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Re-excavation of the Early Bronze Age collective Hili N pit-grave (Emirate of Abu Dhabi, UAE): results of the first two campaigns of the Emirati-French Project

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Introduction

In the last *Proceedings of the Seminar for Arabian Studies*, a reassessment of the 1984–88 excavations carried out at Tomb N at Hili by the Department of Antiquities in Al Ain was proposed (Al Tikriti & Méry 2000). At the end of the original excavations, the central part of the funerary deposits had been left unexcavated in the pit-grave for viewing by the public. A new programme of excavation, undertaken jointly with the French Archaeological Mission in the UAE, commenced in November–December 1998 and continued in December 1999–January 2000, under the co-direction of two of us (W.Y. Al Tikriti and S. Méry) (Figs 1–2). The main aim of this re-excavation was to reconstruct local funerary practices, only partially recognized until now, since Tomb N is very different not only in shape and techniques of construction, but also in internal organization of the deposits, from the classic monumental circular Umm an-Nar graves nearby (Haddou 1989; Al Tikriti & Méry 2000).

At the end of the Early Bronze Age (Umm an-Nar period), funerary practices reached a high level of complexity in the United Arab Emirates. Very few reports exist on such practices (Al Najjar 1985; Benton 1996; Bondioli, Coppa & Macchiarelli 1998), particularly of pit-graves of the Tomb N type. Furthermore, a collective grave, such as Tomb N, is especially difficult to document and interpret. Tomb

N contained the remains of several hundred individuals and the 1.7 metre-high funerary deposits result from a long sequence of changes over a lengthy period of use. The difficulty is increased because our team must try to reconstruct the burial processes from the excavation of a small portion of the original remains (about five cubic metres remained to be excavated in 1998). Moreover, the stratigraphy of the remaining deposits in Tomb N is very complex, as shown by the two vertical sections left *in situ* by M. M. Haddou (Fig. 3). Other constraints are the very high degree of fragmentation of most of the bones, the pulverization of the sediments in the burnt area (upper level), as well as the deterioration of the bones in the unburnt areas.

For all these reasons, it was obvious from the beginning of the 1998 campaign, that only a very precise excavation and full registration of osteological and archaeological data could show the differences between the natural and anthropic events that had affected the tomb and its contents. This strategy of excavation must be used in order to understand fully the treatment of the dead by the Bronze Age populations, i.e., the initial position of the deposits, decomposition in an empty space or in the ground, identification of primary or secondary burial, etc. Therefore, we decided to adopt the strategy and techniques of excavation developed for

FIGURE 1. Sketch of Tombs E and N after restoration. Drawing: C.U. John.

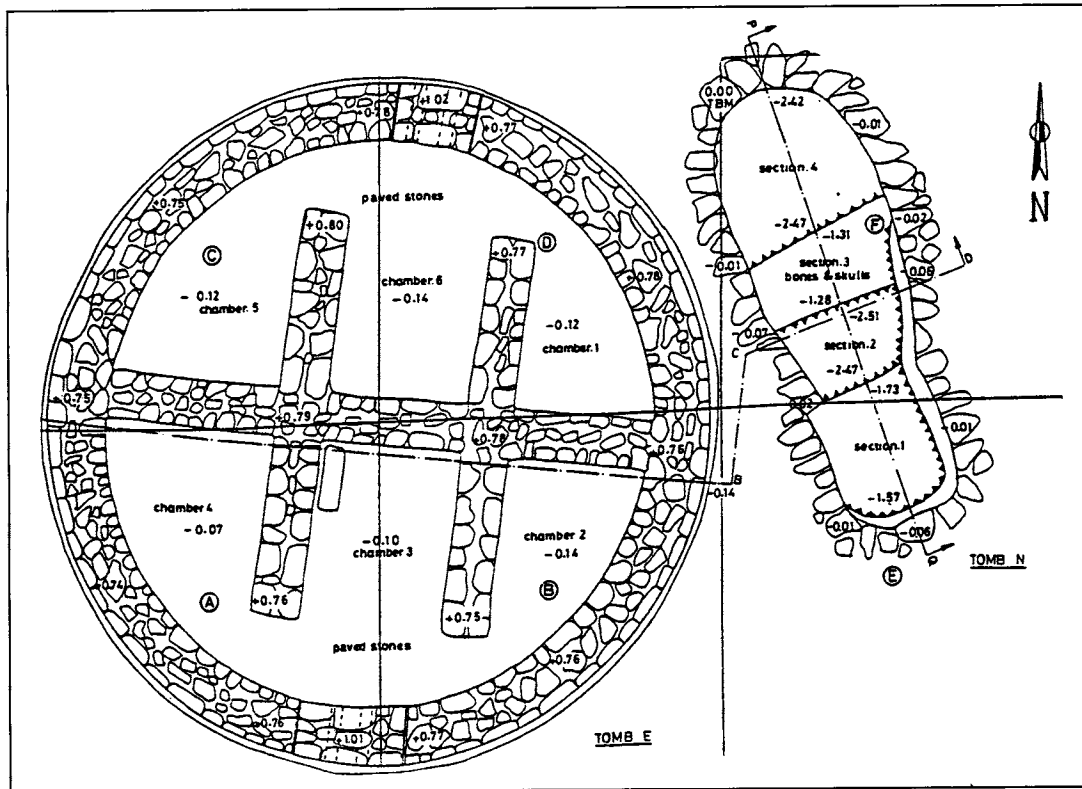
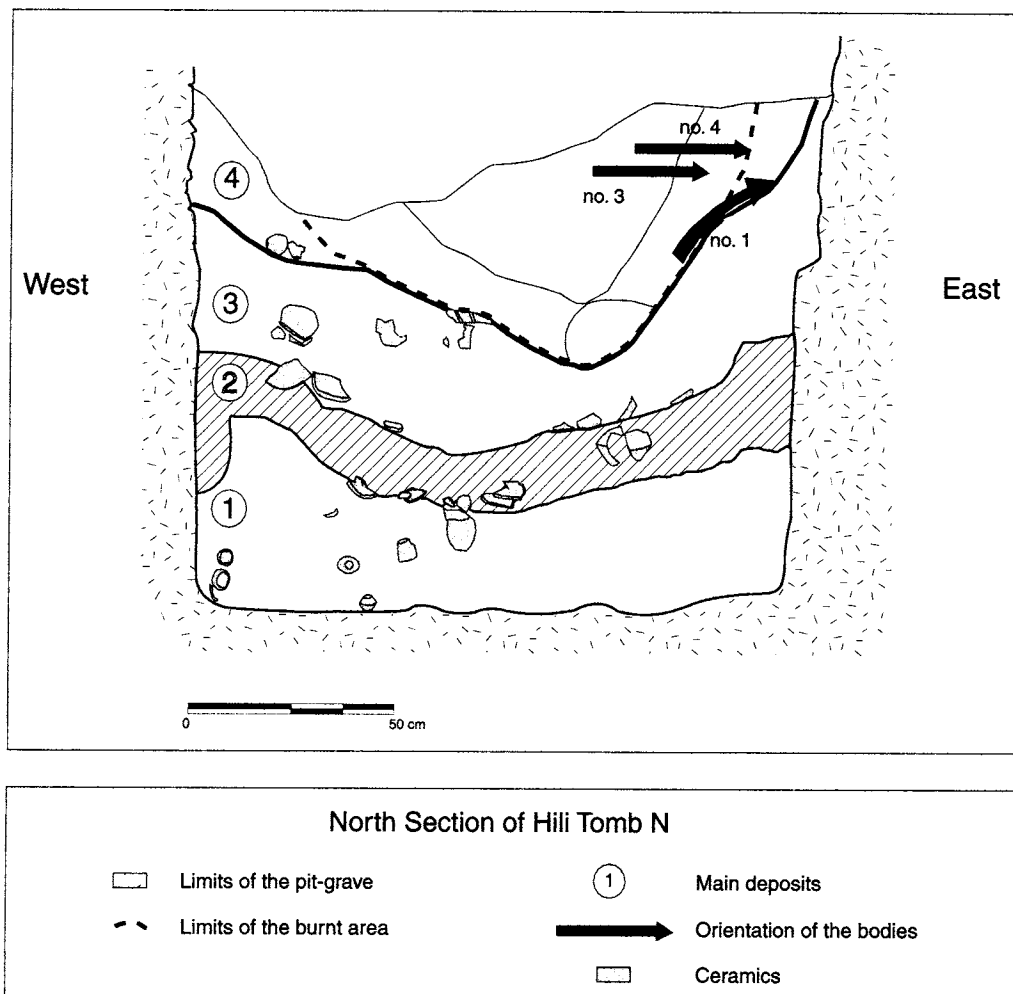


FIGURE 2. Tomb N during the 1999–2000 season of excavation.



FIGURE 3. Four main deposits were identified in the north Section. Level 4 was excavated in the 1998 and 1999–2000 seasons. Drawing: G. Basset and S. Méry.



Neolithic collective graves in France.¹ This is the very first time that this specific methodology, which had to be adapted to the particular conditions of pit-grave N at Hili, has been used in eastern Arabia. While it is still unlikely that complete skeletons will be recovered in the grave, the new methods of excavation provide a greater opportunity to examine and record related or articulating 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 results in the calculations of stature and assessments of age, sex and disease.

We will not describe in the present paper either the structure itself (Fig. 1), or the findings of the original excavations, as these have recently appeared in this journal (Al Tikriti & Méry 2000). Here, we will focus on the description of the sections of the remaining part of the funerary deposits, as well as the layers excavated during the 1998 and 1999–2000 seasons and will present the recovered artefacts in that context only.

Description of the section

The remaining deposits are roughly trapezoidal in shape on the surface (Fig. 5, and Al Tikriti & Méry 2000: fig. 6), with vertical sides. This enabled the stratigraphy to be analysed before beginning the excavation (Fig. 3). The study of the northern section of the remaining central part of the deposits showed that there were at least four different levels:

The *basal funerary deposits* (Level 1), the upper limit of which is horizontal, consist of a very dense accumulation of well preserved, although fragmented, bones in a sandy yellow matrix. The shafts of lower limb bones are very numerous.

Level 2 contains few fragmented bones in an abundant matrix rich in wadi gravels. Sherds lay flat at the surface of the level. The upper limit of this deposit is not horizontal but has built up along the eastern and western sides of the pit.

Level 3 consists of a dense accumulation of very eroded and fragmented bones in a beige sandy matrix. Some pottery vessels are visible in the

section but they are less numerous than in the previous level. This level is bowl-shaped and characterised by a strong wall effect. The bones clearly follow this orientation.

The central part of *Level 4* consists of a burnt area with fragmented bones in good condition (Fig. 4). Long bones within the area of burning are either horizontal or oblique (Fig. 5), but do not follow the slope of the underlying stratigraphic unit. Outside the burnt area bones are much more eroded and fragmented.

Description of the excavated layers (Level 4)

So far, we have excavated ten different layers, all belonging to Level 4 and corresponding to the same funerary deposits, with partial *in situ* burning. The description of the excavated layers demonstrates their complexity.

Layer 1

The surface layer of the bone deposits had been exposed during the course of the previous excavations, more than ten years earlier. The uppermost layer had been described as consisting of earthen soil mixed with fallen stones and void of bones (Haddou 1989). The cover of slabs had fallen inside the grave, some slabs being recovered in a sub-vertical position (Al Tikriti & Méry 2000: fig. 1): we can thus exclude the possibility of an intentional filling of the pit-grave when it was condemned. When use of the grave was discontinued, the empty space between the funerary deposits and the cover was less than one metre high.

At the beginning of the 1998 season, the surface of the bone deposits was cleaned, drawn and photographed. We noticed the abundance of skulls, particularly in the eastern part of the deposits. Most of them were in a secondary position. Some of them were intentionally ranged and others indicate the original position of the body. (Fig. 6). The central part consisted of a burnt area with a maximal diameter of 1.4 metres (Al-Tikriti & Méry 2000: fig. 6). At the surface of the deposits and in section, a

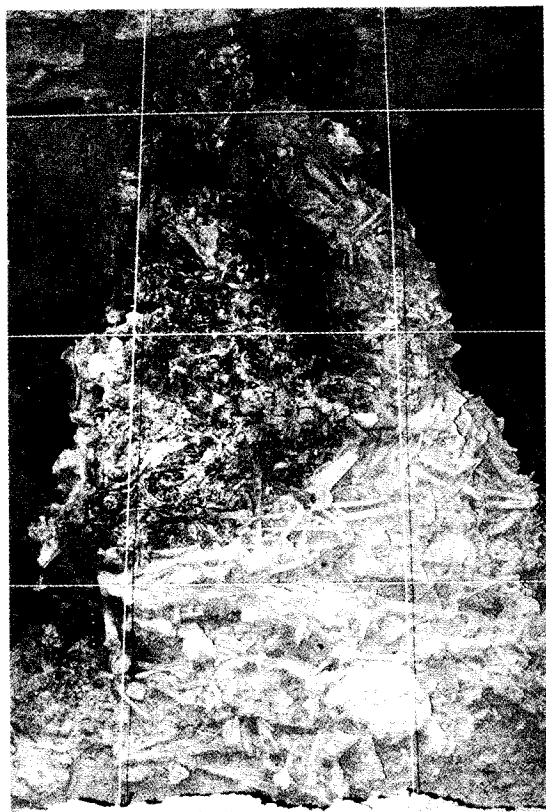


FIGURE 4. At the surface of the deposits and in section, a black halo clearly encircled the burnt area, layer 1.



FIGURE 5. *Burnt area (Level 4), detail of the north section. The horizontal or oblique orientation of many long bones indicate intentional manipulation, during the construction of the fireplace but may also have occurred during maintenance of the fire.*

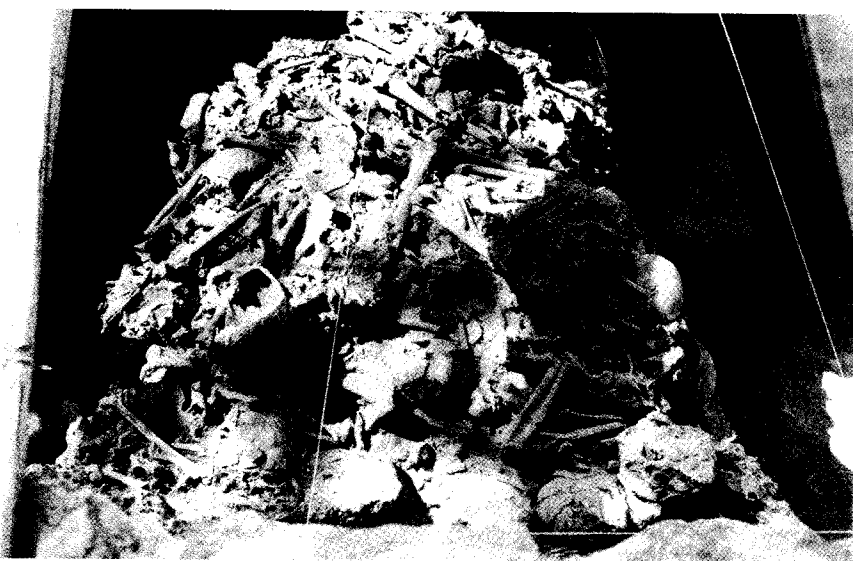


FIGURE 6. *Layer 1, after brushing. Skulls are aligned in the eastern part of the deposits.*

black halo clearly encircled this burnt area (Figs 4 and 5). Some bones were only partly burnt (some of these were in full anatomical order) with a gradual change in colour, depending on their initial position in the area of burning. This shows that the burning occurred *in situ*, as proposed by M. Haddou. Most of the bones in the burnt area are blackened and do not display heat-induced micro-fractures,² which occur when bones are burned at very high temperatures; the temperature of combustion was therefore less than 250°C at the surface of the burnt area. A single Umm an-Nar artefact was found in layer 1, in the

shape of an unburnt flattened base of a Hili Sandy Red Ware pot, the commonest ware type in the Hili area during the Umm an-Nar period (Méry 2000: 135–138).

Layer 2

A few sherds of the same pottery ware were also found in this layer, together with a good number of articulated body parts.³ These skeletal elements were located at the centre or at the periphery of the burnt area. As some of these were in strict anatomical order with joints considered to be labile (i.e. the first

to give way in the process of decay), we could exclude, at this very first stage of excavation, the hypothesis that Tomb N was, for at least the final stage of its use, simply a dump-ossuary as defined by Leclerc (1999: 33), or an annex to Tomb E.

Layer 3

A few sherds of Hili Sandy Red Ware and a 10 cm long piece of carbonized branch, obliquely embedded in the burnt area, were found. Following microscopic analysis by Dr. M. Tengberg (UMR 7041, CNRS), this has been identified as a small branch of jujube tree (*Ziziphus spinachristi*). A sample of this charcoal was dated by radiocarbon to the very end of the third millennium BC (see below). A group of bones in strict anatomical order appeared outside the burnt area, immediately within this sub-surface layer; this was a left upper limb, situated close to the eastern wall of the pit. An articulated skull and mandible also belong to the same Individual no. 1, but this relationship only became evident during the 1999–2000 season, when new elements were identified (see below, and Fig. 7). The twenty other articulated body parts identified in layer 3 are equally distributed within the burnt area and the unburnt area. We noticed the presence of three articulating thoracic vertebrae and, significantly, part of a foot, with labile joints, in strict anatomical order. This confirms the impression we had from the lifting of layer 2: the hypothesis that dry bones were deposited in grave N at Hili can be excluded. However, it is not possible to determine whether these were primary burials (the initial placement of the corpse after death in the pit-grave) or secondary (there was an intermediate resting place after death, but somewhere other than the final place, the pit-grave). Even though some bones in layer 3 were found intact, the majority are very fragmented. This is also true for the subsequently excavated layers, until layer 6 where the majority of bones are less fragmented.

Layer 4

Several features, like the disorganization of the bone remains and their high degree of fragmentation make this level comparable to the previous layer. The rare and fragmentary artefacts include two pottery rims dated from the end of the Umm an-Nar Period (Hili

Sandy Red Ware and Omani Fine Red Ware) and charcoal pieces. Ten articulating body parts were recovered, some of these with labile joints. It was impossible to identify in the field the original position of the bodies but post-excavation statistical analysis showed that skulls and limbs are well represented near the walls of the pit and trunk bones are more concentrated in the central portion of the excavated area.

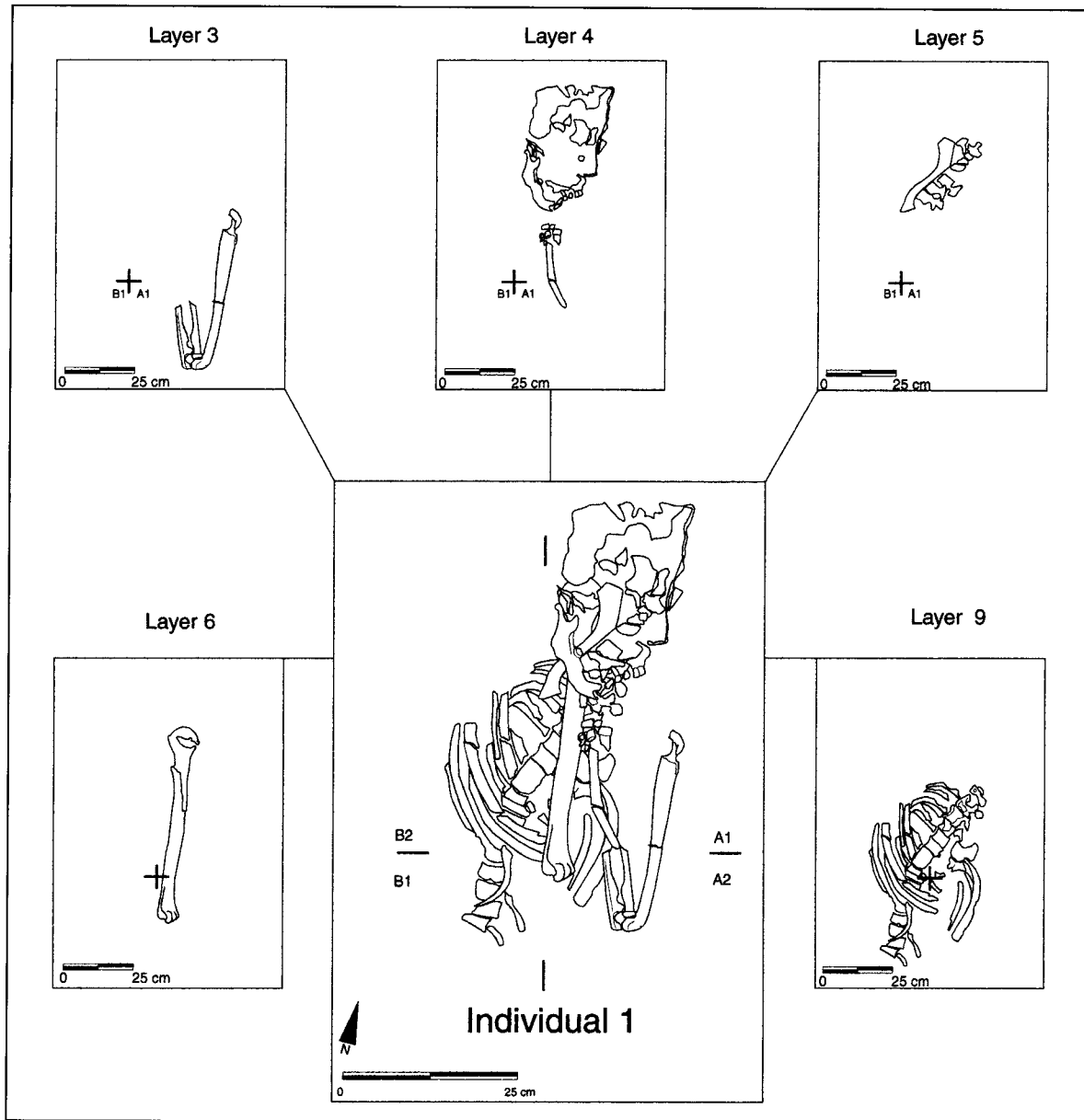
Layer 5

Several pieces of charcoal (from the jujube tree) and other burnt remains were recovered, as well as four copper rings of the classic Umm an-Nar type. One was *in situ* on a proximal phalanx. Thirteen articulated body parts were identified, all with more stable joints not considered labile (radius/ulna, skull/mandible, tibia/fibula). A group of five ribs and a scapula of a very young child were located at the periphery of the burnt area. Many other immature bones were identified in this layer, most of them in the burnt area; they clearly belong to at least three different individuals, possibly four. In the central part of the burnt area, the specific orientation of the long bones corresponds to our observations in layers 2–4, i.e., horizontal or oblique, and not following the slope of the underlying stratigraphic unit (Level 3), which is bowl-shaped and characterized by a strong wall effect. This orientation of the bones may indicate intentional manipulation, possibly associated with maintenance of the fire.

Layer 6

The eastern border of the filling may have served as a circulating axis since bone fragments in this area are absent or extremely fragmented. One important articulating body part, a wrist and hand without the fingers, was affected by marked arthrosis. The presence of these pathological changes made it possible to link these bones with the radius and ulna recovered in layer 5, which were similarly affected. Another group of articulating bones were found: the neck of an adult. First ribs, collar bones and a scapula are also associated. The bones of this individual, Individual no. 1, actually began in layers 3 and 5 (Fig. 7). The position of the body can be reconstructed: it was on its back and oriented NE/SW (Fig. 8), 20 cm from the eastern wall of the

FIGURE 7. Details of Individual no.1. Drawing: G. Basset and J. Rouquet.



pit, with a flexed arm and hand located near the left cheek. The last group of articulating bones, not evident in previous layers, includes the thoracic area and half of the right humerus of an adult. The SE/NW orientation of this second individual is not parallel to the first and it appears to have been lying on its right side (Fig. 8). Like the previous one, the

head is near the eastern wall of the pit-grave. This fact is important because most of the skulls previously recovered had been moved from their original position. The two bodies were not lying horizontally, but followed the slope of the underlying level (Level 3). Five other small groups of articulated bones were recorded in this layer but

could not be linked to any identified individual. The surface of this layer is characterized by its hard and lumpy nature, indicating that liquid mud had flowed along the wall of the pit-grave during seasonal rains. This silty mud infiltrated the bone spaces in Level 3 *before* the deposition of the two bodies described for layer 6.

A single artefact was found in layer 6, a chlorite goblet very different from the usual types of *série récente* vessels (or *série Umm an-Nar*, after David 1996) and the *série tardive* (or *série Wadi Suq*) (Figs 9–10). Among Bronze Age chlorite vessels, its shape is unique but its decoration, although unusual, echoes a characteristic theme of the Wadi Suq assemblages in the Shimal-Dhayah region, where a feathered motif or 'palm frond' is incised either on walls of suspension vessels (Vogt & Velde 1987: fig. 25/9–10), or, more frequently, on knobs of lids (Vogt & Velde 1987: fig. 26/10, as an example). To our knowledge, this is the first time that this particular motif has been associated with an Early Bronze Age chlorite vessel, but the same pattern is known on a seal dated from the last third of the third millennium BC at Ra's al-Jins RJ-2 (Period III) (Cleuziou & Tosi 1997: fig. 11/6) and there are also several broad parallels in the Dilmun glyptics (for comparisons, see Magazzu 1995: 143). This is not the first atypical feature of the Hili N chlorite assemblage since the decoration of two goblets of the *série Umm an-Nar* recovered during the original excavations are reminiscent of chlorite vessels from the beginning of the second millennium BC (H. David pers. comm. and Al Tikriti & Méry 2000: fig. 10/2).

Layer 7

The possible area of traffic becomes more evident since not a single piece of bone was found in a band 20–30 cm wide along the eastern wall. Eleven articulating body parts were identified. Individual no. 1 continues with the right humerus and Individual no. 2 with part of the lumbar region. Some limestone fragments were found under the bones of the second individual and were lying over the hard and lumpy layer of Level 3. They come from the disintegrating calcareous slabs, used to cover the grave. Their presence in a stratigraphic context demonstrates that they covered the grave

during its use (or part of it) and were not merely added when the grave ceased to be used.

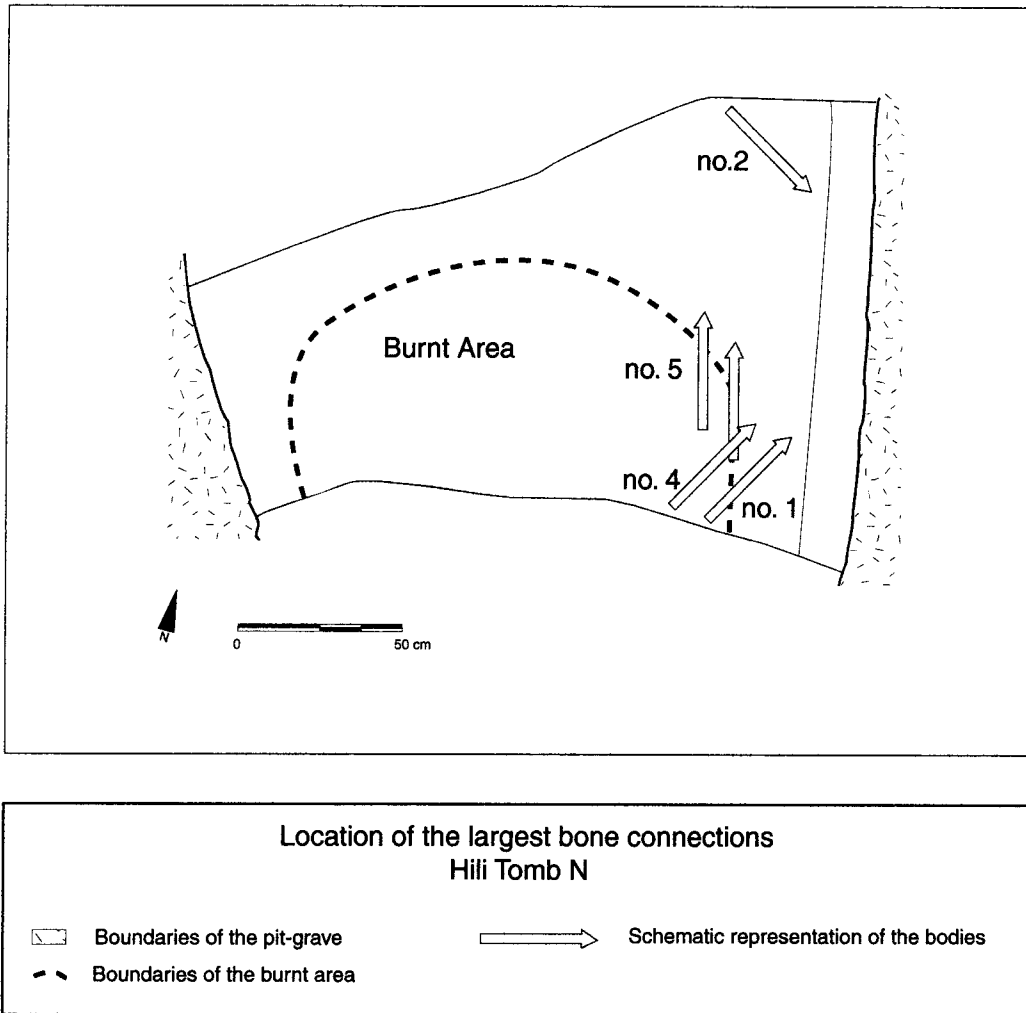
Layer 8

As in the previous layer, there is a total absence of human remains along the eastern wall of the pit, where the sediment is very hard and lumpy. In square B2, a new group of articulated bones appears, a left shoulder with part of the thoracic region. This third individual, an adult like the first two, lies parallel to Individual no. 1 but located 20 cm above (Figs 3 and 8). However, Individual no. 3 lies horizontally, whereas Individuals nos 1 and 2 follow the slope of the underlying deposit Level 3. Clearly, the three skeletons belong to a homogeneous archaeological level, i.e. the deposit including the area of burning. Individual no. 3 was certainly deposited after Individuals nos 1 and 2, who could have been buried contemporaneously. The length of time between these two or three events is impossible to ascertain.

Layer 9

This layer contained parts of a necklace, consisting of a perforated circular calcedony seal with an engraved quadruped with horns (probably a bull) and a perforated boss associated with a large broken carnelian bead of the long biconical type, and a small, short, biconical carnelian bead (Figs 11–12). This is the second stamp seal found at Hili grave N (Al Tikriti & Méry 2000: fig. 12). Representations of quadrupeds are known among the EBA Omani glyptics (Magazzu 1995), for example at Ra's al-Jins RJ-2 Period III (2200–2000 BC) (Cleuziou & Tosi 2000: fig. 16/4). The shape of this seal echoes another stamp seal found at RJ-2 (Cleuziou & Tosi 2000: fig. 16/5). A few new bones (ribs) were identified for Individual no. 3, but the bones of this individual must continue deeper. Some bones of Individual no. 1, part of the spine from the 3rd thoracic vertebra to the 3rd lumbar vertebra, with corresponding ribs and sternum (Fig. 7), also appear at this level. The lower part of the trunk is embedded in the area of burning (Figs 13–14), and it is probable that the corpse was burned before complete decomposition (further demonstrating, if needed, that the deposit excavated during our two campaigns

FIGURE 8. Schematic orientation of the bodies in the grave. Individuals nos 1–5. Drawing: G. Basset and J. Rouquet.



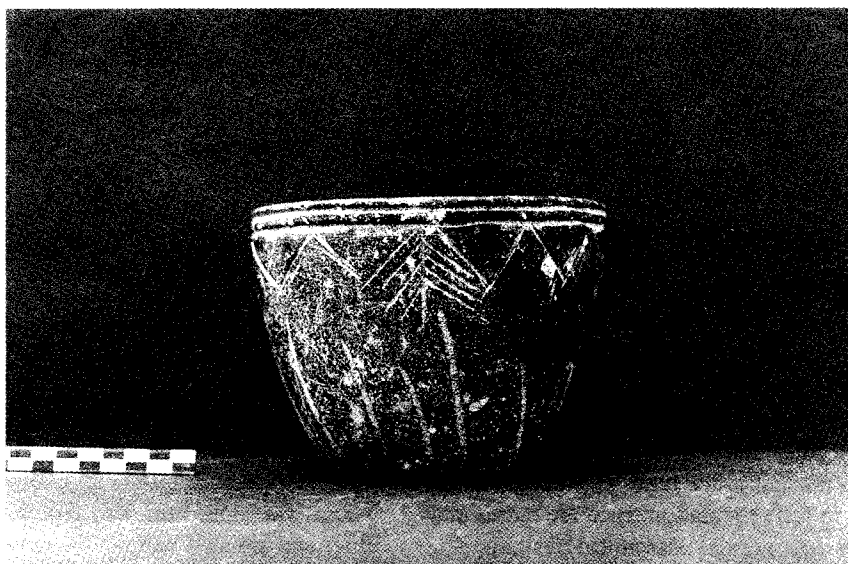
is homogeneous). A new bone group (humerus, radius and ulna) confirms that at least some body parts had not fully decomposed when they were deposited in the pit-grave and cremated. These bones are not in full articulation since the radius and ulna are not in their normal anatomical position. The position of these bones indicates several movements (mainly rotational), which could have occurred in the empty spaces liberated by the decomposition of flesh. Could this stage be prior to the ignition? It is not possible to say.

Layer 10

During the cleaning of squares B2 and D2, two articulated hands were found. An articulating left forearm (radius, ulna) was recovered following the hands. The right arm was flexed (humerus, radius, ulna) and situated below. These bones may indicate the presence of a possible fifth adult, or they may belong to Individual no. 3. Eighteen beads from a necklace, which had begun to appear in the course of the excavation of layer 5, were removed during the excavation of layer 10 (square D2). The necklace



FIGURES 9 and 10. *This chlorite bowl is unique and very different from the série Umm an-Nar chlorite vessels. The feathered motif is reminiscent of a characteristic pattern of the Wadi Suq period.*





FIGURES 11 and 12. *A calcedony seal with an engraved horned quadruped was recovered in Level 4 together with carnelian beads. Drawing: H. David.*

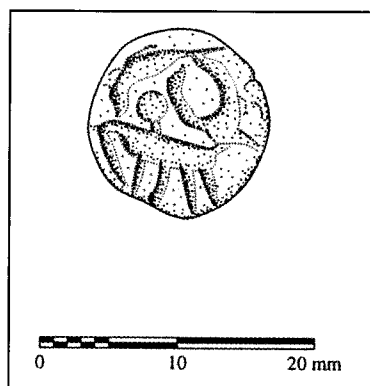


FIGURE 13. *Individuals nos 1 and 3 are visible on the upper part of the photo. No. 1 was deposited in the pit-grave prior to no. 3. The two individuals do not have exactly the same position, but the heads were both close to the eastern wall of the pit-grave. The base of the trunk of Individual no. 1 was within the area of burning (top deposit in the grave).*

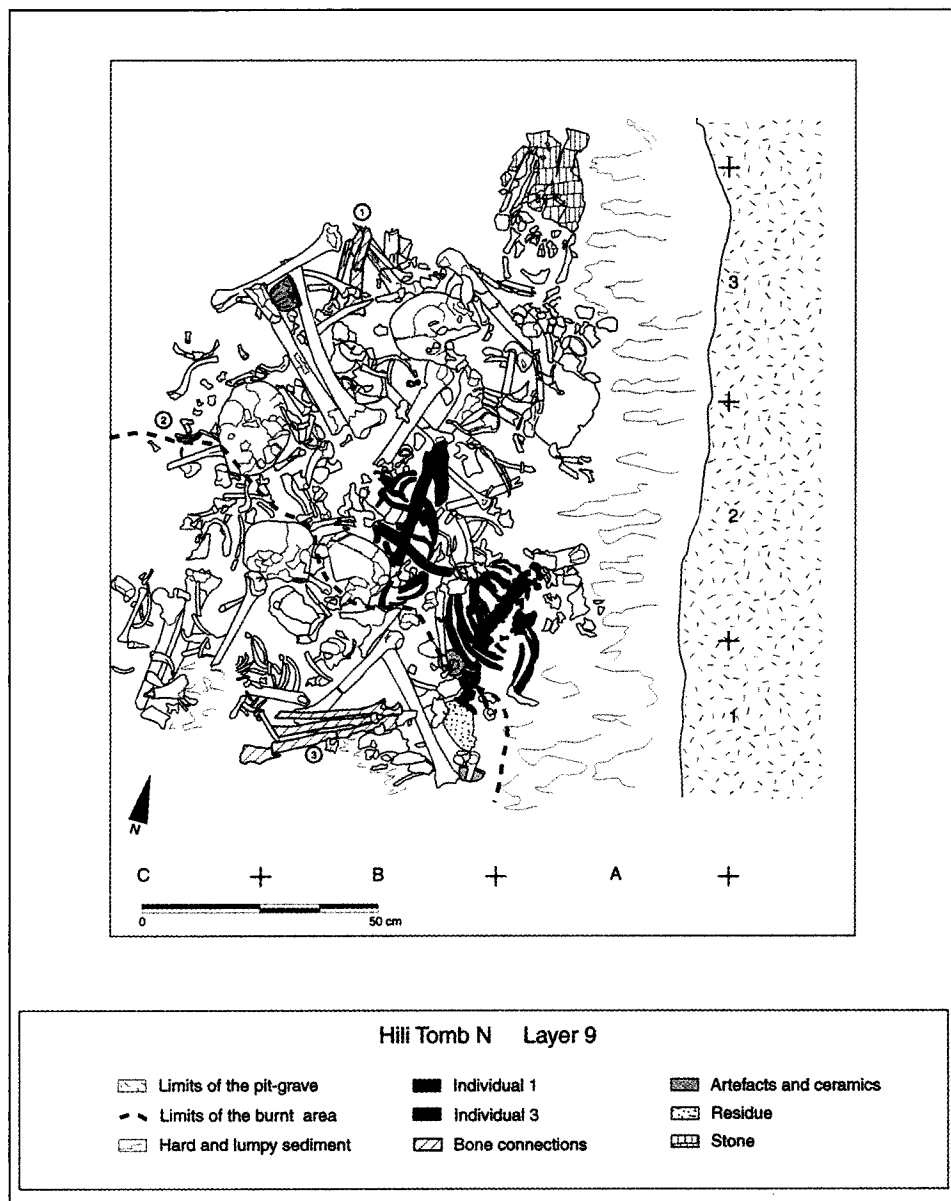


FIGURE 14. Distribution of bone remains in layer 9 (Level 4). Drawing: G. Basset and J. Rouquet.

consists mainly of carnelian beads of the short biconical type and some artificial beads. Four carnelian beads were found *in situ*, the others having moved slightly out of position. As at Umm an-Nar, some beads had parts of the string remaining (Frifelt

1991: 117, fig. 252), but analyses showed that the one found in Hili N pit-grave was not made of linen or cotton (personal communication M.C. Moulherat C2RMF-Louvre).

Discussion

Hili N and Tomb B at Moweihat in the Emirate of Ajman (Al Tikriti 1989; Haerinck 1991) are the two Umm an-Nar pit-graves known to date. Both are situated very close to a circular monumental grave of classic Umm an-Nar type. In both pit-graves the human bones were very disarticulated, and it had been generally accepted that they were used to house the cleared bones from the neighbouring monumental graves (Haerinck 1991: 9–10, 20). However, this was not the case with Tomb N at Hili, and the accepted hypothesis for the Hili N type pit-grave is now modified after our two campaigns of excavation. In actual fact, quite a high number of articulating bones were found in the upper part of the deposits. Among those bones found in strict anatomical order, were several with labile joints, which disarticulate very soon after the *start* of decomposition of the body. The preservation of small labile joints such as those of the feet and hands indicates that at least some of the bodies must have been deposited *soon after death* while some tendons were still intact.

Our excavations thus clearly show that Tomb N did not latterly function as a simple dump-ossuary or annex to the neighbouring tomb E, although at this stage, we do not know whether this had been the original function of the pit-grave (corresponding to Level 1). It is probable that at least the upper parts of the deposits (Level 4) consist of primary deposits. This is the most likely explanation for the state of disarticulation of most of the bones, together with the preservation of delicate, labile joints, such as those of hands and feet. It is more likely that decomposition in an empty space, associated with the repeated rearrangement of the human remains during the use of the grave, could explain the evident disarticulation and fragmentation of the bones. Preservation of labile articulations could only have been by chance. An alternative hypothesis is that the burial deposits or part of them were secondary. In such a case, Tomb N served as a receptacle for bodies exposed in the adjacent tomb or elsewhere, but when transferred into the pit-grave, some were only partially decomposed (i.e., less than two or three weeks after death) whereas others were fully decomposed.

An inventory of all of the registered bones and a statistical study of the spatial organization of the different anatomical regions on the excavated surface have been carried out. The percentages of the anatomical regions (i.e., skull, trunk, upper and lower limbs) were calculated for each 0.50 metre square in each excavated layer. This study showed evidence for a bipolarity of skulls and upper limbs (Fig. 15), with most located at the east and west edges of the grave pit. This pattern was partly confirmed during our second season, when parts of the skeletons of five different adults were identified and their orientation established (Fig. 8). Two of them (Individuals nos 3 and 5) are parallel to the long North-East axis of the pit-grave, whereas two others (nos 1 and 4) are orientated NE-SW but with the head near the eastern wall of the pit-grave. The head of the other individual (no. 2) was also towards the east but the body was oriented SE-NW. It is not possible to say whether these bodies were in a flexed position, but the arm of Individual no. 1 was tucked up with the hand under the cheek. The chronology of deposition of the bodies is complex. Individuals nos 1 and 2 were deposited first — although it is not possible to say whether their deposition was contemporaneous. The first was 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 Level 3. Individual no. 3 was then deposited, followed by no. 4, both of these lying flat.

The central zone of the upper level of bones (Level 4) shows clear evidence of exposure to heat (blackened bones, cinders, carbonized wood) (Figs 4–5). As already stated, the burning occurred *in situ*. The colour of the bones generally indicates low temperatures of burning (in the region of 250°C, with some peaks to about 600°C) and, in some cases, the pattern of bone fragmentation is characteristic of combustion when the body was in a *fresh state* and not after decomposition. The presence of a branch of wood among the burnt bones, as well as the specific orientation of many of the long bones in the burnt area, indicates that the bones were intentionally manipulated. Thus, we can say that the incineration of the bodies was deliberate, but this involved only a small part of the upper level of the central portion in the grave-pit.⁴ The mixing of the bones and the

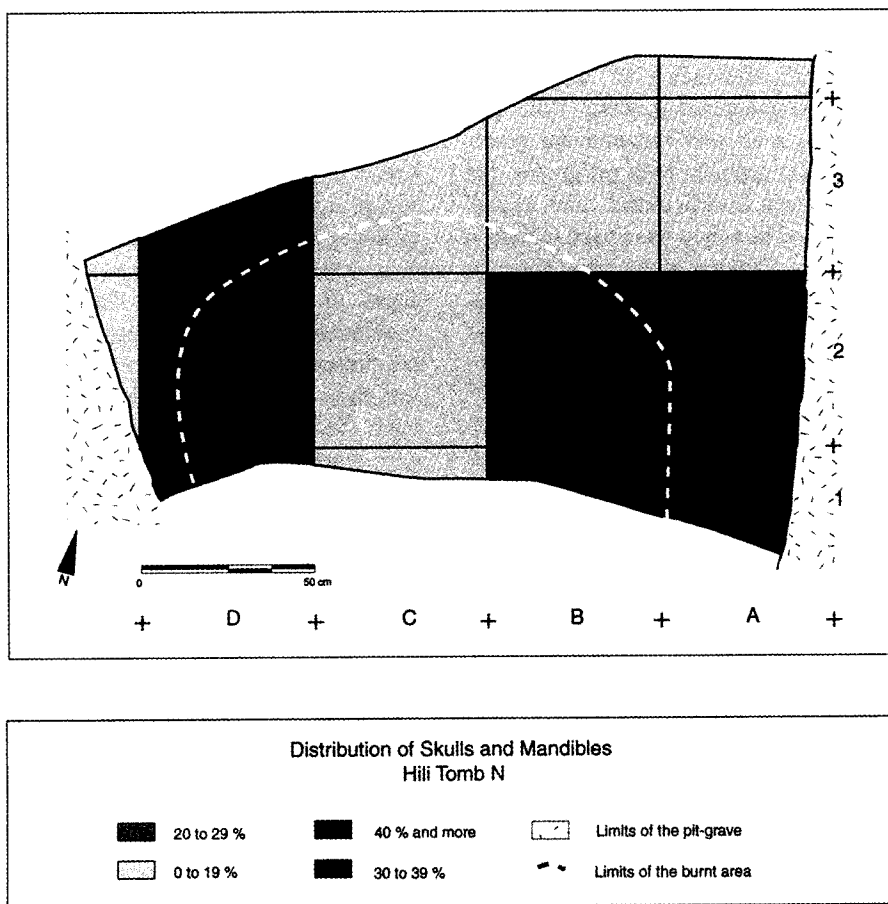


FIGURE 15. *Distribution of skulls and mandibles, Level 4. Drawing: G. Basset.*

scarcity of articulated bones in the area of burning can be explained by the stoking of the fire and the movement of the bodies during burning. Cremation did not involve the whole surface of the tomb, far from it. Was this intentional? Was the process interrupted, and, if so, was the interruption intentional (a ritual practice associated with the abandonment of the grave, scarcity of wood, etc.) or of natural origin (the failure of the fire to produce sufficient heat to maintain the burning of the bodies)? Many questions remain to be answered.

Conclusions

When discovered in 1983, Tomb N at Hili was the very first example of a collective burial-pit from the Umm an-Nar Period in the UAE. The original excavations produced a huge amount of

disarticulated and fragmented human remains. Most of this material has now been examined by one of us (K. McS.) and the study of the remainder is running concurrently with that from the new excavation.

Approximately, 300 individuals have been identified so far. It is expected that the final total will be at least 500. Preliminary findings show that there was a high proportion of immature remains, including foetuses, neonates, infants, older children and adolescents. Most adults died in early adulthood; very few lived into middle or old age. Initial results suggest that this was a population of small stature, with males averaging 167 cm and females 155 cm. Dental disease is by far the most commonly occurring pathology present. Sixty-five percent of the jaw fragments belonging to adults had missing teeth, and dental abscesses were also

common. Poor dental health appears to have been widespread among many prehistoric Gulf populations. It has been proposed that this tooth loss is a consequence of eating dates (for example, Bondioli, Coppa & Macchiarelli 1998 on the Tomb A at Hili North and Hojgaard 1984 on Janussain, Bahrain). Establishing the aetiology of dental disease amongst the Tomb N population is one of the main aims of the current anthropological analysis.

The burial deposits consist of three or four main phases of deposition. The first C¹⁴ dates on bones sampled in Level 1 and Level 4 cover the period 2200–2000 BC. However, these dates are only provisional because the sampled bones did not include articulated skeletons and also we cannot exclude the presence of bones older than the initial construction of the pit-grave in Level 1.⁵ However, the period indicated by the C¹⁴ dates does not conflict with the chronology indicated by the study of the artefacts (Al Tikriti & Méry 2000). The section (Fig. 3) shows that the basal burial deposit (Level 1) was separated from the second one by a horizontal level of sediment, poor in bones and containing sherds lying in a flat position (Level 2). We do not know, however, if this level covered the entire surface of the grave, i.e., an intermediate level, serving as a base for new inhumations. Subsequent bone deposits (Level 3) have accumulated against the eastern and western sides of the tomb. This wall effect is even more marked in the next level (Level 4), the deposits of bone being clearly tilted.

Until now, only one other grave of this type has been discovered and excavated in the UAE, at Mowaihat B. Both graves, Mowaihat B and Hili Tomb N, are not only pits dug into the ground, but are also partly constructed and are much larger and deeper than the small pits dug into the sand at Al Sufouh, Tombs II and III (Benton 1996: 35–37). Moreover, no articulated bones were found in the Al Sufouh pits, such as at Tomb N at Hili and at Mowaihat Tomb B. The immediate proximity of the Hili and Mowaihat grave-pits to circular monumental graves and the finding of many disarticulated bones, led scholars initially to hypothesize that Umm an-Nar grave-pits were dump-ossuaries linked to the circular graves. The

new excavations at Hili N together with a reassessment of the previous findings, led our team to conclude that the use of the grave was much more complex than previously thought. Primary inhumations are confirmed in the upper level of bone deposits at Hili N and they certainly existed at Mowaihat, at least in the most recent level of bone deposits. The best preserved remains were those of an articulated, semi-complete female skeleton (Al Tikriti 1989: 93) and smaller articulated parts of skeletons were also recovered in the grave (*ibid*, see also Haerinck 1991: pl. IIA, top). In tomb N, at least, we continue to hypothesize that the basal level could correspond to re-burial from the adjacent Tomb E, the architecture of which is related to the circular graves of the early Umm an-Nar Period.

We know very little today about the possible duration of, and interruption in the use of, Arabian collective graves and we have also to take into account the possibility of several phases of emptying. However, the relative chronology between pit-grave N at Hili and the neighbouring monumental circular grave E can be reconstructed, because ashlar from the original facing of Tomb E were reused when the western wall of the pit-grave was strengthened by a stone-wall (Al Tikriti & Méry 2000: fig. 5). We are not able, however, to compare the contents of each grave, as very few bones and diagnostic pottery sherds were collected in grave E during its excavation in the mid 1970s.

According to the study of the artefacts, both pit-graves at Hili N and Mowaihat B, date to the last part of the Umm an-Nar period and part of their assemblages are later than that of Tomb A at Hili North. Only the lower levels of Tomb N yielded Indus pottery (Haddou 1989: figs 3–4, Al Tikriti & Méry 2000: fig. 9), a type of ware associated with the last level of occupation at Hili North. The absence of Incised Grey Ware and the scarcity of Painted Grey Ware are also striking in Tomb N and no Iranian softstone had been recovered until now among the chlorite vessels from Tomb N. Most of these are identical to those from the classic monumental Umm an-Nar graves from the third part of the third millennium BC, but according to H. David, several vessels echo the *série Wadi Suq* from the beginning of the second millennium BC.

Hili Sandy Red Ware is even more diagnostic for comparisons between Tomb A at Hili North and Tomb N. Some types of domestic jars are frequent in both graves, such as the type of jar with an everted rounded rim (Al Tikriti & Méry 2000: fig. 8/3) and squat jars, decorated with a wavy line, cross-checked by vertical or oblique lines (*ibid*: fig. 8/2), a type of decoration characteristic of levels IIf at Hili 8. However, some types well represented in tomb A at Hili North are not represented in grave N and the reverse is also true, indicating that the two graves are probably not exactly contemporaneous. For example, a type of jar illustrated by Al Tikriti & Méry (2000: fig. 8/1) is common in the upper levels of Tomb N, whereas only a single piece was found in tomb A at Hili North. Conversely, no rounded base jars were found at Hili N, and only a single sherd, decorated with a double undulated line, a pattern considered to be diagnostic of Hili period IIf and well represented in tomb A at Hili North (Cleuziou & Vogt 1983), was identified.

It is currently difficult to make comparisons with the circular grave at Tell Abraç, considering that most of its material is unpublished. However, the most classic types of local artefacts for the Umm an-Nar period after 2300 BC, such as Fine Red Omani Ware and *série Umm an-Nar* softstone (Potts & Weeks 1999; Potts 2000), were rare or absent in the Abraç grave, indicating that it was slightly more recent than Tomb N. This is confirmed by C¹⁴ dates, which date the Tell Abraç grave to the very end of the Umm an-Nar Period (Potts & Weeks 1999: table 1), and show Tomb N to be contemporary or slightly older.

The results of our first two seasons of excavation thus continue the study of funerary practices in the Umm an-Nar Period. Pit-graves, such as Tomb N of Hili, invisible in the landscape, unlike the monumental circular graves, have not been the subject of specific research in the UAE, and have only been discovered by chance up until now. We do not know whether the appearance of pit-graves occurs late in the Umm an-Nar sequence, but, if so, does it point to a change in the burial practices at the end of the Umm an-Nar period? Circular monumental graves were not abandoned at that time but it is striking that the plan and techniques of construction of the Tell Abraç circular tomb are

rather poor when compared with the standards of the older Umm an-Nar classic graves (Potts 2000: 88–89).

On the other hand, did these underground graves exist throughout the Umm an-Nar period, corresponding to a resurgence of pit-graves, documented in the fifth and fourth millennia (Umm al Qaywayn, Ra's al-Hamra') but not during the Hafit period? This must remain a hypothesis until more is known about the prehistory of the Oman Peninsula.

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Notes

- ¹ Field anthropology methods were developed in recent years by Dr. H. Duday (1995) and the School of Bordeaux, two members of which are part of the Hili N team (J. Rouquet, assisted by G. Basset). The field team also includes an osteo-archaeologist (K. McSweeney, University of Edinburgh) and an archaeologist who is a specialist on the Bronze Age in the Oman Peninsula (Dr. S. Méry, CNRS Nanterre).
- ² The degree of alteration of the bones located outside the burnt area was more marked than that of the bones recovered inside, but this phenomenon decreased in the subsequently excavated layers because the unburnt bones were less exposed. Unburnt bone breaks down either into splinters following the axis of the shaft (a normal process of fracture for dry bones), into flakes, or, at the final stage, into powder. The bones within the area of burning were protected from the same degree of fragmentation by their

greater density and the surrounding matrix formed by the residue from the fire.

- ³ Five lumbar vertebrae, a collarbone and humerus, a radius and ulna, several hands, and a foot.
- ⁴ Another area of burning was found in the course of the earlier excavations by the Department of Antiquities and Tourism. We cannot, however, ascertain from the original photographs whether this burning occurred *in situ*, but it is probable.
- ⁵ Radiocarbon dates were processed by one of us (J.-F. S.) at LODYC (Paris). Charcoal (Pa 1844) originating from layer 3 dated to 3730 BP ± 30 years (calibrated age range HC at 1 sigma, 2183–2040) and bone (Pa 1835) from the basal level provided a date of 3800 BP ± 60 (calibrated age range BC at 1 sigma, 2325–2135).

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