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E.C.L. During Caspers (1934-1996)



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New Evidence of Funerary Practices at the End of the Early Bronze Age at Hili, United Arab Emirates

Sophie Méry, Kathleen McSweeney, Jérôme Rouquet, Gautier Basset & Walid Yasin al-Tikriti

Introduction

A third season of excavation was held in January and February 2001 at Hili Tomb N (Eastern region, Emirate of Abu Dhabi) by the French Archaeological Mission in the United Arab Emirates in collaboration with the Department of Antiquities and Tourism in Al Ain. The pit-grave was originally excavated between 1984 and 1989 by a team from the Department, who decided to leave, in the central part of the structure, the burial deposits untouched. The main aim of the re-excavation of the remaining deposits of Tomb N is to try to reconstruct local funerary practices, only partially recognized until now, particularly for this type of grave which is different (in shape, techniques of construction, and the internal arrangement of the bone deposits) from the circular monumental graves of the Umm an-Nar Period and was until now very rarely identified in Eastern Arabia.

Monumental tombs of circular shape are considered to be diagnostic of the period extending from about 2700 to 2000 B.C., known as the Umm an-Nar Period (second part of the Early Bronze Age). Since the pioneering discoveries on the Umm an-Nar island (Frifelt 1991), more than 70 of them have been excavated in the United Arab Emirates and the Sultanate of Oman (for example al-Tikriti 1981; Vogt 1985a; Benton 1998; Blau & Beech 1999; Potts 2000; Cleuziou, Méry & Vogt in prep) [Fig. 1]. They are compartmented stone tombs, faced with fine worked ashlar blocks. By the end of the Umm an-Nar period, their diameter could reach up to 14 m (at Mleiha and Shimal), and the number of compartments in the tombs could reach up to 12. The human remains are generally found in all compartments, and most skeletons are disarticulated and the bones fragmented. It is assumed that this disturbance of the bodies was partly due to the displacement of bones in order to make space in the compartments of the grave, during its use. Locally, funerary practices had obviously reached a high level of complexity. The number of individuals buried in the same grave reached several hundreds by the end of the Umm an-Nar period. The tombs were collective graves, which means that the bodies were buried gradually over a certain period of time, which is often difficult or even impossible to estimate due to several factors (*i.e.* destruction and robbing of many graves, methods of excavation of the graves and registration of associated artefacts, absence of a good range of radiocarbon dates on bones, lack of information in the reports).

Together with those on Umm an-Nar island, the Hili

collective tombs form a core group for the understanding of the Umm an-Nar period funerary practices. More than a dozen have been excavated so far, mainly in the 1970s (al-Tikriti 1981). Among them, Tomb A at Hili North, excavated by the French Mission in the early 1980s, provided the best set of information about burial customs (Cleuziou & Vogt 1983; 1985; Vogt 1985a; 1985b; Bondioli, Coppa & Macchiarelli 1998; Cleuziou, Méry & Vogt in prep). According to the excavators (Cleuziou & Vogt 1983: 42; 1985: 275), the use of this tomb possibly extended over about 200-300 years, at the end of the 3rd millennium BC. It measured 10.3 m in diameter and comprised of two storeys. One was underground and the other above. The upper storey had been destroyed, but the subterranean one consisted of two independent halves separated by a wall. Each half was subdivided into two compartments connected by a small passage. These compartments were reached from above. Most of the bones found in the destroyed upper storey were highly fragmented and not articulated. Moreover, most of them had been burned. However, 31 articulated individuals were found lying on the floor of one of the subterranean compartments (Cleuziou & Vogt 1985: Fig. 3) and it was assumed that this layer marked the final stage of the use of the grave. The bodies were placed south-north or north-south, in a contracted position with the legs bent and the right arm flexed, with the hand on the front of the face, or under the head. According to the anthropologists (Bondioli, Coppa & Macchiarelli 1998: 233), this group included 18 adults of both sexes, and 13 juveniles and infants, of which three were less than a year old. Burial customs were difficult to interpret because of disturbances, both from the ancient use of the tomb and the process of destruction and robbing of the monument, but it was possible to carry out a partial reconstruction. It is assumed that the bones lying on the floor of the subterranean compartments after decomposition were transported to the upper part of the tomb, in order to be burned. Post-excavation studies have showed that more than 300 different individuals were buried in the tomb. The mortality of infants and young adults was very high. Moreover, some distinctive morphological traits were found on the bones, possibly suggesting close family connections.

Tomb N also belongs to the Hili cemetery group. It is a 7 m long collective pit-grave of a type rarely identified in the United Arab Emirates (a similar, but smaller grave, was excavated in the Emirate of Ajman more than 10 years ago, see al-Tikriti 1989; Haerinck 1991). Such pit-

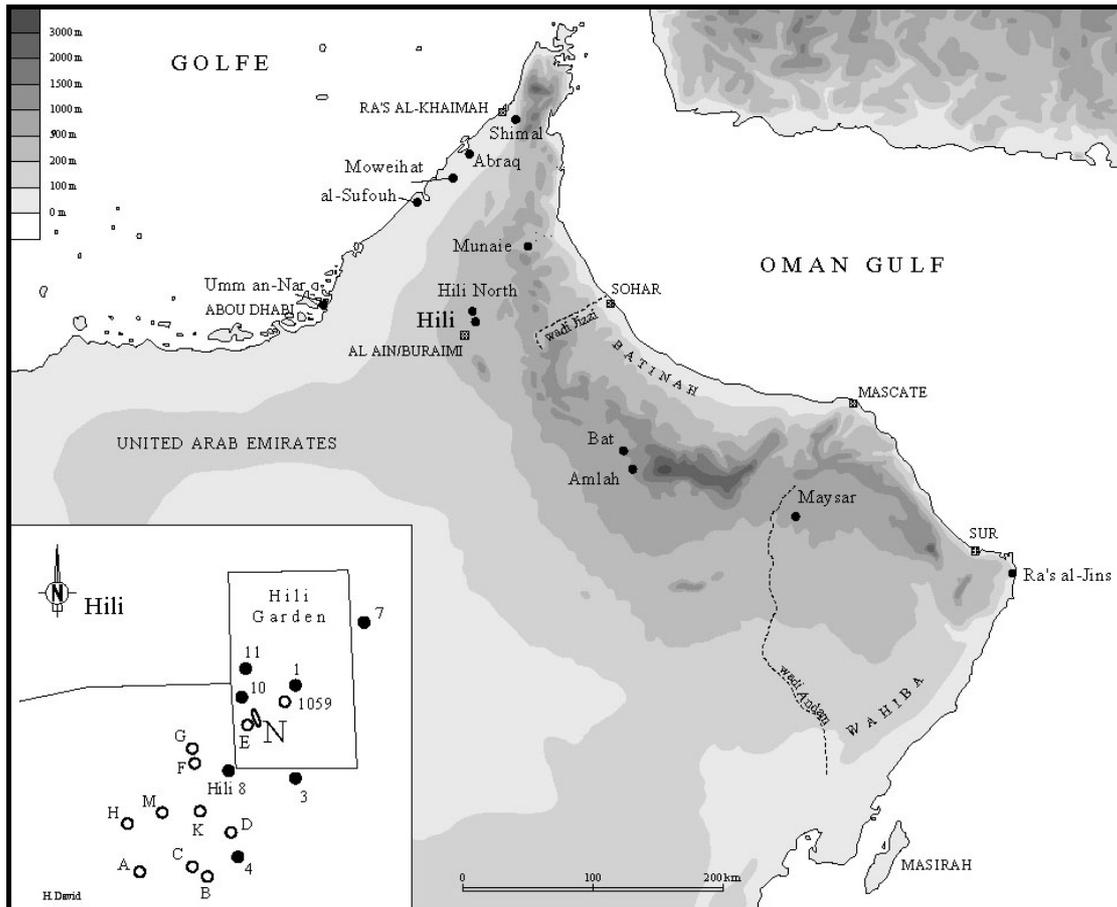


Fig. 1: Location of the excavated Umm an-Nar graves or groups of graves in the United Arab Emirates and the Sultanate of Oman (drawing by H el ene David).

graves, which are not visible in the landscape, unlike the monumental circular graves, have only been discovered until now by chance and have not been the subject of specific research in the United Arab Emirates. They are very different from the circular monumental tombs of the Umm an-Nar type, not only in shape and techniques of construction, but also in the internal arrangement of the bone deposits.

The original excavations (1984-1989)

Hili N pit-grave is located about 80 m from the megalithic Hili 1059 tomb, and less than 0.5 m from a smaller circular six-chambered grave (Hili Tomb E). Very few bones and Umm an-Nar pottery sherds were recovered in this circular grave when excavated by Saeed ur-Rahman in the 1970s. Hili N is a simple pit dug into the ground [Fig. 2]. Its original shape was oval, with a length of about 5 m, a maximum width of 2 m and a depth of 2.5 m. At a later stage, it was enlarged by the addition of a small extension to the southern side, thus making the total length of the pit 7 m (Haddou 1989: Fig. 1; al-Tikriti & M ery 2000: Fig. 3). The tomb was covered with a roof, as some large flat slabs which had collapsed inside the pit were found in the upper layer, which was devoid of skeletal remains (al-Tikriti & M ery 2000: Fig. 1). In the original pit, the upper part of the western and northern sides was strengthened with a stone wall (possibly to withstand pressure from

the monumental tomb nearby), but only the very top of the rest of the pit was constructed of stones. The wall was built using non-dressed stones mixed with ashlar blocks originating from the facing of a circular Umm an-Nar tomb, possibly from the one just nearby as the blocks were identical in dimensions, shape and working. Their re-use indicates that the circular tomb was at least partly destroyed when the pit-grave was dug and that it may have been already out of use. One facing stone is sculpted in 'ronde-bosse' with a motif we interpret as a dagger (al-Tikriti & M ery 2000: Fig. 5), which is very similar to the bronze daggers with crescent pommels found in the tumuli of Madinat Hamad on Bahrain at the end of the 3rd millennium BC (Lombard 1999: Fig. 55). This type has not been found amongst Umm an-Nar facing-stones, but it is well known in the rock art of Oman (Preston 1976: Pl. 15; J ackli 1980: 13, 60-63). The same daggers are represented on funerary steles from Mahra and Jawl regions (Yemen) dating from the end of the 3rd to early 2nd millennium BC (Vogt 1997: 33).

Aims of the new excavations

The original excavations by Haddou revealed skeletal remains, which covered almost the entire surface of the pit (al-Tikriti & M ery 2000: Fig. 2). The bone deposits were very thick, about 1.8 m, and a random-layer system of excavation was adopted, as it was not possible to distin-



Fig. 2: Hili N pit-grave in the course of the 2000 excavation, from the south. The restored facing wall of Tomb E is visible on the left (photograph by French Archaeological Mission in the United Arab Emirates).

guish actual layers. These excavations, therefore, produced an enormous amount of disarticulated and fragmented human remains mixed with hundreds of pottery vessels (about 400 are either intact or have a complete profile from the base to the rim) and other objects (Haddou 1989; al-Tikriti & Méry 2000), some of which are now on display in the Al Ain Museum. As at Mowaihat (Haerincck 1989: 4), the immediate proximity of the Hili grave-pit to circular monumental graves and the fact that it contained many disarticulated bones, led scholars initially to hypothesise that the Umm an-Nar grave-pits were ossuaries, used to store bones cleared from the monumental circular graves (Haerincck 1991: 10; Potts 1997: 48).

Most of the contents of Hili N pit-grave were excavated in the 1980s, but a 6 m³ portion of the burial deposits in the central part of the structure was left untouched, to show the complex accumulation of the funerary deposits. However, problems of preservation, and the possibilities offered by recently established methods of field anthropology combined with archaeology, led H.E. Saif bin Ali al-Darmaki to propose to the French Archaeological Mission that the excavation of the central portion of the tomb should be completed in collaboration with the Department of Antiquities in Al Ain. We began the re-excavation of the pit-grave in 1998.

Generally speaking, collective graves are particularly difficult to document and interpret because the funerary deposits may result from a complex sequence of changes over a long period of use. In our case, the difficulty is amplified by the fact that our team must try to recon-

struct the burial processes from the excavation of only a portion of the original remains. Moreover, the accumulation of the remaining deposits in the pit is very complex, as shown by the two vertical sections of the remaining central part of the deposits left *in situ* in 1989 (see below). To give an idea of the very unique case one has to deal with, the accumulation of bone deposits in French Neolithic graves rarely reaches 50 cm (Chambon 1999), whereas the Hili pit-grave deposits reach 1.8 m. Other constraints are the high degree of fragmentation of most of the bones, the pulverisation of the sediments in the burned area, as well as the deterioration of the bones in the unburnt areas. Therefore, we decided to adopt the strategy and techniques of excavation recently developed by field anthropologists for collective graves in France (Duday 1995; Chambon 1999). While so far we have not found complete skeletons—and it is very unlikely that we will—the new methods of excavation provide a greater opportunity to examine and record related or articulated bones than has previously been possible, with the potential to examine at least partial skeletons, rather than individual bones or fragments of bones. It has also been possible to retrieve more complete bones and reconstruct broken bones. This will help to provide more accurate assessments of stature and age, sex and disease.

Stratigraphy of the remaining portion of deposits

The study of the sections left *in situ* after the original excavations showed that there were three distinct phases of bone deposits mixed with pottery sherds and complete pottery vessels [Fig. 3]. The oldest deposit is covered by a layer devoid of bones but full of pottery and the above

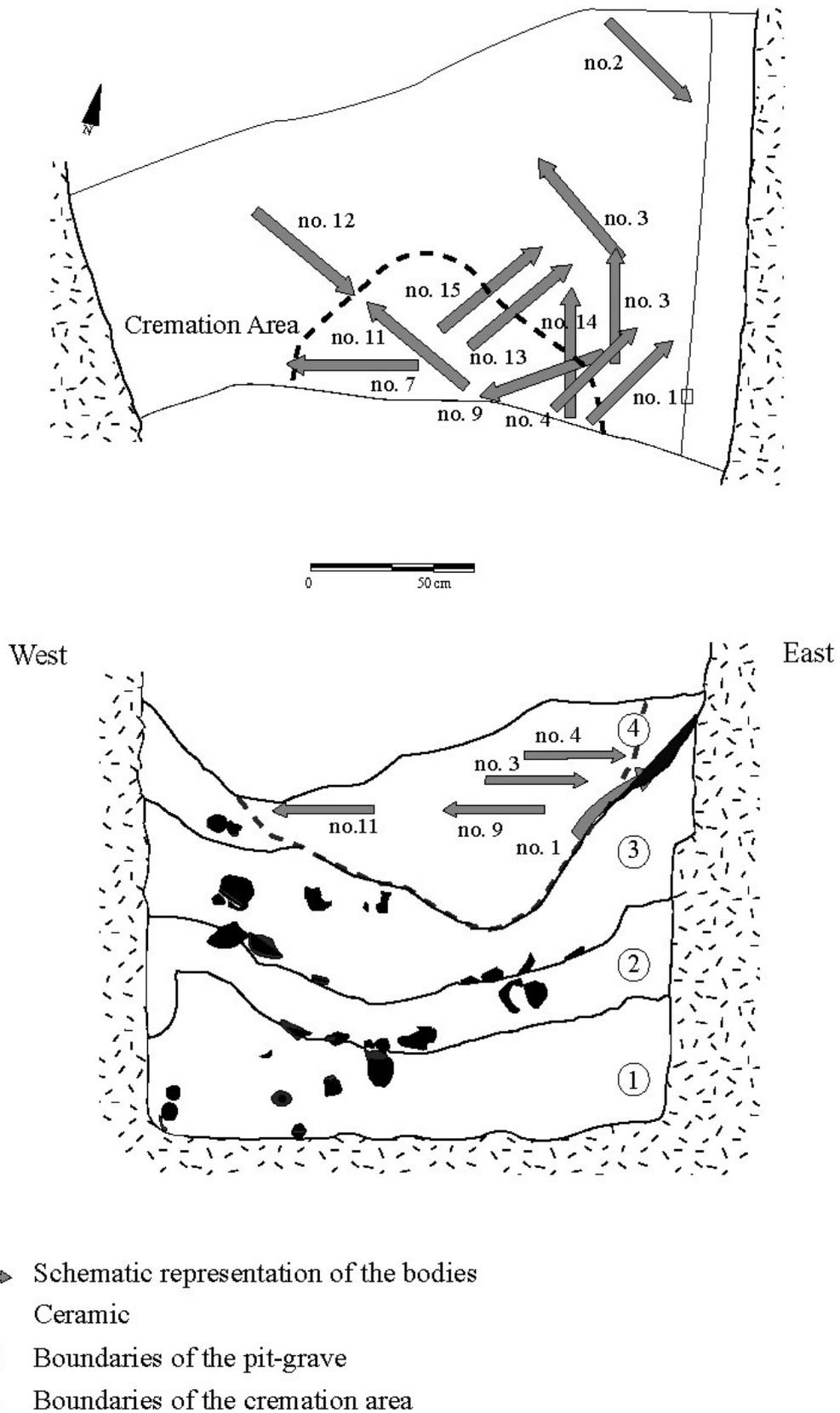


Fig. 3: Location of the 15 largest bone connections in Level 4 (top deposits of Hili N pit-grave) and drawing of the W-E section. The oldest deposit level (no. 1) is covered by a layer devoid of bones but full of pottery sherds (no. 2) and the two superseding bone deposit levels (nos. 3 and 4) clearly go back up along the long sides of the pit. The uppermost deposit level includes an area of burning interpreted as a single event occurring at the very end of the period of use of the grave. Bodies, which were at least in a partial state of decomposition, and others which were fully decomposed, were burned at the same time. According to the rotation or lateral movements of some articulated bones, we know that the decomposition of some bodies occurred in an empty space (drawing by Gautier Basset and Sophie Méry).

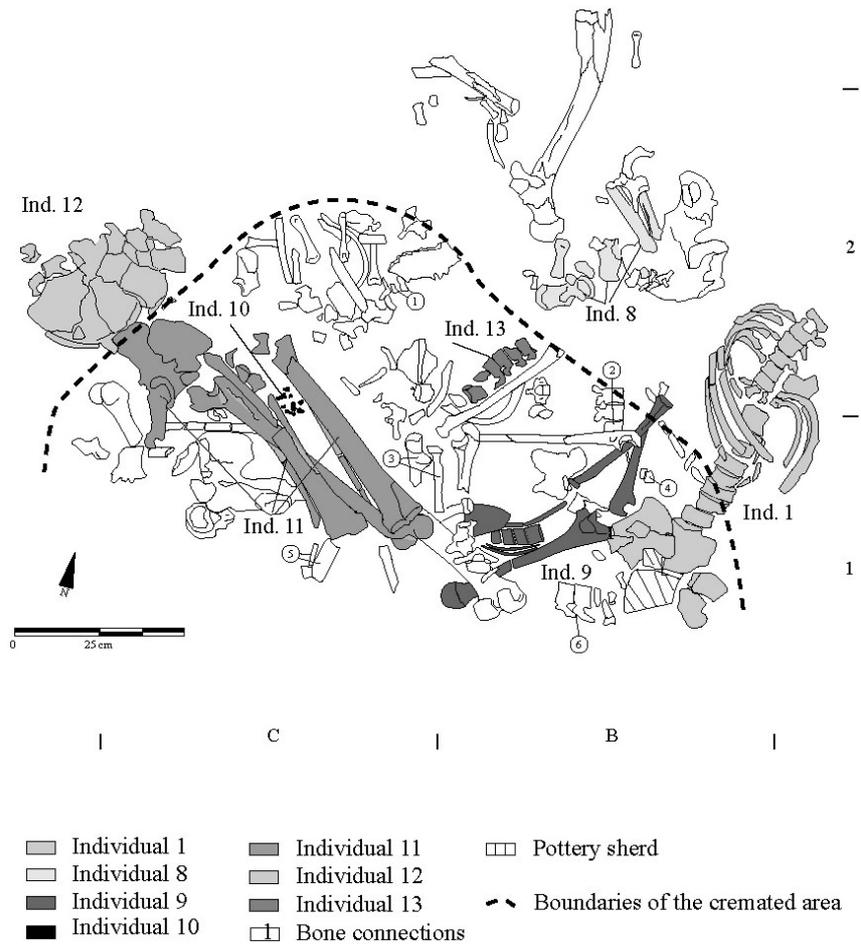


Fig. 4: Drawing of layer 14 (Level 4). The base of individual 1 (about 25 years old, sex uncertain) is integrated into the cremation area (top bone deposit of the grave). It was burnt after the complete decomposition of the body, but the decomposition occurred in situ according to the position of the left wrist (layer 4, see Méry et al. 2001: Fig. 7) and the thoracic cage bones (drawing by Gautier Basset).



Fig. 5: Individual no. 1.

two bone deposit levels clearly go back up along the long sides of the pit. The top deposit includes an area of burning. In order to determine the relationship between the different levels of bone deposits, it was decided to excavate by very thin layers of bones. The excavation of the top bone deposits, about 50 cm thick, is now practically finished. So far, 20 different layers have been lifted in the upper bone deposits. The quantity of artefacts and pottery vessels associated with the bodies is rather low in Level 4, although two significant finds were made in 1999—a chlorite vessel and a chlorite seal representing new types in the assemblage (Méry *et al.* 2001: Figs. 9–12). However, excavation of that level gave a lot of information in terms of burial practices.

Evidence for primary deposits in the top deposits (Level 4)

During our first season, very fragile articulations of small parts of skeletons, such as hands or feet were found in the upper part of the top level (Méry *et al.* 2001). The preservation of very fragile connections on strict anatomical order means that at least parts of the bodies must have been deposited soon after death because some tendons were still attached. A statistical study of the spatial organisation of the different parts of the anatomy on the excavated surface (skull, trunk, upper and lower limbs) was carried out for each excavated layer. It showed evidence of a bipolarity of skulls and upper limbs, with most located at the eastern and western edges (*i.e.* the long sides) of the pit-grave (Méry *et al.* 2001: Fig. 15). This pattern was partly confirmed during our second and third seasons, when bigger parts of skeletons were found, which enabled the identification of 15 adults. Fig. 4 shows the drawing of one of the layers, which shows several of these incomplete skeletons. Individual no. 1 is the best preserved so far—from the head to the base of the trunk [Fig. 5]. It is not possible to say whether the body was in a flexed position, but its left arm was tucked up with its wrist under the jaw (Layers 3–4). It was orientated north-east-southwest but with the head near the eastern wall of the pit-grave. However, the orientation of the identified individuals in Level 4 is rather variable. The chronology of deposition of these bodies is complex [Fig. 3]. Nos. 1 and 2 were deposited first, although it is impossible to say whether their deposition was contemporaneous. The former was positioned on its back, the other possibly on its right side. Neither was lying horizontal, but inclined, being located on the top of the sloping underlying bone deposits (Level 3). No. 9 and/or 11 were then deposited, and finally nos. 3 and 4.

Whatever the original purpose of the pit-grave, the upper level consists of primary deposits, indicating that the bodies—or at least some of them—were deposited in the pit soon after death. Thus, it became clear that the pit did not merely function as a simple ossuary or annexe to the neighbouring circular Umm an-Nar grave.

In Level 4, the deposits are stratigraphically homogeneous even though they consist of successive inhumations and the repeated reorganisation of the bones. Decomposition of the bodies in an empty space, associated with the repeated rearrangement of the human remains during the Bronze Age as well as the construction of a burning

area, explain the evident disarticulation and fragmentation of many of the bones. Preservation of fragile bone connections could only have occurred by chance. Decomposition in an empty space is clearly documented by two cases in the grave, the relevant articulations being at the centre of the deposit. According to Jérôme Rouquet, who is in charge of the field-anthropology on the joint-team, the rotation of a humerus, radius and ulna (Bone group 101, Layer 9) is diagnostic. These bones were found slightly below individual 3, but above individuals 1 and 2. The upper limb was found without the hand, but it is possible that when the body was deposited, the arm was in a flexed position, with the radius and ulna over the humerus—a classic posture in Umm an-Nar graves. During the process of decomposition the ulna toppled on to its anterior side, rotating about 270°. The radius followed, rotating about 180°, and ended up between the ulna and humerus. Such movements would not have been possible without free space around the bones. This indicates that the bodies were not intentionally covered with earth, and it also confirms the observations made in the field that the sediments in the grave are the result of natural processes, the gradual infiltration of either dust or mud. The second case (Bone group 104, Layer 9), consisting of a skull, a mandible and the two first cervical vertebrae, lay partly below individual no. 3. The mandible had moved laterally, and had toppled forwards. The second cervical vertebra (axis) had moved towards the original position of the cheek. The first cervical vertebra (atlas) had shifted to the left and had turned 90° from its normal position. The skull had toppled forwards, lying on its right frontal bone. Again, such movement could only have occurred in an empty space.

The cremation area of the top deposits

The central zone of the top level showed evidence of exposure to heat, documented by blackened bones and ash. We have confirmed that the cremation occurred *in situ* (Haddou 1989). A characteristic zoned halo (grey/black/red) is clearly visible from the centre to the periphery of the fireplace, and a halo (grey/black) is also visible in the west-east section (al-Tikriti & Méry 2000: Fig. 6). Many bones and connections show a gradual change of colour (white/red/black) and their position indicates that they did not move from their original location in the fireplace, even at the surface of the deposit. The bone colour indicates low temperatures of burning, in the region of 250°C with some peaks to about 600°C. The mixing of the bones and the relative scarcity of articulated bones in the burnt area is explained by the stoking of the fire and movement of the bodies during firing. The burning is interpreted as a single event, occurring at the end of the period of use of the grave. Cremation did not involve the whole surface of the tomb, far from it, and was possibly related to a ritual practice associated with the abandonment of the grave. It was mainly limited to the central part of the upper deposits, but had also spread to the underlying deposits, at least in the lower part of the burnt area. This is indicated by the abundance of sherds in the periphery of the burnt area (but near the bottom), at the interface between Levels 4 and 3. These had possibly been disturbed during the construction of

the fire, and had originated from the underlying layer. This process could also explain the presence, in the same area, of some bones whose fragmentation and alteration is more typical of Level 2 deposits.

Bodies which were in at least a partial state of decomposition and others which were fully decomposed were burnt at the same time. It is possible to determine whether bones were fresh when they were burned only if the burning was at a high temperature (high temperatures are indicated by a grey-blue colour). Some bones, burnt whilst fresh, were found in pockets full of whitish ash near the bottom of the burnt area. This indicates that the fire was deliberately constructed to facilitate combustion (the flesh, when burned, produces oil), as does the presence of a few branches of jujube wood at different levels within the fire. Another indication of the deliberate construction of the fire is the recurrent horizontal, and therefore stable, orientation of long-bones in the burnt area (Méry *et al.* 2001: Fig. 6).

The case for the presence of *non-decomposed bodies* in the top level (Level 4) is based on three different arguments: the specific aspect of bones burnt at a high temperature, the evidence of the process of decomposition in an empty space, and the presence of labile joints in strict articulation. Colour and fracture pattern enables, in certain cases at least, to differentiate between bones which were burned when fresh and those which were burned when dry. The surface of fresh bones burns more rapidly than dry, and colouration and other indicators of cremation will be more evident. In the area of burning, Level 4, a temperature of 600°C was reached in several parts of the fire, as documented by small pockets of grey-blue bones and white ashes. At these temperatures, bones, regardless of whether they were dry or fresh, all turn pale grey with a tendency towards bluish or white. However, only those burnt while fresh show a specific torsion and areas of micro-fissures, perpendicular to the longitudinal axis of the bones. Torsion occurs as soon as the grey-blue stage is reached, but micro-fissures appear later, after the bone has become whitish. Some bones recovered in the lower part of the area of burning display these characteristic micro-fissures. In the areas where the temperature of burning was not that high, it is more difficult to determine whether the bones were fresh or dry when burned. This is also related to the fact that in Tomb N the fragmentation of bones is very high.

Results of the bio-anthropological studies of bones from the original and new excavations

Examination of the bones from the original excavation by Kath McSweeney has shown that at least 360 individuals were buried and once our excavations have been completed this number will probably rise to over 500. This number is much greater than any already known from the circular Umm an-Nar graves. There was no selective burial in the Hili pit-grave since infants and adults of both sexes and varying ages were buried together. A large proportion of the dead consisted of babies and young children of less than five years of age. Many of the bones were from un-born fetuses or newly-born babies, suggesting that problems during pregnancy and child-birth were common. We know from the analysis of the 15 indi-

viduals from the new excavations that the bodies of children were also deposited before final decomposition. Only a few adults lived beyond the age of 40. The adults buried in Hili Tomb N were generally fine-boned and fairly small in stature; women were on average 157 cm (5 feet 2 inches) and the men about 174 cm (5 feet 8 inches). However, there were a few very robust and tall men in the tomb. Some very large bones from men of 183 cm (6 feet) or more have been found.

Although the majority of diseases do not leave any traces on the skeleton and therefore in most cases the cause of death is not known, some interesting evidence on the health of these people has emerged. As already recorded for other Umm an-Nar graves, dental health was very poor (see for example Bondioli, Coppa & Macchiarrelli 1998: 233). Almost all of the adults had lost several teeth by the time they died, even young adults, and many had no teeth at all. Of the three articulated individuals from the current excavations whose jaws have survived, all had lost teeth during life. Of the newly excavated disarticulated jaw fragments a high proportion had suffered a high rate of tooth loss. It is very possible that such poor dental health is associated with the eating of dates, which caused the teeth to decay from an early age (resulting in infection and dental abscesses, which were common), but the number of recorded caries is, surprisingly, very low in Tomb N.

The skulls of some children showed changes possibly related to a deficiency, such as iron or vitamin C or D. It is unlikely that this would have been the cause of death but a poor diet would have made the sufferers more prone to infection or disease, and so could indirectly have led to an early death. Evidence of periods of disease or malnutrition, occurring during childhood at the time teeth were developing, can be seen in the teeth of many people. The fact that some of the people lived to old age can be seen in the examples of arthritis of many joints, such as the neck, lower back, shoulders, elbows, knees, hands and feet. With the exception of one skull with an injury which may have been caused by a blow to the head, there is little evidence for violence. There are many recorded injuries to various bones which in most cases probably resulted from accidents. Healed fractures of the bones of the hands, feet, ribs and collar bones have been identified. In one case, a fracture of one of the bones of the forearm must have been so disabling that it could not be used, resulting in osteoporosis of the bones of the hand. Some injuries to the long bones of the legs and arms, which are well-healed, suggest that the Hili people understood the basics of dealing with broken bones.

Dating

Five radiocarbon dates (see n. 1 and Table 1) corroborate the first results of the detailed study of the artefacts and pottery (al-Tikriti & Méry 2000) and confirm that Hili Tomb N dates to the very late Umm an-Nar Period. It also shows that the period of use of the grave was rather long, at least 100 and at most 200 years. As already mentioned, a date of the two or three last centuries of the 3rd millennium B.C. was first given for Tomb A at Hili North by Cleuziou & Vogt, but we think that it was not used over such a long period as was first suggested (*i.e.*, 200 years at

Table 1: Radiocarbon results from five bone and charcoal samples from Hili N pit-grave					
Sample	Radiocarbon age B.P.	Calibrated age cal B.C.	Calibrated age cal B.P.	Method A 1 sigma B.C.	Method A 2 sigma B.C.
Pa 1835	3800 ± 60	2200	4149	2317-2137	2455-2034
Pa 1840	3760 ± 70	2178, 2166, 2143	4127, 4115, 4092	2281-2038	2451-1950
Pa 1844	3730 ± 30	2135, 2071, 2063	4084, 4020, 4012	2181-2041	2198-1987
Pa 1978	3745 ± 40	2188, 2182, 2141	4137, 4131, 4090	2201-2044	2287-1984
Pa 1979	3755 ± 45	2195, 2172, 2143	4144, 4120, 4092	2272-2052	2294-1984

Calibration method developed by M. Stuiver & P.J. Reimer 1993. For all samples the corrected dates were calculated from intercepts; Method A 1 sigma = 68% confidence interval; Method A 2 sigma = 95% confidence interval.

most) and it is also older than previously thought. The two radiocarbon dates from Hili North Tomb A are older than all the dates of Level 4 at Hili N (Cleuziou, Méry & Vogt in prep). This is partly confirmed by study of the artefacts, but due to the presence of a large amount of identical artefacts in Tomb N and Tomb A at Hili North (especially among the types of domestic jars of Hili Sandy Red Ware), we assume that the beginning of the use of Tomb N at Hili and the end of the use of Tomb A at Hili North could overlap in time or at least be very close. This is not contradicted by the only radiocarbon date from the basal level at Hili N (Pa 1835).

As with Hili Tomb N, the pit-grave at Mowaihat is possibly a bit older than the circular grave from Tell Abraq according to radiocarbon dates and associated material (Potts & Weeks 1999). Thus, Umm an-Nar pit-graves do not seem to constitute a 'transitional type-grave' before the subterranean graves of the subsequent Wadi Suq period in the 2nd millennium BC, and circular monumental graves continued to be in use until the very end of the Umm an-Nar period. At this moment, we do not know whether pit-graves existed throughout the entire Umm an-Nar period or if they should be attributed to the end of that period. Since collective pit-graves are known to have been used in the Oman Peninsula during the 5th and 4th millennia, the (late?) Umm an-Nar pit-graves may represent the revival of very old funerary practices in the region.

Conclusion

To summarise, the Hili pit-grave was the first example of a collective pit-burial from the Umm an-Nar period in the United Arab Emirates. Until now, only one other grave of this type has been excavated, namely in Ajman at Mowaihat. The close proximity of both pits to circular graves initially led scholars to hypothesise that Umm an-Nar grave-pits were ossuaries, i.e. for the reburial of bone from circular tombs which had become full. The new excavations at Hili N, as well as a reassessment of the previous documentation, led us to conclude that the situation was much more complex than previously thought. The Hili pit-grave was not used as a simple ossuary, at least not in the later stages of its use. Partial skeletons of 15 different adults, including males and females, have so far been identified and their orientation in the tomb established. The presence of primary inhumations, and intentional cremation in some areas of the grave, has

now been established. Pending the results of future excavations, we continue to propose that the basal level of the bone deposits may correspond to a re-burial of bones from the adjacent circular grave.

Note

- Five radiocarbon dates were processed at the University of Paris VI-Jussieu by Dr. J.-F. Saliège at LODYC-University VI (Méry *et al.* 2001: n. 5). Two types of material were analysed: charcoal (Pa 1844) and bone (all other samples). The date obtained from the charcoal is very accurate with a small error margin. Only one sample from the bottom level of Hili Tomb N (Level 1) was dated (Pa 1835) and all other samples come from the top level of bone deposits (Level 4).

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