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Sophie Méry

Introduction

- 1 Quite different from the models known for the Near and Middle East, the Neolithic in eastern Arabia (7th-4th millennia BC) is characterised by the absence of agriculture. About 7000-6500 cal BC, animal husbandry appeared, and on most ca. 5500-3200 BC Neolithic sites along the coasts of the United Arab Emirates (U.A.E.) and the Sultanate of Oman, goats, sheep, cattle, and dogs appeared in their domesticated form. In contrast, agriculture did not become established until 4000 years later with the beginning of the Bronze Age (Beech & Sheperd 2001). Copper metallurgy generally preceded the appearance of local pottery, not in evidence until the beginning of the 3rd millennium BC, at the beginning of the early Bronze Age (EBA).
- 2 The process of neolithisation occurred in the Oman peninsula and in Yemen between ca. 6500 and 5000 cal BC. The domestication of caprids and cattle (Uerpmann *et al.* 2000, Martin *et al.* 2009), possible seasonal or even permanent sedentarisation, and the establishment of populations in large villages on the coast provide evidence for this, as do pressure technique in lithic production and the fluting process (Biagi & Nisbet 2006; Charpentier 2008; Munoz *et al.* 2013). It is also at this time that new currents of circulation were created in Arabia. For example, contacts were gradually established between the

populations along the shores of the Persian Gulf, which channelled Ubaid pottery from lower Mesopotamia starting in the middle of the 6th millennium and up to the end of the 5th millennium. These currents of circulation were to increase in the 5th millennium, attested by various objects and materials, especially natural products such as marine shells, obsidian and soft stone, and artificial products such as bitumen and pottery.

- 3 Aridification occurred in the Oman peninsula between 4500-4000 BC, causing profound transformations and leading to the formation of societies organised differently. This was the end of the Neolithic. In the 3rd millennium, technologies such as pottery from north of the Strait of Hormuz appeared. The first third of the 3rd millennium is known as the Hafit period, followed by the early Bronze Age known as the Umm an-Nar period that lasted until 2000 BC.

The emergence of the first oases

Subsistence economy and way of life

- 4 The early Bronze Age corresponds to the establishment of agricultural oases and villages (Figure 1) (Al-Jahwari 2009). From then on some occupations/sites were at least partly sedentary, located in contact with the water tables of the foothills and in the valleys. Hili (Figures 2 and 3), 150 km east of Abu Dhabi, remains at present, more than 30 years after its excavation, the best documented agricultural oasis recorded for this period. This oasis settlement based on the cultivation of date palm, various cereals, legumes and fruits, was in activity beginning in the 3rd millennium BC (Cleuziou & Costantini 1980; Tengberg 2003). The dating of the period I level of Hili 8 has been questioned by D. Potts (1986, 1998:46) on the basis of typological parallels with the few sherds of Mesopotamian pottery found at the site and on his criticism of the radiocarbon dates. Although these arguments are not without value, a new element can be brought to the debate. A study of the stones integrated into the domestic architecture at Hili 8 showed that building II, dated to the very beginning of period II at Hili 8 (architectural phase IIa, Cleuziou 1989: 68) includes stones from the facing of three Umm an-Nar tombs. These tombs do not date to the beginning of the architectural sequence of the necropolis of Hili, which dates entirely to the Umm an-Nar period (phase 1), but to the following phase (phase 2). This means that either the period I of Hili 8 dates entirely or partly to the Umm an-Nar period, or that the beginning of the Umm an-Nar period is not represented in the new excavations of Hili 8 and that period I is to be ascribed to the Hafit period. Only new datings on the materials of period I or new excavations can usefully restart the debate. However, and this is a very important discovery, it is to be noted that a mud brick tower at Bat excavated in the 2000s by an American team produced decorated sherds of Mesopotamian pottery dating from the Jemdet Nasr period to the Early Dynastic I-II periods (Possehl *et al.* 2010). At Ra's al Hadd (Ja'alan, Sultanate of Oman), the coastal site of HD-6 produced domesticated plants remains, but it is unclear if these were local or cultivated inland.

Figure 1. Map of the main Early Bronze Age oases and coastal settlements in the Oman peninsula

Drawing H. David/Mission archéologique française aux E.A.U.

Fig. 2. The mudbrick towers of the Hili 8 settlement

First construction at beginning of the 3rd mill. cal BC or the Hafit period. Two re-constructions were done during the second part of the 3rd mill. cal BC or the Umm an-Nar Period

Photo S. Cleuziou/Mission archéologique française à Abou Dhabi

Fig. 3. Hili and the region of Al Ain. Main sites of the Bronze Age

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- 5 Evidence of agriculture was also recovered at earlier but still early Bronze Age (EBA) sites such as Bat, Maysar 1, Tell Abraq and Umm an-Nar (Cleuziou & Tosi 2000, Costantini & Audisio 2000, Frifelt 2002, Potts 2000, Weisgerber 1981, Willcox 1995, etc). In a climate that was as arid as it is today, methods of irrigation were necessary, of which certain elements, such as canals and wells, are in evidence, for example at Hili (Figure 4) or Maysar (Weisgerber 1981). This system is however not that of the *falaj*, networks of underground water conveyance that probably did not appear until the Iron Age. Unlike the situation on coastal sites such as Umm an-Nar and Ra's al-Jinz, domestic animals, particularly cattle, strongly contributed to the subsistence economy, at both Hili and Maysar, two sites in the interior of the Oman peninsula (Uerpmann & Uerpmann 2008). Gazelle and wild dromedary were hunted, but the part played by hunting was not important. The donkey was domesticated and cattle were used for carrying loads and for the transport of goods.

Fig. 4. Small water canals at Hili 8.

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The craft of pottery

- 6 The EBA villages of the interior, where the oases were located, were organised around towers, which may be rather safely interpreted as affirmations of power. In these villages, excavation by several local and foreign teams has not only brought to light the existence of an agricultural population, but also that of specialised craftsmen. There were stonecutters, metallurgists, potters, makers of crockery in soft stone and lapidaries.
- 7 In the EBA, with the creation of oases, an occupation of geographic zones that had been little exploited or not at all was to develop in the Oman peninsula. This way of life favoured the exploitation of new mineral resources and the appearance of specialised crafts. The period corresponds to fundamental changes in the local system of technology and to the transfer from the Indo-Iranian regions of pyro-technologies, which produced pottery and copper alloys. In the case of pottery, this transfer meant that potters travelled from north of the Strait of Hormuz, in particular from Pakistani Makran to the Oman peninsula.
- 8 From then on craft tradition was to develop in an autonomous manner. The oldest pottery of local fabrication was identified on the site of Hili 8 (Méry 2000). These types of pottery date to the very beginning of the 3rd millennium according to the chronology of S. Cleuziou (1989).
- 9 From the time of its appearance on the site, fine red pottery painted in black on red slip was evidence of high technical knowledge : the paste is very fine (few inclusions over 50 μm , very rare over 100-150 μm), the techniques of shaping (coils shaped on a rotating device) and of firing (oxydizing atmosphere predominant) were well mastered (Figure 5). However distinct, this local tradition is related to the ceramic traditions of the plain of Dasht, in Pakistani Makran, in the shapes and the decoration of the vessels but especially

by certain characteristic technical features. However we can differentiate the two groups, on the colour range of the pasteware, granulometry, etc. The differences are small but visible macroscopically: the composition of the paste of the two groups, UAE/Oman and Dasht, is distinct (Méry & Blackman 2005). As early as 2600-2500 BC (but probably even before) and until 2100-2000 cal BC, some vessels made in the plain of Dasht, in fine gray or red pottery, were brought to the Oman peninsula (Méry *et al.* 2012).

Fig. 5. Fine red Omani pottery, typical of the 3rd millennium BC local production

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- 10 The local production of domestic pottery, with sandy paste and geometric decoration painted in black on a red slip, was to develop beginning in 2500 BC in the foothills of the Oman mountains, on sites such as Hili (Figure 6), Bat, Amlah and Maysar, but also on the Indian Ocean coast, on the site of Kalba. Regionalisation of the style of the different groups of production thus began (Méry 2000). At Hili, the use of rotation to shape domestic pottery is certain of around 2500 BC, but wheel-turned pottery, that is, from a central ball, hollowed and raised, was probably not yet mastered to make a *complete* vessel. It is not even certain that the latter technique was used at the end of the 3rd millennium BC, as the recent experimental study of the material from tomb N at Hili, dated to 2200-2000 BC, has shown (Méry *et al.* 2010). In fact, we discovered that most of the domestic vessels at Hili were fabricated using the coil method and finished on a rotating device, or shaped with coils or on a 'tournette' or turned on a 'potter's wheel', on a modelled pancake form or on a wheel turned base.

Fig. 6. Domestic pottery from tomb N at Hili garden and Tomb A at Hili North

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- 11 The technical skills required and the variety of products found indicate that production was organised around dwellings rather than specialised workshops. The potters were 'specialists' in that they were masters of their techniques, which were not shared by everyone. But it is likely that they were not full-time specialists but farmers as well (on the question of the specialization in the Oman Peninsula see also Weeks 2003, Rouse and Weeks 2011).
- 12 In the middle Bronze Age, after 2000 BC, a certain number of elements indicate a/some restructuration of the pottery production. At Hili and Shimal (Emirate of Ra's al Khaimah, near the Straits of Hormuz) funerary pottery and domestic pottery were henceforth fabricated in the same production units (Méry 2000), because the pastewares are very close or similar except the granulometry of the coarse or semi-coarse mineral fraction. Compared to the EBA, there was a growing use of pottery and a wider diversification of the types of vessels employed, which would have had a repercussion on the modes of production. The probability of development of itinerant specialists is rather high if we consider the stylistical homogeneity of the Wadi Suq pottery from the northern Emirates to the Ja'alan in the Sultanate of Oman. By style, we mean all technical features of the vessels plus their morphological, morphometrical, and decorative traits.

Necropolises and stone cutters

- 13 It was at the end of the 4th millennium BC that a new type of tomb became widespread in the Oman peninsula, called 'Hafit' after the eponymous site (Frifelt 1971). These are collective tombs in which the number of buried individuals could reach about thirty (Benton and Potts 1994, Santini 1987, Munoz 2004), probably members of one 'family' (genetically related or by alliance). The monuments, in dry stone, without foundations and of truncated cone shape, contained only one burial chamber. Grouped together in

sometimes very vast necropolises, and located on rocky outcrops which render them visible from afar, Hafit tombs are – like traditionally by protohistorians in Western Europe Protohistory – considered to be territorial markers. It was proposed that they were indicative of tribal unity by Cleuziou (2002), and the present author supports this hypothesis (also retained by Giraud 2007) as well as the probable ancient origin of the eastern arabian tribal system in the Neolithic.

- 14 The discovery of oasis settlements of the so-called Hafit period, i.e. the first phase of the EBA (3200/3100-2700/2600 cal BC) remains difficult, only the sites of Hili 8 (Cleuziou 1989) and Bat (tower 1147 of Matariya, cf. Possehl *et al.* 2010: 19) have produced clear remains of domestic occupation with, for example, typical pottery from Lower Mesopotamia dated to the first third of the 3rd millennium BC. The complex coastal settlement of Ra's al-Hadd HD-6 (Azzara 2009) was also occupied in this period but no Mesopotamian pottery has so far been found on the site.
- 15 Beginning in the second third of the 3rd millennium BC, the settlements are better known, and the necropolises are constructed nearby or even within the villages. The funerary structures in use in the Umm an-Nar period are of three main types: monumental circular tombs, pit-graves and 'ossuaries' (Méry 2010).
- 16 The monumental circular tombs that in elevation appear as truncated half-spheres (Bessac & Dubeuf, forthcoming) are the most frequently identified funerary structures. There were several tens of individuals buried per monument in the first part of the Umm an-Nar period (as in Cairn V at the Umm an-Nar site or Tomb M at Hili Garden), which reached several hundred at the end of this period as at Tomb A at Hili North, Tell Abraq and Tombs UNAR 1 and 2 at Shimal (Bondioli *et al.* 1998 ; Potts 2000 ; Carter 2002 ; Cleuziou *et al.* 2011), the burials appearing for the most part to be of individuals who died naturally (McSweeney *et al.* 2010). The stratigraphy of the funerary deposits, of which the study has not always been favoured by the archaeologists, was often disturbed by looting, and radiocarbon dating remains rare, which complicates or even makes impossible a reliable estimation of the duration of use of the tombs. But the recent study of the necropolis of Hili indicates that this duration was less than two centuries – even though there are cases of re-occupations, according to ¹⁴C dates and artefactual evidence (McSweeney *et al.* 2008). This is most probably also the case of the Tomb of Tell Abraq, and UNAR 1 and 2 at Shimal, even though still difficult to prove, due to the difficulty to accurate ¹⁴C datation when collagene is missing and only the mineral fraction (apatite) can be dated (Munoz *et al.* 2013).
- 17 The compartmented plan and the dimensions of the monumental circular tombs varied during the course of the Umm an-Nar period, the interior space always being separated in two chambers with independent entrances opposite each other. They were covered with large stone slabs and the external face made of bush-hammered stones. At the end of the 3rd millennium, some of them included an underground level while others reached 14 m in diameter. The numerous funerary offerings, which included both pottery and stone vessels, metal objects and ornaments, varied over time, according to the development of trade with Mesopotamia, with the region that includes south-western Iran and Pakistani Makran, and with the Indus civilisation – especially the southern part of the Indus hydrographic basin i.e. the Indus river valley (Méry 2000, Cleuziou & Méry 2002).
- 18 At Hili Garden and Hili North necropolises, a study of construction techniques of the monumental (or, exceptionally, cyclopean) circular tombs has enabled determination of

the relative chronology of the monuments (Gagnaison *et al.* 2004, Gagnaison 2006). This was confirmed by later work, carried out as a blind test (Bessac & Dubeuf forthcoming). A progressive development of techniques and investment in construction has been recorded for a period of about six or seven centuries, and three successive groups could be distinguished according to whether the structures and their elements were of simple, intermediate, or elaborated fabrication. The distribution of tombs of different phases does not follow any particular organisation in the necropolises of Hili and the time intervals between constructions are not known. The tombs would have been constructed one after another or in groups of two at the maximum (such as tombs F and G), although the use of some could have overlapped, and some could have occasionally been reused.

- 19 For the tombs of simple fabrication (Phase 1, the earliest in the Hili architectural sequence of the monumental tombs) (Figure 7), the stones of the facing, worked perpendicular to their natural layering, are small, and the work of bush-hammering on the facing is unequal; this work with small building stones could have been that of occasional stonemasons and concerns four or five tombs of the necropolis (tombs Z, F, G, H and perhaps D). In the tombs of elaborated fabrication (Phase 3, the latest in the necropolis) (Figure 8), the facing stones are set upright with their strata in a vertical position, as the stonecutter would thus not have been limited for the heights of the courses to the width of the natural layers. The blocks can measure up to 2.55 m long (tomb 1059 at Hili Garden, south gate). There are four known tombs built with these great blocks (tombs A and B at Hili Garden, tombs A and B at Hili North), one tomb being of cyclopean masonry, that is, made of at least two courses of blocks larger than the size of a human (tomb 1059 at Hili Garden). To give an idea of the weight that had to be transported, the block of the south gate of tomb 1059 was evaluated at 2,125 tons. The latest tombs are characterised by perfect joins in the facing, stepped in order to ensure the best stability for the building.
- 20 The other tombs of the necropolis of Hili Garden are of intermediate fabrication and chronology (tombs C, J, M, E).

Fig. 7. Tomb H at Hili Garden. Early phase of the Hili necropolis

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Fig. 8. Tomb 1059 at Hili Garden. Early phase of the Hili necropolis

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- 21 From this study, it may also be seen that the funerary architecture of the Umm an-Nar period was the fruit of a local craft production, structured and specialised. The degree of task specialisation developed gradually up to 2100 BC, and this process was recorded in

detail in the necropolis of Hili by a team of the *French archaeological mission to the U.A.E.* Beginning in the second third of the 3rd millennium BC, the working of architectural stone became specialists' work at Hili, in the sense of work not carried out by everyone; then, during the last third of the 3rd millennium, it became the work of specialists with a high and even very high level of competence.

- 22 There were in the Umm an-Nar period two other types of grave structures which are different in nature, size and manner of functioning from the monumental circular tombs, although dug nearby. They are not frequently known to date, but this is due to their subterranean nature that makes them more difficult to spot.
- 23 The first type corresponds to graves filled with bones mixed with pottery and objects. These are secondary burials rather than the results of emptying graves.
- 24 The second type consists of large collective graves that date to the end of the 3rd millennium, situated in immediate proximity to the earlier monumental circular tombs. They heralded the big or huge underground tombs of 'Wadi Suq' type from the Middle Bronze Age, when, at about 2000 BC, a new culture was to become widespread in the whole of the Oman peninsula, and in many aspects the material culture was to change.

Trade in the Early Bronze Age

- 25 The first long-distance trade was established during the Neolithic in the southern part of the Gulf, and intensified and diversified in the Bronze Age. Limited to lower Mesopotamia and the north of the Gulf in the 6th-5th millennia, it was to include the regions situated north of the Strait of Hormuz in the 4th and 3rd millennia (Cleuziou & Méry 2002). The emergence and development of these trade networks certainly favoured the appearance of specialised craftsmen, and thus more stratified societies. The contacts that existed with Mesopotamia, indirect in the 6th-5th millennia, were probably no longer so in the 3rd millennium, once the region was well integrated into the networks that crossed the Near East and means of transport enabled the establishment of direct contacts. Contacts appear to have become denser in the early Bronze Age, and organised in different ways.
- 26 For the Bronze Age, it is known that many goods were traded: coastal products such as shells, products from the interior of Oman such as copper, vessels in soft stone or pottery, and foreign merchandise such as the pottery, ivory and elements of stone ornaments recovered in the excavations. Cuneiform texts are another source of information that we have for reconstructing the history of trade. They show that there was a state of intense commerce in the Gulf in the 3rd millennium, including especially the land of Dilmun (from Kuwait to Qatar), Meluha (which corresponds to the Indus civilisation) and Magan (the United Arab Emirates and the Sultanate of Oman). Magan was most probably the main or one of the main suppliers of copper for Mesopotamia, and it was exported by sea in the form of ingots and manufactured objects. Other goods from this region were exported to Mesopotamia. These were mainly raw rocks such as diorite, intended for statuary and architectural decoration, as well as agricultural products such as palm stems, dates and animals (goats). In return, the Mesopotamians sent cereals, fabrics and skins.
- 27 After 2500 BC, many foreign products discovered in the Oman peninsula came from the Indus civilisation: terra cotta vessels (Figure 9), especially jars serving to transport

foodstuffs, and luxury objects such as ivory combs, cornelian beads engraved with acid (Figure 10) and cubic weights in flint.

- 28 This long-distance trade should not, however, overshadow the importance of the local and regional trade which was the basis for trade within the Oman peninsula and constituted in this region a fundamental factor for the cultural homogenisation that began in the Neolithic.

Fig. 9. Decorated pottery from the Indus valley, found in tomb N of Hili

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Fig. 10. 'Etched' carnelian bead from the Indus valley found in tomb N at Hili Garden

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Conclusion

- 29 The societies of the Oman peninsula evolved during early proto-history in the direction of greater complexity and more advanced integration. The model changed from one in which goods circulated in a traditional manner of distribution between communities to a system in which certain goods were specific products filling demands that were exterior or mainly exterior to those of the producer population. At the same time, crafts diversified, seen in particular in the appearance of elaborated architectural stone and the development of pottery. Artisans who were clearly specialised appeared, possessing a level of technological expertise that was greater than before. They probably devoted periods of time that were longer and more regular to the production of objects.
- 30 The local societies changed from village or 'clan' groups with no leader to simple chiefdoms (in reference to the typology of Johnson and Earle, 1987) or societies of tribal type (after Cleuziou 2002, Cleuziou and Tosi 2007). The distinction is not clear however, as the tribe is defined first of all by ethnicity (which is possible to determine in our case), while the chiefdom is above all a political unit (but unambiguous archaeological remains of such an organisation are still to be found in our case). No attempt at modelling to differentiate tribe and chiefdom in relation to their size has yet been initiated, either in Arabia or the Near East, and work on defining territories has only just begun in the Oman peninsula for the Bronze Age, through spatial analysis (Giraud 2007). In any case, the construction of towers 20 meters in diameter and monumental tombs are evidence that collective activities were coordinated in the 3rd millennium for the benefit of the entire

community, an indication that those who represented authority had a power of “constraint” on the members of the group. These two types of building are thus related to authority, and in this sense to a political unit of the chiefdom type.

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ABSTRACTS

In the peninsula of Oman, the first agricultural oases appeared in the 3rd millennium and developed, bringing profound economic and social change. In the sphere of craft technology, various developments occurred, particularly in the pyro-technologies. These changes favored the emergence of a society that reached its peak during the last third of the 3rd millennium, at the end of the early Bronze Age. Then it was transformed and declined by 2100 BC. Approximately a century after, a new type of society/culture emerges, the Wadi Suq Culture, but the subsistence economy of which will continue to base on the agricultural oasis system - except in the (or most of the) coastal sites and the stopping places / hunting places -. The analysis proposed here is centered on the example of the oasis of Hili in the Emirate of Abu Dhabi. Hili is the site on which most specialized studies were realized until now, partially published studies which the author of this article led or in which she took part.

Dans la péninsule d'Oman, le III^e millénaire voit apparaître et se développer les premières oasis agricoles. Ce processus, complexe et encore mal compris, s'accompagne d'évolutions profondes dans le domaine économique et social. Ainsi, dans la sphère artisanale, on assiste à diverses transformations, en particulier au sein des pyro-technologies. Ces changements favorisent l'émergence d'un nouveau type de société, qui atteindra son apogée au cours du dernier tiers du III^e millénaire, à la fin de l'âge du Bronze ancien, puis se transforme et décline vers 2100 avant J.-C. Un siècle environ plus tard, une société différente par bien des aspects émerge, mais dont l'économie de subsistance continuera de reposer sur le système oasien - sauf dans les habitats côtiers et les haltes/lieux de chasse.

L'analyse proposée ici est centrée sur un exemple, celui de l'oasis de Hili dans l'émirat d'Abou Dhabi, car c'est le site sur lequel le plus d'études spécialisées ont été réalisées jusqu'à présent, des études partiellement publiées que l'auteur de cet article a menées ou auxquelles elle a pris part.

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Mots-clés: Néolithique, oasis, spécialisation artisanale, complexification sociétale

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