleaning of the sandy fill (416) uncovered textile on the southern side of the tomb. The body appears to be in fairly good preservation and shows signs of mummification, which may suggest that the sampled leather could be a mixture of leather and human skin. The body, likely an adult, is laid in a crouched position, on its left side facing south/southeast. The spine is extremely curved, almost south to northeast. The textile around the pelvis was extremely friable. The remains were tightly contracted on the east side of the original grave shaft (approximately 0.60 m wide, east to west). The legs and arms are flexed with the hands by the skull. The feet are on the south side of the tomb. Samples of organic remains have been taken during excavation. There were no finds associated with the body, but again, no investigation has yet been made inside the textile shroud.

In situ conservation was carried out and a separating layer of foil was wrapped around the exposed surface of the textile shroud and its undercuts. A rigid facing of layered cotton bandage in PVA emulsion was applied to prevent damage during lifting. The mummy was lifted on the final day of fieldwork, 23 January.

Tomb 86: excavation of this tomb was originally started in the 2007 season when the cut of a robbing shaft was investigated to a depth of 1.6 m. Finds included some disarticulated bone, amphora fragments, local pottery sherds, textile fragments and beads. An initial expansion of the excavation beyond the narrow robber shaft had revealed an amphora set upright on the ancient ground level by the southwest corner of the tomb. The 2007 excavation stopped when a dense layer of organic matter and textile fragments were encountered at the base of the shaft. It was thought that large stones in the shaft had prevented the robbers fully accessing the burial. At the end of the 2007 season the tomb was backfilled with 1 m of soil.
At the start of the 2008 season the shaft was reopened and the excavation area enlarged for safety reasons to the south, east and west. This revealed a second large pottery vessel near the surface on the eastern edge of the shaft, possibly a storage vessel with a wide 0.40 m diameter opening, of local origin (SF300). This was likely part of the funerary ritual as it appeared to have been deliberately placed and had been carefully packed round with small stones.

After removal of the 2007 backfill, a partly articulated section of spine was revealed in the northeast side of the shaft running on a northeast to southwest line and this was given a skeleton number (SK407), though it appeared to be disturbed and within the robber fill. The excavation area was then further enlarged to the east and south (cutting back into natural) to make the excavation safe and a stepped entranceway constructed from the east to facilitate access.

Immediately to the south of the robber cut and robber fill (418) removed in 2007, the remains of an articulated burial were located, comprising a femur and some ribs, as well as traces of textile. As this was separated from SK407 it was initially thought that it might be a second body and was consequently given a separate skeleton number (SK410). As excavation progressed it became apparent that the body had been laid with head to east, probably facing north, and that a large part of the body had been disturbed or removed by the robbers. For part of the torso both right and left sides were still present, but a number of the left side bones (uppermost in the burial presentation) were absent, along with the skull. At the west end of the grave, one articulated femur disappeared into the section, showing that the robber shaft did not fully coincide with the original shaft fill (Fig. 11).
Just east of where the head should have been were two circles of organic matter (one of which contained leather fragments, SF302). A folded piece of textile had been placed beneath the body and there were heavy folds on the left side of the body, extending at the top end to half way up the head-space where there was a finished seam. It continued beneath the section at the bottom (western) end. There were also traces of plain textile around the scapula suggesting that the body was tightly wrapped or dressed separately to the textile shroud beneath. In addition, fragments of coloured textile (SF301) appeared in the neck area, above the plain textile, including a bright red square with blue and a yellow stripe that matched up with a fragment recovered in 2007 (see below Fig. 19; cf. Mattingly et al. 2007, 149). As it was very delicate, it was lifted as a soil block and excavated by the project conservator in the finds processing room.

Below the skeleton and extending across the base of the robber shaft to the north there was a great deal of very dark organic matter, with particular concentrations around the scapula, ribs and pelvic areas. It was decided to sample all the organic material in separate bags, with two samples in the head area, one from the scapula area, one from around the ribs and another from the pelvic area. A good deal of this matter was decomposed textile, presumably soaked in body fluids, but some human tissue may also be present. Beneath it, there were no further traces of bone, and the base of the tomb was located.

After removal of the in situ skeletal elements and the extensive textile fragments around them, the remaining robber fill and original shaft fill around the west and north side of the cut was excavated. The skull and jawbone of the burial were retrieved intact (but out of position) from behind a large slab that had been tipped into the northeastern side of the shaft at the time of the robbing. An intact North African lamp (SF304) was found in the same area, while against the original northwest side of the shaft stood a near intact amphora (SF303) in an upright position (see below Fig. 18). The amphora rim had been retrieved from the robber fill (405) earlier in the season. Fragments of African Red Slip (ARS) form 3B found in the top fill (404) suggest a second-century AD date for the burial.

The left side of the body had been largely robbed out together with the head, arms and part of the spine (the displaced vertebrae SK407). The leg bones extending into the west section had been partially disturbed, but remained in an approximately articulated relationship with each other. Almost all the missing elements of the skeleton were retrieved from the fill of the robber cut and it is clear that only a single body was involved (thus SK410 = 407). The semi-articulation of the lower legs and the section of backbone found in the robber fill suggest strongly that when first disturbed by the robbing, this body was also mummified. The black organic deposits (possibly containing human tissue) and a blackish sheen to some of the in situ bone also support this interpretation. Other signs of the excellent preservation were traces of cartilage and calcified tendons and preserved brain residues within the cranium. The west section of the tomb showed clearly where the robber cut (412) had cut down into the middle of the skeleton. From the position of the legs, the body was laid on its right side, with feet to west and head to east or northeast, facing north-northwest. The skeleton was that of an adult male, aged 20–40.
Cemetery UAT009
UAT 009 is a smaller cemetery of approximately 280 shaft burials, built tombs and corbelled cairns located south of UAT 008. Two tombs, T1 and T2, were selected for excavation.

T1: this was a fairly large (approximately 1.70 m diameter) shaft tomb, probably originally covered by a substantial corbelled cairn to judge from the rubble ring surrounding it. Pre-exciavation photographs were taken for photo-rectification. Cleaning of the surrounding area was carried out, including the removal of stone, to make excavation of the shaft safe. During the clearing of stones two, possibly three, rough stelae were found on the west side of the grave. Excavation of T1 produced a significant amount of disarticulated human bone from the top fills (583) and (584). Despite of the heavily disturbed grave, an area of articulated skeleton was found on the south side of the tomb. The articulated bones (SK588), a small number of lumbar vertebrae, sacrum, ribs and the left scapula, suggest the body was laying on the right side with the head to the west facing south. Small samples of the west area of the body were taken for further analysis.

T2: a small shaft burial (approximately 1.20 m diameter and 1.00 m deep) located northeast from T1. T2 does not appear to have had a superstructure and there was only a small amount of stone marking the grave. The sandy grave fills produced a small amount of pottery, small fragments of disarticulated human bone and small fragments of riveted copper alloy of uncertain function (but paralleled from Saniat Jibril and Jarma – one possibility is that they were used to join sections of leather). The disarticulated bone belonged to an adult female.

Cemetery UAT010
Seven features were investigated in UAT010 in 2008. One of these, T1, was found to be a geological feature, so only six were definite tombs. Tombs T5 and T6 contained relatively complete articulated skeletal remains. The others either contained some partial articulation or only disarticulated bone. Most tombs showed signs of robbing. Although the two intact inhumations were both crouched, their orientations differed, with one head (T5) laid to the northwest and the other (T6) to the west. Few grave goods were recovered from these burials apart from 40 ostrich eggshell beads, and other beads of glass (1), faience (1), carnelian (2), amazonite (1) and other stone (1). Some graves contained broken pottery sherds in their robbed fills.

T4 and T5 were the most substantial structures in the area. Both were type 1e crevice burials, constructed using a combination of large natural boulders and deliberately piled stone. The other tombs were low-lying structures constructed using a few courses of local stone forming a ring or chamber, and then covered by low cairns. It appears that all tombs had shallow grave cuts, rather than shafts, for the inhumation and these were also orientated in various directions.

In conclusion, it is clear, even in their robbed state, that there was no set design to these tombs. The burials do not appear to have been positioned with any particular orientation in
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mind. It does, however, look as though all burials were crouched given the size and shape of the chambers and grave cuts. The tombs themselves were constructed using local materials and the builders sometimes made use of large natural boulders where available. No evidence of stelae or offering tables was found associated with the tombs.

T1: excavation investigated one of the suspect mounds of stone that could potentially have been a burial. This turned out to be geological with no evidence of any archaeological activity at all.

T2: small cairn consisting of six large stones forming a central cist with a disturbed covering cairn of smaller stones. Quite a lot of disarticulated bone was found in the central area of robber fill but no articulated remains. Although the overall size of the central burial was small, this was evidently a double inhumation of a young adult female and a small child. A single ostrich eggshell bead (SF274) was found.

T3: this tomb comprised a low oval cairn of small stone piled over a central burial structure defined by large boulders. There was a visible robber cut in the centre, but in addition to some disarticulated bone in the robber fill, some articulation remained, consisting of the lower half of the body of an adult male – legs, pelvis and feet (SK525). Finds included a solitary stone bead (SF276). A brownish organic stain beneath the body suggested the possibility of a decayed leather or textile shroud. Organic preservation was poor because of the shallowness of the burial (approximately 0.30 m below ground level).

T4: this ‘crevice burial’ was constructed within/against a series of large natural boulders, with the addition of some smaller stones to the north and a rough cairn, constructed of small stones, on top of the latter. The burial was heavily robbed with disarticulated bone relating to a sub-adult female in the robber fill and no articulation. The grave cut ran in an east–west direction. Forty beads were retrieved during sieving; these were predominantly of ostrich eggshell (SF254), but included also two carnelians (SF255 and SF259); one amazonite (SF256) and one of turquoise faience (SF257).

T5: another crevice burial consisting of large natural boulders forming a U-shape in plan, with some deliberate chamber construction to the northwest and with a rough cairn covering an intact burial of a large adult male. This comprised a crouched inhumation on its right side with the head to the northeast and possibly facing northwest (SK532). No grave goods were recovered apart from a single turquoise faience melon bead (SF277).

T6: a small shallow burial chamber, perhaps originally covered by a low cairn, in the bottom of a narrow gully. The burial contained an almost complete adult female crouched inhumation (SK533) with head to the south, facing west (and upwards). There was also a child burial in the north side of the cut (SK534), which was heavily disturbed. Grave goods included some ostrich eggshell beads (SF258 and SF363) and pottery sherds recovered during sieving.
T7: low, relatively elongated stone cairn with disarticulated bone in the robber fill of a central shallow chamber along with some Garamantian pottery sherds. No articulated remains were encountered, but the skeleton appears to relate to a single individual of sub-adult age.

Cemetery UAT050

Five tombs were investigated in UAT050 in 2008. Tombs T2 and T6 were of similar design exploiting natural rock crevices, each body covered with stones forming a low cairn. By contrast, tombs T1 and T5 were beautifully built, substantial structures and exhibited similar characteristics to each other in construction and dimensions. The superstructure of T5 had been destroyed but it is plausible that it was of similar design to the stepped circular/oval tomb T1. The corbelled interior construction method of both tomb chambers was very similar with large boulders carefully positioned horizontally and with each subsequent course overlapping the former slightly to form a vaulted shape. T7 was a type 2b shaft burial.

T1: this was a type 5a circular (approximately 3 m diameter) ‘stepped tomb’ with a corbelled, well-constructed chamber below (Fig. 12). There was evidence on the northeast side of
possible mud-plaster on the exterior rough-coursed walls. The southern end was broken-in due to robbing. Limited excavation was carried out to remove (and sieve) the robber spoil from the exterior of the monument, yielding some Roman pottery, glass fragments, a cowrie-shell bead (SF260) and disarticulated bone (an adult of undetermined sex). The tomb structure was recorded, but it was judged unsafe to investigate the tomb chamber itself.

**T2**: located immediately east of T1, this crevice burial made use of natural large boulders. The northern and western end of the grave had been disturbed by robbing, but the upper torso (SK505) of an adult male (minus left arm) was in position and articulated, indicating that the displaced skull found in the fill to the north was close to its original position.

**T5**: although robbed in antiquity through the roof (with consequent demolition of a suspected stepped superstructure, T5 contained a large number of grave goods (Figs 13 and 17), with at least 15 pottery vessels (including two amphorae, a lamp, numerous examples of ARS form 3, and six dishes, one of which contained the remains of a coiled basketry lid) stacked along the west, north and northeast sides of the tomb, as well as more than 15 separate glass vessels (mostly fragmentary) and a single cowrie-shell bead (SF362). The tomb contained quite a bit of disarticulated bone from two skeletons, both probably male and one adult and the other
young adult, with elements of one partially articulated skeleton lying on its left side in the centre of the tomb with head to the southeast, facing southwest. The original position of the second skeleton in the tomb is uncertain, but the profusion of grave goods stacked around the tomb edges suggests that the two bodies had been placed close to one another in the centre. Traces of rush matting were found preserved under the grave goods and the skeleton.

*T6*: another crevice burial in a natural rock alcove, this comprised a shallow grave defined by natural rock and large slabs to the northwest of step tomb T1. The burial was heavily robbed and contained disarticulated bones of an adult female in the sandy robber fill. The only articulated remains comprised foot bones at the east end of the grave slot, suggesting that the head would have been to the west. Sieving retrieved 73 ostrich eggshell beads (SF357) (including some of an unusual squared shape, SF366), seven ebony beads (SF367) and one amazonite bead (SF365).

*T7*: this was a well-constructed shaft grave with a stele and offering table *in situ* on the west side (Fig. 14). The shaft contained only disarticulated bone of a young adult female within robber fill, with no other finds present. The lower shaft was constructed using narrow slabs of mainly limestone set into the sides of the grave cut vertically.

**Cemetery UAT052**

UAT052 is situated in the middle of a north-facing slope, just east of the centre of the Watwat embayment. Within the area, six tombs were numbered. Of these, five were fully investigated, while substantial skull fragments were collected on the surface at the other location (T1). Two of the ‘tombs’ (T5 and T6) proved not to be burials, but simply piles of small stones adjacent to natural boulders. T1, T2 and T4 were all variants of type 1b corbelled cairns, whilst T3 was a type 1e crevice tomb, formed from small stones piled between several very large boulders.

*T1*: a large cluster of thick skull fragments of an adult was collected adjacent to an unexcavated triple corbelled cairn.

*T2*: the diameter of this large corbelled cairn was 7.50 m and its height approximately 1.10 m. It contained disarticulated bone belonging to at least two individuals, a young adult male, and a child of approximately 8 years. T2 produced 17 beads from the robber spoil within and around the tomb in faience (SF252), ostrich eggshell (SF253, SF359) and carnelian (SF360). There were also fragments of twisted vegetable fibre cord (SF383).

*T3*: this small cairn within a rock crevice had a diameter of 2.20 m and a height of 1.60 m, and was built up over a double inhumation comprising an adult female SK550 and an infant of approximately 1 year old (SK547). The adult was probably over 40 years old, so may not have been the mother of the infant. Infant SK547 was found lying supine on a raised stone in the far southeast corner of the grave cut, with head to south. The adult
SK550, in contrast, was lying to the north on the base of the grave cut on her right side. The head and cervical vertebrae were slightly displaced, but would have been to the west, facing south. Fifteen disc beads, including three of an unusual laminated shale (SF369), were recovered from around the head and neck area of the adult female (SF282, SF283, SF358, SF368, and SF400), presumably the remains of a necklace that had been largely removed by robbers.

*T4*: this corbelled cairn had a diameter of 6 m and a height of 0.80 m; it contained a disturbed but partially articulated skeleton of an adult male (SK549). The legs and most of the left side were missing. The head, although disturbed, appeared to have remained largely in its original position, at the northeast of the tomb, facing northwest. The cervical vertebrae had been completely disarticulated – this may be due to the tombs robbers searching for a beaded necklace. It is possible that this is a pattern emerging in the observed habits of the tomb robbers. From the articulated parts of the spine and arms, it was possible to tell that the individual had been lying on its right side. Interestingly the left hand held the right wrist in its grasp – obviously an intentional position at the point of burial. A single blue glass bead (SF284) was found close to the eye socket of the skull of SK549 – it is uncertain whether this was part of a robbed necklace or a single ‘amulet’ bead.

**Other Watwat cemeteries where burials were excavated**

*UAT051*: a dense cemetery of corbelled cairns and shaft burials of Classic Garamantian date, possibly overlying an earlier Garamantian settlement or other activity site (= UAT063). Three burials were briefly investigated here on the final day of the field season. T1 was a corbelled cairn that had been robbed through the roof. Under the cairn, the burial had been placed in a slab-lined shaft. The robbing was almost total, but the contents were sieved and the tomb photo-recorded and a profile constructed. T3 was another substantial corbelled cairn that had been neatly half-sectioned during robbing. This was again cleaned up, with robber spoil being sieved to recover pottery and bone, and the tomb photo-recorded. T5 was a robbed shaft burial with a well-preserved stone slab lining. This was cleaned out, the remaining contents sieved and the structure recorded.

*UAT055*: a single shaft burial was excavated in this cemetery at the northeastern end of the embayment. This was a lined shaft burial, with a deeply engraved cross on one of the slabs. The burial had been robbed and was heavily disturbed, but did produce a fine intaglio stone from a ring, possibly a cabochon garnet (SF398). Clumps of poorly preserved, but finely woven textile were recovered (SF396). Embrittled by body-fluids, these fragments had narrow-stemmed matting fibres adhering to one surface and were probably underlying the body in its original position.

*UAT056*: this cemetery consists of a nucleated area of corbelled cairns and shaft burials near the foot of the escarpment slope, with more dispersed cairns extending some way up the
sides of the valley behind. Two suspected burials were investigated, though T1 proved to be a shallow shaft of only approximately 0.40 m depth – almost certainly unfinished and containing nothing apart from a small charcoal deposit in its base. On examination, T3 proved to be nothing more than a natural ‘feature’ adjacent to an area where early Garamantian pottery had been found near the eastern edge of the Classic Garamatian cemetery. T2 was an unexcavated shaft burial within the main cemetery where some skull fragments were collected, one parietal with a neat perforation.

The Jarma escarpment quarry (site GSC048)
By David Mattingly and Ian Reeds

A brief intervention was again made in the modern aggregates quarry on the escarpment due south of Jarma (see Mattingly et al. 2007, 144–45), following observation by one of the DMP geographers of a small burial exposed in section. On closer inspection, about ten Garamantian burials, including two child burials, were identified in the bulldozer-cut section in the wadi bed adjacent to site GSC048. What was left of the child graves was systematically excavated and recorded (T1 at 26°30.258’N, 13°05.243’E; T2 at 26°30.255’N, 13°05.259’E). The tombs are of particular interest, as hitherto the DMP work has not recorded burials that were exclusively dedicated to children. The previous examples of child burials have all featured a child or neonate inserted into an adult grave, presumably alongside a parent or close agnate relation.

The GSC048 cemetery as previously recorded was believed to consist of a small group of large cairns on the north side of the minor wadi that cuts eastwards into the escarpment. The surface appearance of the cairns suggests that some of them may have been quite elaborate tombs, with well-built subterranean structures. The bulldozed cut now reveals that there were additional burials here, not readily discernible at the surface, including lined shafts and the two small subterranean corbelled structures, in which the infants had been interred. There is a possibility that the additional shaft burials visible in the 30 m bulldozer cut were also unrobbed and would repay future investigation.

T1: the burial was identified by a subterranean corbelled structure erected over the child’s body. There were signs of the burial shaft cut in which the grave structures were built, but no surviving trace of any superstructure at ground level (though visible bulldozing above and alongside the deep quarry cut could well have erased all evidence). The corbelled structure had an outer width of 1.08 m, with an internal width of 0.70 m, a surviving height of 0.60 m above the floor of the grave (with the top of the corbelled structure approximately 0.50 m below ground level). Only about a third of the interior of the grave chamber survived the bulldozer (with a maximum depth into the section of 0.30 m), but this contained a series of significant finds. Part of the leg bones and some feet bones remained in place (SK590), but in poor condition owing to exposure to the atmosphere. These suggested that the body had been laid on its right side with head to south and facing east, though the entire body above the tibia and fibula had been cut away (though some additional skeletal elements
were recovered from the loose soil at the base of the section). At the west end of the section (effectively the northwest quadrant of the grave behind the legs of the child) a complete handmade bowl (SF370) was located *in situ*, with a pierced ostrich eggshell disc (amulet SF372) adjacent to the east. Around the lower legs 174 ostrich eggshell beads (SF376) were recovered, some still with visible twisted animal-gut thread connecting them. There were also some traces of leather here, perhaps suggesting the original presence of a bag rather than a leather shroud. The bead necklace had evidently been looped around the child's legs, rather than contained within the bag.

*T2*: located approximately 30 m east of *T1*, this tomb had an almost identical subterranean corbelled structure over the burial, which had been roughly half-sectioned by the bulldozer cut. The corbelled structure was narrower (external: 0.85 m, internal: 0.55 m), but taller (0.80 m) than *T1*. The bones of a very small child were visible in the exposed section (SK592) and some were retrieved from the spoil immediately below the grave. The child, under one year of age, had been laid on its right side, with head to east, facing north. With the inclusion of the elements retrieved from the spoil below the cut, the skeleton was substantially intact. A pierced sherd of faience (SF371) was found directly under the chin – again presumably intended as an amulet – along with a carnelian bead (SF373) in the same general area beneath the body. The faience sherd had initially been drilled laterally (a lapidary technique employed on stone pendants from Old Jarma), breaking along this perforation, and being re-drilled from front to back.

The child in *T2* was about 9 months old and that in *T1* around 1 year old. The finds and associated burial structures suggest that these were both burials of the Classic Garamantian period. Both involved considerable labour in their construction and contained grave goods, showing that even very young children in Garamantian society had value attached to their lives and were deemed worthy of individual and ritualised burial. The apparent inclusion of amulets with both children is interesting and chimes with more recent Saharan practices (Nicolaisen and Nicolaisen 1997, 333). It is unlikely that the ostrich eggshell bead necklace was worn by the child in *T1*, but that it may have been included along with the pot as funerary offerings, rather than personal possessions of the deceased.

**A wadi-centre cemetery (TAG012)**

*By David Mattingly, Muftah Ahmed and Matt Hobson*

Because of the unexpected discoveries of the mummified remains at Watwat, the planned campaign of excavations around the west side of the Taqallit headland and in its vicinity was curtailed. Although an exploratory visit was made to assess sites for excavation and a small-scale excavation was made at one site (TAG012), the main investigation of this area has been held over until 2009. During the reconnaissance trip to the Taqallit area it was noted that there had been considerable additional damage to some of the cemetery and foggara sites on the west
Figure 15. TAG012.T1, after initial cleaning, looking west showing rectangular mudbrick superstructure. Scale: 1 m (photo: D. Mattingly).

Figure 16. TAG012.T1, final shot looking east after removal of superstructure and excavation of shaft. Scale: 1 m (photo: M. Hobson).
side of the headland as a result of bulldozer activity, creating shallow opencast excavations in order to extract aggregates. TAG001 was already seriously damaged in 2000 and does not seem to have suffered further destruction in the interim, but excavation at this site must be a priority of the next phase of work to salvage some information.

Potentially even more serious as a threat to one of the best-preserved sectors of the Wadi is the spread of new farms south of the Ubari to al-Hatiya agricultural projects. Several furrows have been cut in the ground recently to demarcate proposed new farms – one of them falls within 100 m of the Garamantian cemetery site of TAG012. This site is extremely important as a rare example of a wadi-centre cemetery, similar in nature to Saniat bin Huwaydi (GER011) (Mattingly 2007, 70–71, cf. 124–25). The cemetery is located approximately 2 km northwest of the Taqallit headland and it stands out from the surrounding sandy gravel plain as a low mound (again reminiscent of Saniat bin Huwaydi). The burials consisted of a mixture of rectangular and pyramid tombs – of which parts of two pyramids still stand, though in a much reduced state from when Charles Daniels saw them in 1963 (Mattingly 2007, 70–71). The plan of the site made in 2000 shows about 60 tombs revealed as surface patches of mudbrick – though there were in all probability rather more tombs here.

In order to test the preservation of the structures and the potential of the site, two structures were explored (T1 and T2), with one of them being fully exposed by the close of the dig. T2 had a section cut across it, which failed to locate a central mudbrick dome or shaft, and was not continued due to a lack of time. The fully excavated burial (T1) was a rectangular tomb (type 4b), possibly originally with a second tier or further superstructure above. It was located to the immediate southeast of T2, and upon investigation revealed a robbed-out shaft below the centre of the rectangular surface monument. The shaft had originally been closed by a substantial mudbrick corbelled dome. It is proposed to return to this site in the next season to carry out further excavation across a larger area of the burials.

_T1:_ as initially exposed, T1 consisted of a very hard, square mudbrick platform, 4 × 4 m in area and 0.5 m in depth (Fig. 15). This had been constructed above a levelling deposit of compacted sand. Beneath the levelling deposit and the mudbrick superstructure was a circular shaft covered over with a mudbrick dome. The flat platform of the rectangular superstructure and the dome over the shaft both revealed slight traces of disturbance, but it was not initially thought the tomb had been robbed. The shaft itself was excavated to a depth of 1.60 m below ground surface, onto a hard mineralised natural. The shaft had a 1.70 m diameter at the top, decreasing to approximately 1 m diameter at its base (Fig. 16). The fill of the shaft mainly consisted of a light brown loose sand, with occasional mudbrick inclusions. Apart from a couple of small abraded sherds of pottery in the shaft fill, no other material was recovered from within the tomb, which had been completely emptied of contents and bones. The robber’s point of entry through the roof of the tomb was partially disguised by collapsed mudbrick packed into the hole. SF413, a turquoise faience bead, was found during cleaning outside of the tomb, at the far southeast of the excavated area.
On the east side of T1, an area of windblown sand was cleared away to reveal several features, including a spur wall at the southeast corner, and a centrally placed stepped platform. Both features are paralleled at Saniat Bin Huwaydi tombs, where spur walls sometimes defined funerary enclosures in front of tombs, with offering tables and stelae erected on the stepped platforms against the east face of tombs. Further investigation around the tomb is needed to make clear its exact extent and the nature of its articulation with adjacent tombs within the cemetery.

**Wadi Barjuj sites (SCH050 and SCH052)**

By David Mattingly, John Dore and Muftah Ahmed

As part of the OXY Libya LLC survey enhancement work the Burials and Identity team visited a new Garamantian cemetery recorded on the northeastern fringes of the Wadi Barjuj. The site was of particular interest because it lay in an area where no Garamantian cemeteries or settlements had previously been recorded, approximately 18 km northwest of the nearest attested evidence of oasis agriculture at Qasr ash-Sharaba. The tomb types visible in the OXY Libya LLC photographs from their initial survey were drum cairns and drum tombs suggesting a Classic Garamantian date.

The visit was made on 21 January 2008. Approaching the site from the northeast, we crossed a rolling gravel plain before arriving at the location on spurs of a shallow escarpment sloping down into a series of palaeolake basins to the south. SCH050 proved to be a large cemetery in two main sections, Area A with about 54 drum cairns, drum tombs and shaft burials, and Area B with about 14 drum cairns. Area C comprised a single outlying cairn. Ceramics collected from
around the cemetery confirmed the Classic Garamantian date, with amphora fragments, ARS and wheel-made coarsewares. Reconnaissance along the edge of the escarpment revealed further previously unrecorded cemeteries, of similar character, on most of the southern spurs overlooking the basin. This area appears to be a continuation of the palaeolake environment recorded by us as the Barjuj (BJJ), but we numbered the sites under the SCH code because of the close cultural links with the major Garamantian centre at Qasr ash-Sharaba (SCH020). A second major cemetery was recorded in detail 430 m west of SCH050 and numbered SCH052, containing over 100 burials of various types: drum cairns, small cairns, shaft burials. The date seemed consistent with SCH050 in the Classic Garamantian period. Although some of the burials had been robbed, some at least appeared to be intact.

The survey of the immediate environs revealed two very extensive Pastoral sites associated with the Palaeolake (SCH051, SCH053), the latter overlain by a major Garamantian settlement and oasis cultivation systems. All of these sites merit further investigation and protection.

**Pottery study**

By John Dore

The work of the 2008 season was primarily concerned with the following: (i) material recovered from excavations at the cemeteries of Watwat (UAT), Jarma Escarpment (GSC) and Taqallit (TAG); and (ii) study of the collection of amphorae recovered in previous excavations and held in store at Jarma by the Department of Antiquities.

**The Cemeteries of Watwat, Jarma Escarpment and Taqallit**

Although the yield of pottery was generally lower this season when compared to 2007, with only fragmentary finds in most of the tombs, two important groups of material were recovered from UAT050.T5 and UAT008.T86.

**UAT050.T5 (second century AD):** this tomb yielded a substantial collection of complete or almost complete ARS dishes: at least four examples of Hayes 3C, one of Hayes 4, and five of Hayes 6 (Fig. 17). At least four of these vessels carried an identical two letter graffito on the underside of the base. It is unclear at present whether the letters are in the Latin or Punic alphabet but the supposition is that they represent the initials of the owner of the vessels. Other finds included a substantially complete lamp and the fragments of two cylindrical amphorae of Tripolitanian origin. These latter are particularly interesting since they appear to have been substantially larger than the majority of amphorae recovered from burials in the Wadi al-Ajal, with a capacity of at least 150 litres.

**UAT008.T86:** this tomb yielded a complete example of a small piriform amphora of Mau type 35 which probably dates to the first century BC or first century AD (Fig. 18), though other finds from this shaft are more consistent with a date in the late first or second century AD.
Other finds: other finds of interest include a small hand-made bowl executed in a well levigated Roman fabric from GSC048.T1 and the neck and rim of a jug exhibiting a ‘Punic’ style of decoration – horizontal bands of dark red paint on a burnished pale brown background, from surface collection at UAT010.

Amphora Study
The study of the amphora in Jarma Museum initiated last season was continued. Recording of vessels both in the store and on display in the museum has been completed. Over 100 vessels have now been catalogued and their details entered into the DMP database. The majority of vessels (possibly over 90%) appear to have originated in Tripolitania and there is a possibility of some types having been made more locally.

Other finds from the burials
By Franca Cole

Metal
As in 2007, there was a noticeable lack of metal artefacts in the excavated burials, even allowing for the robbed state of many of the tombs. The single metal find of the season was a copper alloy plate with two rivets from UAT009.T2. A close parallel to finds from Old Jarma and Saniat Jibril, this was most probably used to join pieces of leather.

Beads
The dominant bead material, as in 2007, was ostrich eggshell. Most of these beads were rounded disc types, but a new find are the five squared-off beads (SF366) from UAT050.T6. A new material recorded this season was laminated shale used for three disc beads (SF369) at UAT052.T3. A small number of carnelian and amazonite stone beads and faience beads was recovered, never more than three per burial, although this may be a factor of targeted removal by tomb robbers. Faience beads were predominantly disc-shaped and similar in size to the ostrich eggshell beads, and a single striated ‘melon bead’ (SF277) was recovered from UAT010.T5. Two pendants or amulets were recovered from burials: one a faience vessel sherd (SF371) perforated both laterally and front to back; the other a large ostrich eggshell disc perforated through the centre (SF372). Both amulets were found in baby burials at GSC048. Glass was again a rare material with a single green trade type bead (SF413) from TAG012.T2, and more unusually, a modified cobalt blue barrel bead (SF385) ground down at both ends from UAT008.T87. Two cowrie shell beads were recovered from the high status tombs T1 (SF260) and T5 (SF362) at UAT050, currently the only site from which they have been excavated. Both were perforated by removing the hull of the shell, leaving the ridged mouth intact. The edges of the cut had then been polished smooth. Overall, the assemblage suggests that necklaces of tightly packed ostrich eggshell beads were common, and that beads of other materials were used occasionally. The size and shape of the stone and faience beads is similar to that of the ostrich eggshell beads they were found in association with, suggesting that they were worn together.
Other jewellery
A single stone intaglio (stone cut to be set in a ring) was recovered from UAT055.T1. SF398 was a very dark red stone, probably a garnet, cut and polished in cabochon style, with no incised decoration. The edges of the stone showed differential wear at the margins, suggesting the stone had been set at some point during its history.

Textiles
Textile fragments were recovered from four of the burials this season, with near-complete preservation of shrouds from burials UAT008.T84, T86 and T87. The body in T84 was completely covered with a large, coarsely woven woollen textile that was cream in colour. The shroud was woven in a weft-faced tabby weave, with evenly spaced, tightly S-spun warp threads (seven per cm). The weft threads showed little sign of having been spun and were loosely packed creating a soft, flexible fabric. Some areas of the surface appeared to have been felted or matted together, suggesting the textile had been worn or seen use before being included in the burial. Selvedges were made by grouping warp threads (1:1:2:2:6:6), the edge bundle formed was then infilled with extra wefts embroidered into the fabric. Warp ends were finished with a pair of S-spun 2-Z-plied cords, one of which was threaded through the warp ends. The two cords were sewn together using natural undyed thread, and then overbound in a criss-cross pattern with thread made from three to four non-plied petrol-blue strands.

UAT008.T86 contained a large, finely woven shroud. This was plainly woven, weft-faced and pale cream in colour (ten warps per cm, 56 wefts per cm). Selvedges were formed by grouped warps (1:1:2:2:6:6) and extra wefts were added by embroidering between the final three warp bundles. A similar fragment was found with a decorated selvedge. Again finished with grouped warp bundles (1:1:2:2:6:6), the final bundle had three cords sewn onto it, two 3-S-plied crimson cords and a central 3-Z-plied ochre cord. The reverse in ply direction appears to have been intentional, creating a textured zigzag effect, and may indicate that imported edgings and decorative cords were being used to decorate locally made textiles.

The careful laboratory excavation of the block lift from the neck area of the skeleton revealed quite a number of the fine coloured textile fragments, as well as tassels (Fig. 19), one of which was still in situ, threaded onto the cord used to bind two square textile pieces together. The textile had natural coloured warp-threads (11 per cm) and was decorated with a variety of brightly coloured geometric patterns, all of which were effected using a weft-faced tapestry-weave (15 wefts per cm). The dominant background colour is dark blue, with stripes of cream, red and ochre; bright blue and ochre checked squares on a red background; and alternating purple and blue triangular pennants, their points picked out in white. It is currently suggested that the textile and tassels represent parts of a small, square purse or bag placed at the neck.

Among other fragments of coloured textile, a number of pieces of finely-woven dyed purple fabric (11 warps per cm, 46 wefts per cm) were retrieved from the pelvic area. Close inspection showed this to have had a cream-coloured square woven into the fabric.

UAT008.T87 was covered with two large textiles, the outer beige, the inner dark red-brown (Fig. 20). The red-brown textile was tightly woven (warps 14 per cm, wefts 56+ per cm).
Unusually, the warp fibres have completely decayed and the textile is very poorly preserved. It is uncertain whether the differential decay observed in the warp threads was due to the nature of the fibre itself, or the effects on the fibre of the dye used to colour them. The textile has a selvedge made with two sets of paired warps to which a pair of Z-spun, 2-S-plied cords have been sewn. The coarser outer textile was a natural undyed beige, with eight to nine warps and 40 wefts per cm. The selvedge was decorated by the addition of three cords – two red S-plied threads and one beige Z-plied thread – identical in structure to the fragment from T86. A continuous running stitch was used to sew the cords onto the final warp-bundle of the main shroud.

Outside UAT008, textile was found in only one other burial. UAT055.T1 produced a small number of compressed textile clumps, all of which were in a reduced, carbonised state (probably as a result of absorbing bodily fluids). These were too poorly preserved to give weave detail, but the compaction and density of threads suggest an extremely finely woven fabric, comparable to the 30+ threads per cm seen in textiles from UAT008.

Conservation work continued on the textile shroud (SF31) recovered from ZIN220.T19 during the 2007 season. A fine, weft-faced fabric (eight warps per cm, 32 wefts per cm), the total size of the shroud appears to have been approximately 4 m². Extremely fragmentary, with fibres embrittled from contact with body fluids, the textile is darkened and discoloured, but cleaning revealed two woven-in rectangles of purple-red thread. The colour change was reinforced.
visually by the pairing warp threads at the boundary of the two colours. The rectangles are of slightly different widths, one 13 cm the other 14.5 cm and the maximum preserved length is 42 cm. Reinforced selvedges have been made from grouped warps (1:1:2:2:2:8:8) and the final bundles have been oversewn together. The warp-ends have been reinforced by the insertion of a pair of S-spun, 2-Z-plied cord, threaded through the loops, the two being Z-spun together, picking up alternate warp-ends. The shroud was sewn together along the warp-end selvedge with a doubled Z-spun thread in a broadly-spaced, diagonal running-stitch, thus creating a seam that lies flat.

The conclusion that must be drawn regarding the analysis of the textiles so far, suggests an extremely high level of local weaving technology. The techniques used, particularly with respect to colour boundaries and selvedge warp-bundling are consistent across the assemblage, making it highly unlikely they had all been imported. It is possible that some of the coloured cords used for the reinforcement and decoration of selvedges were imported. Spin and ply directions tend to be internally consistent across an assemblage, and the mixture of S- and Z-plied cords may thus indicate that decorative elements such as coloured cords and braiding were being traded into the region.

Leather
A very small number of leather fragments were recovered from tombs in UAT008, UAT010 and UAT050 this season. None of the fragments exhibited seams or other indications of modification.
Gourds
Gourd fragments were recovered from only one tomb this season. The fragments (SF399) were undecorated and found in association with the glass vessel fragments in UAT050.T5

Matting and threads
Matting was very poorly preserved and, with the exception of a few fibres adhering to clumps of textile (SF396) in UAT055.T1, indicated largely by the presence of twisted vegetal fibre or rawhide bindings in the burials. The flattened fragments of (S-spun, 2-Z-plied) vegetal fibre cordage that were recovered from UAT008.T86 (SF268 and SF382) and T87 (SF387) closely resemble the binding threads sewn through the fine, narrow-stemmed plant fibre matting recovered from Zinkekra during 2007. A single fragment of finely twisted vegetal fibre (SF384, Z-spun, 2-Z-plied) was recovered from UAT052.T2. While the plant fibre itself is similar to fibres in the rest of the assemblage, the cordage is distinct in both the tightness and direction of its spin.

The fragments of rawhide binding (SF262 and SF378) recovered from UAT008.T84 indicate the presence of a second type of matting. In this type, bundles of broad-stemmed plant fibres were bound together with paired rawhide strips that were crossed over between each bundle of fibres. Fragments of textile recovered from underneath the burial exhibited deep linear grooves, the impression of the surface on which they had been laid. The ridged impressions seen in combination with the twisted rawhide bindings indicate that the burial had been lined with a mat of this type, although the fibres themselves had not survived.

Funerary stelae and offering tables
By Farès Moussa

As part of the work of the DMP, a complete catalogue has been made of funerary furniture found by the project, by the earlier FP work, and held at the Jarma museum (both on open display in and around the building and in the stores). A total of 112 offering tables and 144 stelae (or stelae sets) was photographed and drawn with detailed notes, including dimensions, being entered into a database.

This survey continues the work begun by Charles Daniels and David Mattingly to catalogue Garamantian stelae and offering tables, and aims to consolidate information concerning their provenance, where known. It is hoped that, through further cross-referencing with previous authors’ notes and with the co-operation of other excavators, it will be possible to obtain provenance information about these monuments, which can also be incorporated into this catalogue.

It is also hoped to add the smaller collections of offering tables and stelae held in the museums at Tripoli and Leptis Magna to complete the catalogue of known Garamantian funerary furniture. With the data from this catalogue it should be possible to improve on the initial classification drawn up by Mattingly (2003, 206–13), and to make statistical and comparative analyses concerning provenance and stylistic variation in form, decoration and
iconography. Such analyses can contribute to our understanding of cemetery morphology and chronology, mortuary customs and artistic traditions in relation to both rock art within the Wadi and similar funerary monuments in the wider North African context. Initial observations suggest there existed a much wider vocabulary in monument form and decoration than originally appreciated and that monuments were regularly painted in red ochre. Close examination also reveals more information about quarrying and stone-working methods than has previously been observed.

Skeletal remains
By Efthymia Nikita and Marta Lahr

During the 2008 excavation the skeletal material of 35 individuals was recovered and examined. This assemblage related to the remains of at least 30 individuals contained in 25 tombs in the Watwat cemetery; three individuals recovered during surface collection from the same area; and two infants from tombs in the modern aggregates quarry on the Jarma escarpment (GSC048). The majority, 23 skeletons, had been buried individually, while five tombs contained double interments.

Analytical lists with the skeletal contents of each tomb and their state of preservation were drawn up and, with the use of standard osteological methods, the sex and age of the individuals were determined. Any signs of pathology were also recorded. In addition, several measurements were obtained from the crania and the postcranial elements, where these were well preserved, and non-metric traits were scored for the entire skeleton.

In general, the majority of the material was poorly preserved. More specifically, 32 skeletons showed signs of fragmentation, 20 were substantially weathered, and 12 had been subjected to discoloration. On the other hand, in eight cases there was cartilage preserved on the joint surfaces, while calcified tendons were observed on certain elements in three skeletons. Finally, one skeleton had evidence of burning, another demonstrated tooth marks on the cranial bones, and one cranium preserved brain residues.

Overall, 12 male and ten female individuals were identified. The sex of the other 13 skeletons could not be determined, but it should be stressed that six of them were subadults, thus any sex estimation based on morphological criteria would be unreliable. The remaining seven individuals were very poorly preserved and lacked any diagnostic feature of sex. The principal method applied for sex determination was the Phenice method for the os coxae (Phenice 1969) in combination with the shape of the sciatic notch (Walker 2005). Secondarily, the cranial morphology was taken into consideration and more specifically, the size of the nuchal crest,
the mastoid process, the glabella and the mental eminence as well as the shape of the supra-orbital margin were examined and scored according to the system presented in Buikstra and Ubelaker (1994; cf also Howells 1973). In cases where neither the os coxae nor the skull were available, the size of the femoral, humeral and radial heads, as well as the size of the muscular attachments, was used as a sexing criterion since males tend to be more robust than females, although this sex assignment should be treated with reservation.

The skeletal remains were divided into the age groups that are given, along with the number of individuals belonging in each category, in Figure 21. The main ageing methods included the examination of the stage of dental development for the sub-adults (Ubelaker 1989), as well as the stage of the epiphyseal union of the long bones, the os coxae and the hand and foot bones (Krogman and Iscan 1986; Redfield 1970; Suchey et al. 1984; Webb and Suchey 1985). For the adults, age estimation was based on the Suchey-Brooks system applied on the pubic symphyses (Brooks and Suchey 1990), and on the sternal rib end morphology (Iscan and Loth 1986). In addition, the Meindl and Lovejoy (1985) ‘lateral-anterior’ sutural system was applied in cases where the crania were preserved well enough to allow it. Finally, in cases where none of the above methods could be applied, the size of the bones was used as a means of discriminating between adults and subadults, although this is a rather ambiguous criterion.

The main pathology affecting the examined individuals was arthritis, identified on ten skeletons. It was principally expressed on the vertebral bodies, but also on the long bone epiphyses, the clavicles, the temporo-mandibular joint, and the patellae. In addition, ante-mortem dental loss must have also been widely distributed, given that it was seen in eight individuals. In general, it affected mainly the posterior mandibular and maxillary dentition of mainly elderly but also younger individuals. Other dental diseases were relatively rare, comprising of caries (two cases), abscesses (one case) and periodontal disease (four cases). Two individuals show signs of periostitis (abnormal peristeal bone formation) on the long bone diaphyses that may have been associated with some soft-tissue traumatic lesion. In addition, there was abnormal bone formation on one femoral diaphysis, but this was probably an indication of scurvy and not trauma. Moreover, the femura and tibiae of one individual were bowed, but as a result of intense muscular activity, judging by the size of the muscular attachments, and not because of rickets or osteomalacia. Finally, four crania had cribra orbitalia and two porotic hyperostosis, both signs of anaemia, while one individual suffered from infection of the mandibular nerve.

Conclusions
By David Mattingly

During the 2007–2008 seasons of the Burials and Identity sub-project we excavated more than 80 burials and recovered skeletal remains relating to at least 83 individuals. Despite the generality of robbing and attempted robbery of the burials, articulated or partially articulated remains have survived in approximately 30 instances, allowing something to be determined about the burial orientation. It is too early to offer a detailed analysis of this, but a few general comments about
the burials can be made. Bones recovered from robber fill above partially articulated remains often correlate with the missing skeletal elements, suggesting that the activity of the robbers need not have catastrophically mixed contents of adjacent tombs (though the possibility of mixing of grave contents and skeletal elements must be carefully assessed in each case). There are quite a few cases where elements of more than one skeleton have been recognised in assemblages of disarticulated bone in the dense shaft cemeteries. However, it is possible that some of these may relate to genuine double internments, since in at least ten instances we have found articulated evidence for a child being included in a grave with an adult, probably indicative of instances of synchronous death, rather than reopening of a grave on a separate occasion. As already noted, the GSC048 burials show that on occasion even very young infants were treated to individual burial, with associated grave goods.

We have already recorded considerable differences between the various cemeteries explored – in terms of rituals, structural peculiarities, artefact assemblages and preservation. In 2007, several burials from UAT008 produced what appeared to be traces of human hair and possible human tissue alongside textile, leather and other organic material. The discovery of two mummified bodies in the 2008 season was thus not a complete surprise to us, but is probably to be seen as a feature of the extremely deep and dry burial conditions in that cemetery. The study of these mummified remains will add a significant new dimension to the subsequent work of the project.

The scale and extent of ancient tomb robbing is striking. The date of this robbing activity is unclear, but had evidently occurred long before the Italian colonial regime started scientific investigation of the Garamantes (Pace et al. 1951). Given the destructive nature of the robbing – breaking down elaborate funerary structures, overturning stelae and offering tables, despoiling the bodies of the dead and breaking grave goods – it is inherently unlikely that this was part of the original Garamantian ritual cycle. If it was the case that the Garamantes practised a ritual ‘unmaking’ of their own burials after an elapsed period of time, how might we account for the tombs that escaped this treatment, as at Saniat bin Huwaydi? It seems more plausible to accept that the robbers did not share the cultural and religious outlook of the Garamantes and that this activity dates to the medieval and early modern periods. The labour invested in the systematic opening of so many burials suggests that the burials were perceived regularly to contain something of value, not simply a promise of rare wealth (such as gold). It is clear from many examples – but most notably tomb UAT050.5 – that the ceramic and glass vessels within tombs were not of interest to the robbers, with disturbance focused closely on the bodies (whether mummified or skeletal) within the burials. That suggests that the main interest was some element(s) of personal adornment.

One emerging pattern in the finds data concerns the presence of beads in burials. The vast majority of burials with multiple bead finds relate to female skeletons. Overall, a higher number of the definitely female burials have produced beads, in comparison with definitely male ones and male burials have rarely yielded more than a single bead (one exception was part of a double inhumation with a child). It is also apparent that the number of beads recovered in most cases represents only a small percentage of those that may originally have been present. The largest totals
from single burials are 175 (GSC042.T1), 150 (UAT008.T22) and 147 (UAT008.T32) – the first being a child burial, the other two adult females. These are about the minimum numbers necessary to make a small necklace of, say, ostrich eggshell beads. Most of the burials where smaller numbers have been recovered had been robbed in the past and our working hypothesis is that beadwork was a prime motivation for the robbing activity. During the 2008 season, we noted several cases where there had been minimum disruption to the skeleton within an evidently robbed grave, with disturbance focused on the neck area, presumably during an initial search for a necklace once the head end of the body was identified. In cases where no beads were found around the neck area, little energy appears to have been further expended on searching other parts of the body. Further work is needed to test our hypothesis that the rich beadwork accompanying female burials was a prime target for the robbing activity. It is well known that beads have been a long-term tradable commodity in Saharan and sub-Saharan zones.

As our data set of burials grows in the coming seasons, we shall be able to start to interrogate more fully the evidence relating to the diverse cultural and ethnic identities adapted for and displayed by individuals and groups within Garamantian society.

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Finally, while this report was at proof stage, it was with great shock and sadness that the members of the DMP received the news of the sudden death of our co-author and colleague, John Dore. We dedicate this report to his memory.

References


