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Protohistoric cairns and tower tombs in south-eastern Arabia (end of the 4th-beginning of the 3rd millennium BCE)

Olivia Munoz

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Megaliths of the World

Volume I



edited by

Luc LAPORTE, Jean-Marc LARGE

Laurent NESPOULOUS, Chris SCARRE, Tara STEIMER-HERBET





Megaliths of the World

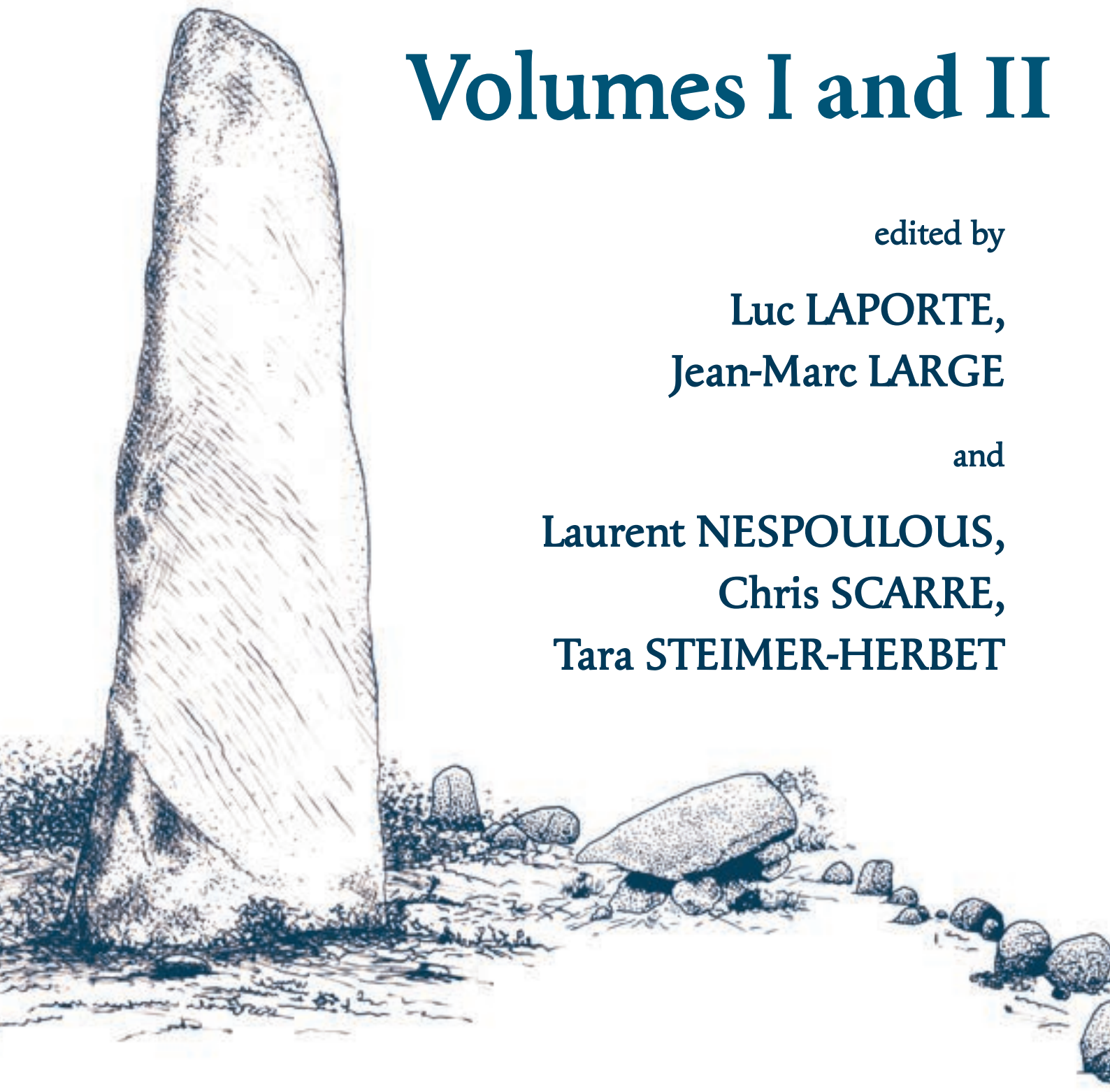
Volumes I and II

edited by

Luc LAPORTE,
Jean-Marc LARGE

and

Laurent NESPOULOUS,
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During the preparation of this publication we learned of the death of Alain Gallay, Emeritus Professor at the University of Geneva, who has made such a major contribution to the discipline. His participation in the international conference on The Megaliths of the World, and his membership of the Steering Committee, was a great honour for us. The whole of the editorial team pay tribute to him.

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Protohistoric cairns and tower tombs in South-Eastern Arabia (end of the 4th - beginning of the 3rd millennium BCE)

Abstract: This article presents a synthesis of current knowledge regarding tower-tombs or Hafit-type tombs. Thousands are found within the Oman Peninsula, within the southeastern Arabian Peninsula, and they are usually associated with the beginning of the Bronze Age (the end of the 4th to the beginning of the 3rd millennium BCE). This apparently large-scale funerary phenomenon is contextualized, and the history of discovery and the orientation of current research are discussed. Finally, the chronocultural timeline is presented, before the traits that characterize these funerary monuments are described. Throughout this article, the available data on locations and use-time of the necropolises, tomb architecture, funerary practices, and the biological data of the individuals deposited within them, are accompanied by a reminder of the challenges and perspectives nourishing current research on this topic.

Keywords: *Oman Peninsula, Arabia, Hafit-type tombs, tower-tombs, cairns, Early Bronze Age*

1. Introduction

1.1 A large-scale megalithic phenomenon...

Still visible in their thousands in the modern landscape, the Hafit-type tombs – named after the site where they were first discovered – are emblematic monuments of the Early Bronze Age of southeastern Arabia, and of the Oman Peninsula (currently the territory of the United Arab Emirates and the Sultanate of Oman), and this earned the sites of Al-Ayn and Bat a place on the UNESCO World Heritage list. Also termed ‘cairns’, ‘beehive tombs’ or ‘tower tombs’ according to their morpho-

logy, these drystone constructions in the shape of truncated cones or igloos are generally set on elevated areas within the landscape and grouped in necropolises that can include over a hundred tombs (**Fig. 1**). Considered as markers of resources and territories, they bear witness to a true anthropization of the landscape: they punctuate all areas frequented by human groups within an immense territory.

While they present great variations in morphology and architecture, their aspect and funerary function links them to a large-scale megalithic phenomenon that characterized the entire Arabian Peninsula



Fig. 1 – Example of tombs from Eastern Arabia: a. Shir (Oman); b, c. Al-Ayn (Oman); d. Ra's al-Jinz (Oman); e. Shiyā (Oman); f. Shifyah (Saudi Arabia) [Photos: Anonymous (a-d); O. Munoz (e-f)].

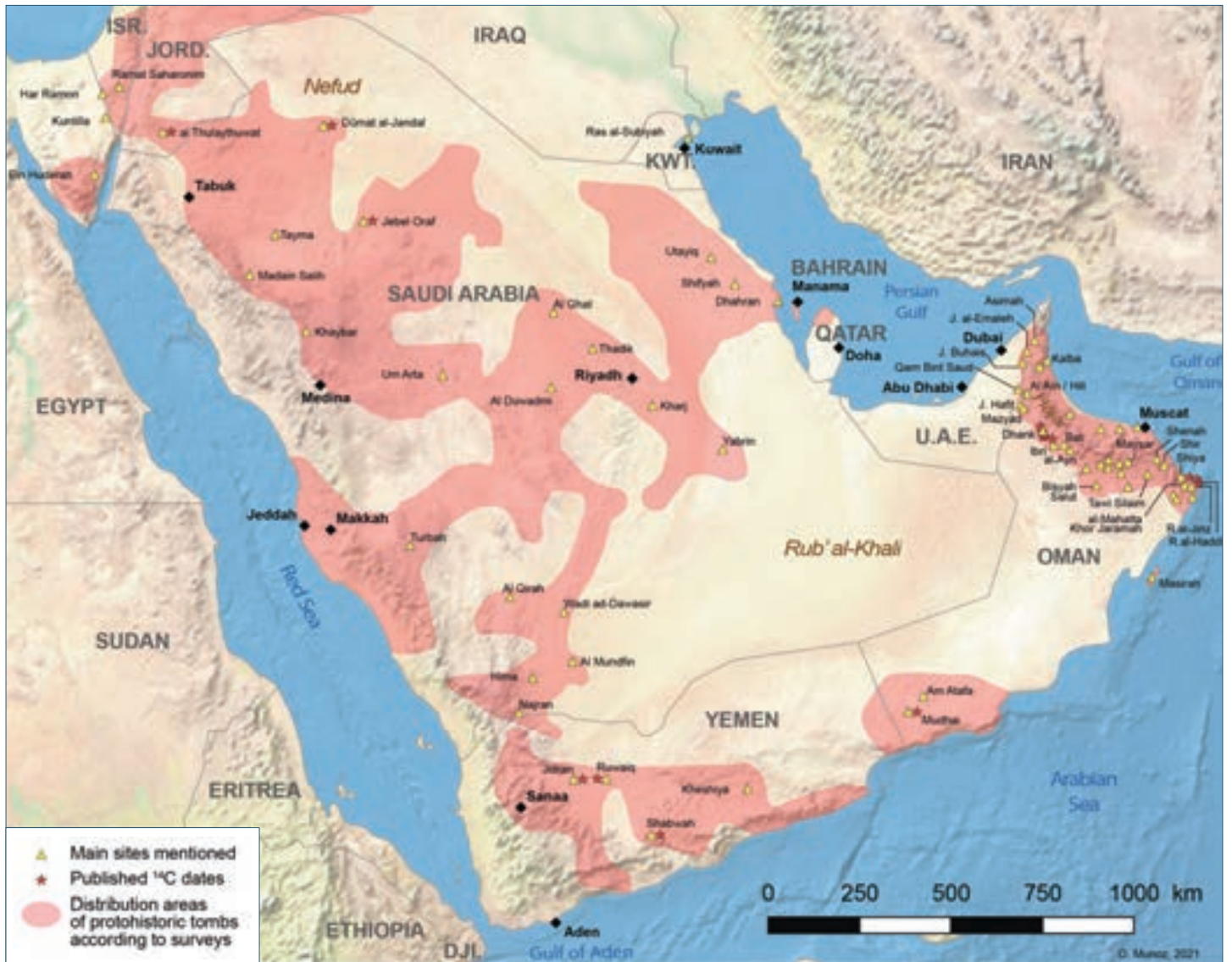


Fig. 2 – Distribution map of tower-tombs and cairns within the Arabian Peninsula and its margins, localization of the principal sites mentioned in the text and tombs dated through radiocarbon analysis (Data compiled from Munoz 2014: fig. 2.3; Chevalier 2017: fig. 2; Deadman 2017: fig. 9.11, A1).

during protohistory (Fig. 2). Indeed, hundreds of thousands of similar monuments can be found in the Sinai Peninsula and the Negev (*nawamis*: Bar-Yosef 1977; Haiman 1992; Saidel 2017); southern Jordan (Abu-Azizeh *et al.* 2014); Kuwait (tumuli: Rutkowski *et al.* 2015); Saudi Arabia (cairns: Adams *et al.* 1977; Hashim 1996; Chevalier 2016; Munoz *et al.* 2020); Oman (cairns, beehive tombs, tower-tombs, Hafit tombs, tumuli: al-Jahwari 2013; Böhme 2011; Cleuziou 2002b; de Cardi *et al.* 1976; Williams & Gregorička 2020; Yule & Weisgerber 1998); and all the way to Yemen (*dirm* tombs, turret tombs, cairns: de Maigret 1990; Braemer *et al.* 2001; Steimer-

Herbet 2004; Steimer-Herbet *et al.* 2006). They are sometimes associated with raised stone alignments ('trains') or other structures made of piled stones (rock piles).

To the north and south of the Arabian Peninsula, these stone tombs replace or accompany other forms of monumental architecture, all bearing witness to a growing imprint of human groups on their environment, as well as to an intense marking of the territory during the middle Holocene (Neolithic and Bronze Age). Indeed, a great variety of megalithic structures have been inventoried in areas comprising groups of tombs. These include trapezoid

or rectangular platforms (McCorrison *et al.* 2012; 2014; Munoz *et al.* 2020), stelae and raised stone circles, dolmens (Zarins 1979; Steimer-Herbet 2011), and impressive stone alignments reaching hundreds of metres and adopting various forms (gates, mustatils, pendants, bulls-eyes, and tapered structures; for examples see Zarins *et al.* 1979; Kennedy 2011, 2017; Groucutt *et al.* 2020). These arrangements are usually interpreted as sanctuaries, cenotaphs, or ceremonial meeting places associated with funerary or ritual practices.

1.2 ... Over the long-term

The chronological amplitude of this funerary phenomenon and its large-scale diffusion (over a territory over three million km²), the rarity of absolute dating and of standardized excavations, coupled with a regional fragmentation of research, makes it difficult to establish a global evolutive synthesis that accounts for all local variants. Recent research, however, indicates that their appearance is relatively precocious – since some tombs are dated to the end of the 6th millennium BCE – and that their use endures,

albeit in an intermittent manner, until at least the 1st millennium BCE (Figs. 3 and 4, and see below).

Three cairns explored in southern Jordan, in the Al-Thulaythuwat area, were radiocarbon dated to the end of the 6th through to the beginning of the 5th millennium BCE (Abu-Azizeh *et al.* 2014). To the south of the Nefud desert, near Jebel Oraf, similar tombs have been dated to the middle Neolithic, and linked to the first pastoralist nomads occupying the region (Guagnin *et al.* 2020). In the Dûmat al-Jandal region, in the north of Saudi Arabia, a series of radiocarbon dates for the use of the cairns indicate a timeframe from the 5th to the 1st millennium BCE (Munoz *et al.* 2020).

To the east of the Arabian Peninsula, in the Oman Peninsula, tower tombs are traditionally attributed to the Early Bronze Age (Hafit period, 3200-2700 BCE), marking the end of the humid period of the Holocene and the emergence of copper exploitation, the development of oasis agriculture, and an intensification of intra- and interregional exchanges (Cleuziou & Tosi 2007; Magee 2014; Bortolini & Munoz 2015). Nonetheless, recent

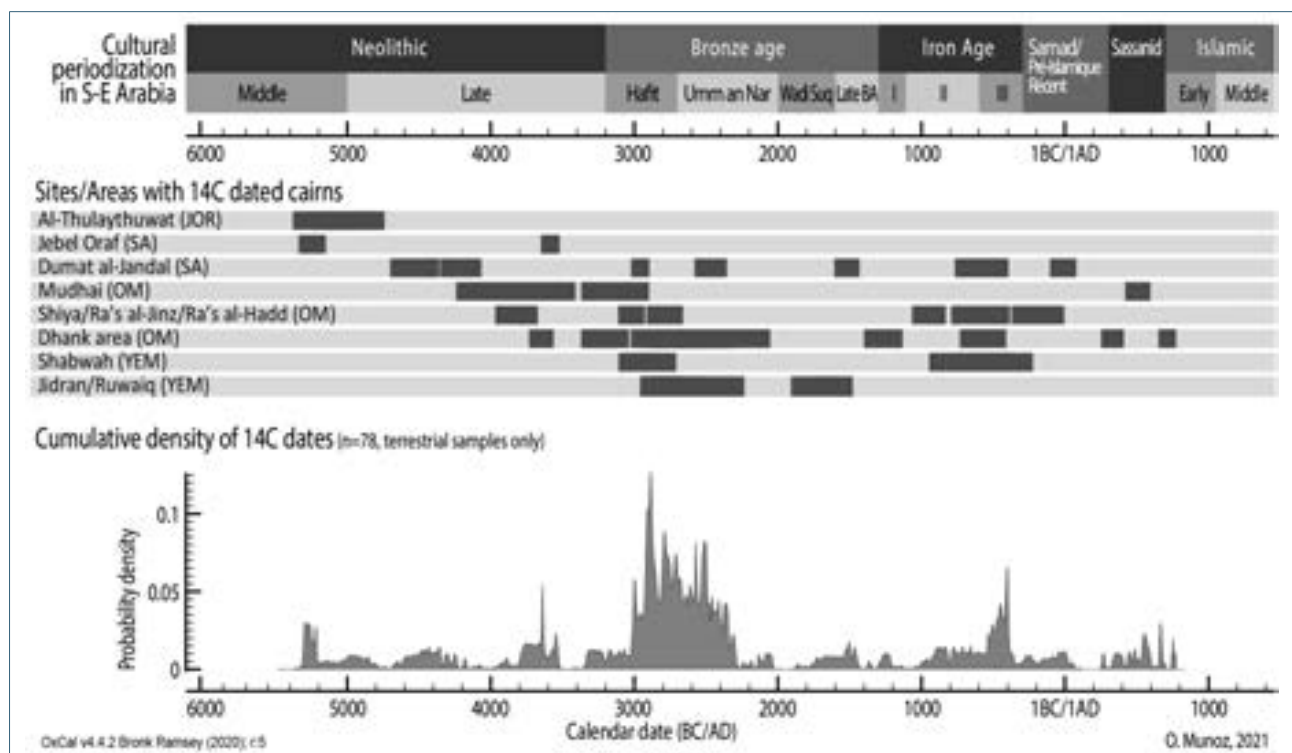


Fig. 3 – Chronological distribution according to regional attribution of tower tombs and cairns dated through radiocarbon analysis and cumulated density of ¹⁴C dates (n=78, terrestrial samples only).

research shows that the systematic chronological attribution of these tombs to the Early Bronze Age during prospection must be relativized and nuanced. Compiling the absolute dates obtained from the Dhofar tombs (Mudhai: Williams *et al.* 2014), in the piedmont of the Jebel Hajar (Dhank region: Williams & Gregorička 2020), or the coast of the Sea of Oman (Shiyā, Ra's al-Hadd and Ra's al-Jinz: this article) indicate that monumental stone tombs have been erected since the Late Neolithic and used until the 1st millennium BCE. The use of the funerary structures is particularly intense at the beginning of the 3rd millennium, during the Hafit period, with another increase at the end of the Iron Age (between 600 and 300 BCE) (Fig. 3). This late re-use of the tombs during the Iron Age is attested through stratigraphic observations (Munoz *et al.* 2017) or, more frequently, through the presence of Iron Age artefacts in reemployed tombs (Schreiber & Häser 2004; Döpfer 2014; al-Jahwari 2016; Madsen 2018: 223).

In Yemen, available absolute dates suggest a construction phase at the beginning of the Bronze Age, continuing through the 2nd millennium BCE, and a re-use phase during the Iron Age (Braemer *et al.* 2001; Crassard *et al.* 2010) (Fig. 3).

An overview is now presented, summarizing the research conducted within the Oman Peninsula (i.e., in the United Arab Emirates and the Sultanate of Oman), where these tombs have been a focus for numerous researchers; this will provide an opportunity to discuss the various approaches used. I will then describe in more detail the monuments known in southeastern Arabia as 'Hafit tombs', which supposedly mark the beginning of the Bronze Age (around 3200-2700 BCE). A review of tomb distribution, architectural variability, and associated artefacts, as well as funerary and bio-anthropological data yielded from human remains, all provide axes of reflection through which to analyse this funerary phenomenon. Throughout this synthesis, I will draw out the challenges facing current research and highlight approaches still to be developed.

2. Pioneering research and current orientation

2.1 First explorations in *terra incognita*

In the southeast of the Arabian Peninsula, the first archaeological research was initiated in the 1950s by a Danish team led by Geoffrey Bibby. It focused first on the island of Bahrain, with the exploration of tumulus-like monuments typical of the island (Bibby 1969). Bibby aimed to identify the lands of 'Dilmun' and of 'Magan' mentioned in late 3rd millennium BCE Mesopotamian texts as purveyors of copper and diorite. The publication of *Looking for Dilmun* (Bibby 1969), which synthesizes his discoveries in a romanticized manner, raised the interest of orientalists for a region that had, until then, been ignored. The mention of Mesopotamian potteries and of soft stone vases from Iran meant that the southern coast of the Persian Gulf could be integrated into the Mesopotamian and Iranian complex, providing the first elements of a relative chronology.

Later, several research teams explored particular sites such as Umm an-Nar, Jebel Hafit, Hili, Bat, Maysar and Ra's al-Jinz. These yielded the first construction elements for a chrono-cultural sequence and for the definition of local material cultures (Frifelt 1968, 1970, 1975a-b, 1991, 2002; de Cardi 1975; de Cardi *et al.* 1976, 1977; Tosi 1976; Cleuziou & Costantini 1980; Weisgerber 1980, 1981, 1983, 1984; Cleuziou 1989; Cleuziou & Tosi 2000a; see also Tosi 1989 for a history of early research). This pioneering research focused primarily on the Bronze Age (3rd millennium BCE), which witnessed the appearance of numerous innovations. These first studies described the emergence of the first oases, the establishment of exchange networks at various scales, and the conditions within which copper was exploited.

At the same time, the discovery of the monumental stone tombs that were present across the entire territory, and easily identifiable thanks to the absence of vegetation, drew the interest of many researchers. In 1962, a Danish archaeological team led by K. Thorvildsen undertook the first scientific excavations of this kind of tomb in the Jebel Hafit, near al Aïn (Abu Dhabi), and these were then continued in an intermittent manner until 1971 (Frifelt 1970, 1975a-b; Madsen 2008: 15-22). The

Megaliths of the World - Part VI: Megaliths from Caucasus to the Arabic Peninsula

| Country | Site/Acronym/Structure/#individual/Lab# | Sample | Age 14C BP | calBC/AD, 2σ | Reference |
|-----------------|--|---------------|------------|--------------|---------------------------------------|
| Jordan | Al-Thulaythuwat/TH.311#A/P784/AA85549 | Human apatite | 6250±57 | -5360 -5040 | Abu-Azizeh <i>et al.</i> 2014, p. 167 |
| | Al-Thulaythuwat/TH.309#E/P783/AA85548 | Human apatite | 6067±54 | -5210 -4800 | Abu-Azizeh <i>et al.</i> 2014, p. 167 |
| | Al-Thulaythuwat/TH.240#E/Pa2488 | Human apatite | 6010±70 | -5205 -4720 | Abu-Azizeh <i>et al.</i> 2014, p. 167 |
| Saudi Arabia | Dumat al-Jandal/DJ/T_L2201/SacA-44357 | Human apatite | 5735±30 | -4685 -4495 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1089/SacA-44370 | Human apatite | 5645±30 | -4545 -4365 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_L2206/SacA-44358 | Human apatite | 5545±30 | -4450 -4340 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1086/SacA-44367 | Human apatite | 5385±30 | -4335 -4060 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1091/SacA-44378 | Human apatite | 4310±30 | -3015 -2880 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1087/SacA-44368 | Human apatite | 3960±30 | -2575 -2345 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1088/SacA-44369 | Human apatite | 3235±30 | -1605 -1425 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_L2207/SacA-44359 | Human apatite | 2470±30 | -770 -420 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_1090/SacA-44371 | Human apatite | 2390±30 | -725 -390 | Munoz <i>et al.</i> 2020 |
| | Dumat al-Jandal/DJ/T_L2204_SU2910/UBA-33306 | Charcoal | 2026±32 | -110 80 | Munoz <i>et al.</i> 2020 |
| | Jebel Oraf/ORF132A/Double cairn/UGAMS 44682 | Marine shell | **7900±30 | -6185 -5875 | Guagnin <i>et al.</i> 2020 |
| | Jebel Oraf/ORF125B/Cairn/UGAMS 36030 | Human apatite | 6270±25 | -5320 -5130 | Guagnin <i>et al.</i> 2020 |
| | Jebel Oraf/ORF108/Cairn A/UGAMS 44684 | Human apatite | 4780±25 | -3640 -3520 | Guagnin <i>et al.</i> 2020 |
| Oman (Interior) | Abu Silah/S021-001,#C/UGAMS 20175 | Human apatite | 4330±25 | -3015 -2895 | Williams, Gregoricka 2019 |
| | Abu Silah/S021-001,#F/UGAMS 20177 | Human apatite | 4140±25 | -2875 -2585 | Williams, Gregoricka 2019 |
| | Abu Silah/S021-001,#D/UGAMS 20176 | Human apatite | 4130±25 | -2870 -2580 | Williams, Gregoricka 2019 |
| | Abu Silah/S021-001,#B/UGAMS 20174 | Human apatite | 4070±25 | -2850 -2490 | Williams, Gregoricka 2019 |
| | Abu Silah/S021-001,#A/UGAMS 14211 | Human apatite | 1330±20 | 650 775 | Williams, Gregoricka 2019 |
| | Al Aflaj/S020-001,#A/UGAMS 20178 | Human apatite | 6280±25 | -5315 -5210 | Williams, Gregoricka 2019 |
| | Al Aflaj/S020-002,#A/UGAMS 20182 | Human apatite | 3920±20 | -2475 -2305 | Williams, Gregoricka 2019 |
| | Al Aflaj/S020-002,#B/UGAMS 20183 | Human apatite | 3910±25 | -2470 -2295 | Williams, Gregoricka 2019 |
| | Al Khubayb/S002-001,#B/UGAMS 11159 | Human apatite | 4490±25 | -3350 -3090 | Williams, Gregoricka 2013 |
| | Al Khubayb/S007-001, locus 003/UGAMS 11161 | Charcoal | 4230±25 | -2910 -2700 | Williams, Gregoricka 2013 |
| | Al Khubayb/S007-003,#C/UGAMS 11158 | Human apatite | 4170±25 | -2885 -2635 | Williams, Gregoricka 2013 |
| | Al Khubayb/S002-001,#C/UGAMS 11156 | Human apatite | 4110±30 | -2870 -2570 | Williams, Gregoricka 2013 |
| | Al Khubayb/S007-167/UGAMS 17150 | Charcoal | 4130±25 | -2870 -2580 | Williams, Gregoricka 2019 |
| | Al Khubayb/S007-057,#D/UGAMS 14213 | Human apatite | 4050±25 | -2835 -2470 | Williams, Gregoricka 2020 |
| | Al Khubayb/S007-011,#A/UGAMS 17148 | Human apatite | 4045±25 | -2665 -2470 | Williams, Gregoricka 2020 |
| | Al Khubayb/S007-167,#A/UGAMS 17151 | Human apatite | 4040±25 | -2630 -2470 | Williams, Gregoricka 2020 |
| | Al Khubayb/S007-003, Locus 004/UGAMS 11160 | Charcoal | 4030±25 | -2625 -2470 | Williams, Gregoricka 2013 |
| | Al Khubayb/S007-012,#A/UGAMS 17149 | Human apatite | 4030±25 | -2625 -2470 | Williams, Gregoricka 2020 |
| | Al Khubayb/S007-057,#A/UGAMS 14212 | Charcoal | 4030±20 | -2620 -2470 | Williams, Gregoricka 2019 |
| | Al Khubayb/S007-169,#A/UGAMS 17152 | Human apatite | 3900±25 | -2470 -2295 | Williams, Gregoricka 2019 |
| | Al Khubayb/S002-001,#A/UGAMS 11157 | Human apatite | 1710±25 | 250 415 | Williams, Gregoricka 2013 |
| | Al Khutma/S002-082,#A/UGAMS 20197 | Human apatite | 4250±25 | -2915 -2705 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-046,#A/UGAMS 20190 | Human apatite | 4170±25 | -2885 -2635 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-049,#A/UGAMS 20191 | Human apatite | 4160±25 | -2880 -2630 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-050,#A/UGAMS 20192 | Human apatite | 4130±25 | -2870 -2580 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-058,#A/UGAMS 20195 | Human apatite | 3910±30 | -2470 -2295 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-052,#A/UGAMS 20193 | Human apatite | 3870±25 | -2465 -2205 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-059,#A/UGAMS 20196 | Human apatite | 3710±20 | -2200 -2030 | Williams, Gregoricka 2019 |
| | Al Khutma/S002-053,#A/UGAMS 20194 | Human apatite | 2410±20 | -720 -400 | Williams, Gregoricka 2019 |
| | Dank region/Necropolis 6/S022-012,#A/UGAMS 20198 | Human apatite | 4850±25 | -3705 -3530 | Williams, Gregoricka 2019 |
| | Dank region/Necropolis 6/S022-048,#A/UGAMS 20199 | Human apatite | 3010±25 | -1385 -1125 | Williams, Gregoricka 2019 |

Fig. 4 – ¹⁴C dates from cairns and tower tombs within the Arabian Peninsula.

Protohistoric cairns and tower tombs in South-Eastern Arabia

| Country | Site/Acronym/Structure/#individual/Lab# | Sample | Age 14C BP | ca1BC/AD, 2σ | Reference |
|-----------------------------|---|----------------------|------------|--------------|-----------------------------|
| Oman (interior) | Mudhai/D001-001,#A/? | Human apatite | 4980±140 | -4215 -3375 | Williams <i>et al.</i> 2014 |
| | Mudhai/D001-001,#C&E/? | Human apatite | 4452±42 | -3340 -2930 | Williams <i>et al.</i> 2014 |
| | Mudhai/D001-001,#B/? | Human apatite | 4315±43 | -3085 -2875 | Williams <i>et al.</i> 2014 |
| | Mudhai/D001-004,#A/? | Human apatite | 1533±36 | 430 605 | Williams <i>et al.</i> 2014 |
| | Mudhai/D001-005,#A/? | Human apatite | 1533±36 | 430 605 | Williams <i>et al.</i> 2014 |
| Oman (coast) | Ra's al-Hadd/HD-7/T6/SacA-11378 | Human apatite | *4730±30 | -3635 -2390 | Munoz, cet article |
| | Ra's al-Hadd/HD-7/T4/SacA-11381 | Human apatite | *4485±30 | -3345 -2065 | Munoz, cet article |
| | Ra's al-Hadd/HD-7/T5/SacA-11374 | Human apatite | *4100±30 | -2865 -1555 | Munoz, cet article |
| | Ra's al-Hadd/HD-7/T5/SacA-11373 | Human apatite | *4045±30 | -2835 -1500 | Munoz, cet article |
| | Ra's al-Hadd/HD-9/T6, US423/BM-3098 | Charcoal | 2780±50 | -1050 -815 | Ambers, Bowman 1999, p. 191 |
| | Ra's al-Hadd/HD-9/T49, US408/BM-3097 | Charcoal | 2470±45 | -770 -415 | Ambers, Bowman 1999, p. 191 |
| | Ra's al-Jinz/RJ-6/T2#2789, (M3infG);/AA-90262/P-977 | Human enamel | *4487±43 | -3360 -2050 | Munoz, cet article |
| | Ra's al-Jinz/RJ-6/T3,molaire/AA-90265/P-980 | Human enamel | *4499±42 | -3360 -2065 | Munoz, cet article |
| | Ra's al-Jinz/RJ-6/T5#2788, (M3infG);/AA-90263/P-978 | Human enamel | *4401±53 | -3335 -1915 | Munoz, cet article |
| | Ra's al-Jinz/RJ-6/T6/Beta-526839 | Charcoal | 4180±30 | -2890 -2635 | Munoz, cet article |
| | Shiya/SHI/T5/Beta-470767 | Charcoal | 4990±30 | -3940 -3650 | Munoz, cet article |
| | Shiya/SHI/T4/Beta-526837 | Charcoal | 4940±30 | -3780 -3645 | Munoz, cet article |
| | Shiya/SHI/T3#B/SacA-47069 | Human apatite | *4620±30 | -3515 -2235 | Munoz, cet article |
| | Shiya/SHI/T6/Beta-470768 | Charcoal | 4480±30 | -3345 -3030 | Munoz, cet article |
| | Shiya/SHI/T1/SacA-47062 | Human apatite | *4415±30 | -3320 -1965 | Munoz, cet article |
| | Shiya/SHI/T2/SacA-47064 | Human apatite | *4355±30 | -3085 -1895 | Munoz, cet article |
| | Shiya/SHI/T2/SacA-47063 | Charcoal | 4350±30 | -3080 -2895 | Munoz, cet article |
| | Shiya/SHI/T3/SacA-47065 | Charcoal | 4350±30 | -3080 -2895 | Munoz, cet article |
| | Shiya/SHI/T3#A/SacA-47068 | Human apatite | *2295±30 | -410 620 | Munoz, cet article |
| | Yemen | Jidran/T81-1/Pa-2034 | Charcoal | 4280±80 | -3315 -2580 |
| Jidran/T105/Pa-2036 | | Human apatite | 4220±40 | -2910 -2665 | Braemer <i>et al.</i> 2001 |
| Jidran/T102#3/Pa-2026 | | Human apatite | 4175±40 | -2890 -2630 | Braemer <i>et al.</i> 2001 |
| Jidran/T106#10/Pa-2037 | | Human apatite | 4045±60 | -2870 -2455 | Braemer <i>et al.</i> 2001 |
| Jidran/T103#4/Pa-2023 | | Human apatite | 3960±80 | -2850 -2200 | Braemer <i>et al.</i> 2001 |
| Jidran/T 109#19/Pa-2038 | | Human apatite | 3400±60 | -1880 -1530 | Braemer <i>et al.</i> 2001 |
| Jidran/T104/Pa-2028 | | Human apatite | 3325±60 | -1750 -1450 | Braemer <i>et al.</i> 2001 |
| Ruwaiq/T101/Pa-1886 | | Human apatite | 4235±50 | -2925 -2630 | Braemer <i>et al.</i> 2001 |
| Ruwaiq/T2/Pa-1898 | | Human apatite | 4210±60 | -2920 -2580 | Braemer <i>et al.</i> 2001 |
| Ruwaiq/T1/Pa-1900 | | Human apatite | 4200±50 | -2905 -2630 | Braemer <i>et al.</i> 2001 |
| Shabwah gov./YLNG 10/T5#1/? | | Human apatite | 4310±40 | -3075 -2875 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T5#2/? | | Human collagene | 4225±35 | -2910 -2670 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T7#7/? | | Human collagene | 2710±35 | -920 -805 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T7#6/? | | Human collagene | 2555±35 | -805 -545 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T6#5/? | | Human collagene | 2390±30 | -725 -390 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T6#3/? | | Human collagene | 2370±30 | -545 -385 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T6#4/? | | Human collagene | 2340±30 | -520 -360 | Crassard <i>et al.</i> 2010 |
| Shabwah gov./YLNG 10/T7#8/? | | Human collagene | 2250±30 | -395 -200 | Crassard <i>et al.</i> 2010 |

Fig. 4 (suite) – ¹⁴C dates from cairns and tower tombs within the Arabian Peninsula.

¹⁴C dates on charcoal sample are calibrated with 2σ age ranges, with Oxcal 4.4, Curve IntCal20 (Reimer *et al.* 2020) ; * Human apatite with possible marine diet: calibrated 2σ age ranges are calculated with Oxcal 4.4, Curve Marine20 (Heaton *et al.* 2020), according to a 0-100% proportion of marine resources in the diet, taking into account the local marine reservoir effect (Δ R= 210 ±15; Saliège *et al.* 2005) ; ** Marine Shell, calibrated with Oxcal 4.4, CurveMarine20 (Heaton *et al.* 2020), Local Marine Delta R= 210 ±15 (Saliège *et al.* 2005).

artefacts they contained and the evolution of their architectural form made them excellent references to establish a chronological sequence (Frifelt 1975a-b; Tosi 1976; Cleuziou 2002a). During the first excavations of these monuments, Frifelt noticed the presence of Mesopotamian pottery of the Jemdet Nasr type (Frifelt 1970: 378), allowing the attribution of the Jebel Hafit tombs to the end of the 4th to the beginning of the 3rd millennium BCE, although an external origin was confirmed by petrochemical analyses in later studies (Méry & Schneider 1996: 93).

These tombs represent a particularly important source of information, since there are few settlement sites for the Early Bronze Age. Indeed, the human groups occupying the peninsula invested only sparsely in domestic architecture, and only at later dates. This is in stark contrast to their funerary monuments, which constitute territorial markers during the Neolithic and *a fortiori* during the Bronze Age. They were built to be visible and to endure (Méry & Charpentier 2009; Bortolini & Munoz 2015).

Ultimately, the history of research on these tombs reflects that of archaeological research in the wider area (see Munoz 2014: 23-32). The fact that these tombs seem to appear at the end of the 4th millennium with no precedent, at a time when contact with other regions can be identified, led archaeologists to search for an external influence to explain the emergence of new funerary practices. The presence in the tombs of imported ceramics from Mesopotamia supported this idea (see for example **Fig. 8: R**). During Caspers (1971) proposed that these were the tombs of merchants or settlers who relocated to the area in order to trade in copper. It did not appear strange, at this stage, that the tombs had no parallels in the regions from which they supposedly originated.

2.2 Paradigms and current challenges

From 2000 onwards, new possibilities offered by satellite imagery and Geographic Information Systems reoriented research towards the spatial distribution of the tombs at a regional scale. Tomb cartography revealed occupied territories and the resources that were potentially exploited, creating new perspectives from which to explore questions relating to the

subsistence modes of the human groups and to the emergence of the first oasis systems (Cleuziou 2002b; Giraud & Cleuziou 2009; Giraud 2010; Deadman 2012, 2017; al-Jahwari 2013, 2015; Deadman & al-Jahwari 2016). Computer systems have also been used to statistically analyse tomb morphology and artefacts in order to understand their structural evolution (Bortolini 2012, 2014, 2019), and to detect formal differences within a necropolis that could reveal social hierarchy (Deadman *et al.* 2015). This last work echoes the first classifications designed to identify traces of the social organization of the groups in relation to other data linked to the few known settlements, based on formal characteristics of the tombs and their geographical distribution (Cleuziou 2002a, 2007; Cleuziou & Munoz 2007).

Over 60 years after their discovery, we can estimate that more than 200 tombs have been excavated in the United Arab Emirates and the Sultanate of Oman (**Fig. 5**), however, few of these excavations have been published in detail. As underlined by Benton (2006: 40), until recently, the few existing publications mostly mention the artefacts found within the monuments. Indeed, the first excavations aimed to establish a relative chronology for the region, (until then unclear), and for which material culture was undefined. With the exception of a few rare monographs published over 30 years after excavations (Cleuziou *et al.* 2011; Madsen 2018), only a few articles, Master's theses and unpublished field reports include precise data relating to the excavated tombs (Santini 1992; Salvatori 2001; Williams & Gregorička 2013, 2019, 2020; Munoz 2014; Munoz *et al.* 2017).

3. Hafit tombs in the Oman Peninsula: state of the research

3.1 The chronocultural context: reminder

Archaeological research conducted over the past few decades has brought to light the major steps in the evolution of the populations occupying southeastern Arabia during the Holocene, at a time where climate became more arid and closer to that of the present day (Cleuziou & Tosi 2007). Within this territory, bordered by the desert and the sea, Late Neolithic (*ca.* 4500-3200 BCE) society relied upon animal

husbandry where water was available inland and, to a lesser extent, on the hunting of wild animals (Uerpmann *et al.* 2008). On the coastlines however, where settlements were often built near to wadi openings or mangroves (Biagi 1988, 2004; Biagi & Maggi 1990; Berger *et al.* 2005, 2013, 2020), research indicates an intense exploitation of marine, lagoon, and mangrove resources associated with husbandry (Uerpmann 2003; Uerpmann & Uerpmann 2003; Zazzo *et al.* 2014; Munoz 2017).

The first oasis-based agricultural systems, based on the date palm, supposedly appear during the Hafit period (around 3200-2700 BCE) which marks the beginning of the Early Bronze Age. These then intensify during the Umm an-Nar period (around 2700-2000 BCE) (Cleuziou & Costantini 1980; Tengberg 2012; al-Jahwari 2009; Munoz 2017). Some researchers, however, estimate that oasis agriculture is only fully formed from the second half of the 3rd millennium onwards.

Ancient populations exploited a large variety of resources, focusing on favourable areas, moving seasonally, and exchanging materials with groups in other regions (Tosi 1975). This original and successful adaptation, in the context of the aridification of the climate of the recent Holocene, is well attested by the socio-economical transformations marking the transition towards the Early Bronze Age. The spatial distribution of human occupation (territorial expansion inland) as well as the structure and architecture of the settlements (emergence of permanent villages made of raw bricks and great circular ‘towers’) all bear witness to these processes (Azzarà 2009; Cable & Thornton 2012).

Moreover, numerous innovations attest to artisanal specialization with a large-scale production (copper exploitation and metallurgy, ceramic production, soft stonework, enhanced sailing and fishing techniques, etc.). These were part of an intensification and diversification of exchange networks at multiple scales (local, intra- and interregional) (Potts 1993; Cleuziou & Méry 2002; Méry 2000; Frenez *et al.* 2016; Méry *et al.* 2017), occurring while the state societies of the surrounding regions (Mesopotamia, Iran, Indus, Egypt) expanded both politically and economically throughout the Near and Middle East.

Finally, we can observe modifications in the funerary practices indicating important social changes that point to an increasingly complex society. During the Neolithic period, the tombs were pits, sometimes covered with stone slabs, and were placed close to settlements. During the Hafit period, these evolved into collective tombs in the shape of towers or igloos, built of stone. During the Umm an-Nar period, monumental circular and compartmentalized tombs were built capable of containing hundreds of individuals (Cleuziou & Munoz 2007; Méry & Charpentier 2009; Bortolini & Munoz 2015; Munoz 2019).

4. Implementation, development, and use over time of the necropolises

From the beginning of research in this area, the specific location of the necropolises of Hafit-type towers have focused the attention of researchers (Cleuziou 1997, 2002b), and GIS allowed the characterization of these choices (Giraud & Cleuziou 2009; Deadman 2012, for a more recent synthesis see Deadman 2017: 73-79). Initially, the presence of Hafit tower tombs near to axes of travel used as commercial networks led Frifelt to propose that the merchants travelling along those routes were also the builders of the tombs (Frifelt 1970; Gentelle & Frifelt 1989: 124-125). More recently, in his analysis of tomb distribution of oriental Ja’alan, Cleuziou introduced the notion that some of the great necropolises would be associated with settlements whilst smaller examples would mark the territory in terms of resources (fishing or well areas), with isolated tombs delimiting frontier zones or passage points (Cleuziou 2002b).

The Hafit tombs are indeed often grouped within necropolises comprising several dozen monuments and, more rarely, they are isolated. In the territories of the Sultanate of Oman and the United Arab Emirates, their number has been estimated to be more than 100 000 (Cleuziou 2002b: 21; Cleuziou & Tosi 2007: 107), although a more recent estimation suggests that the number of well-preserved monuments is around half of this (Deadman 2017: 148). The largest necropolises can include several hundred monuments, for example, in the Jebel Haqlah with over 900 tombs (al-Tikriti 1981), in the

Dhank region with over 700 monuments (Williams & Gregorička 2020), in the Wadi Andam with close to 3000 tombs (Deadman 2012), and at the coastal site of Shiyā with about 400 tombs (Munoz *et al.* 2017) (Fig. 5).

In many ways, these tombs mark a rupture with the previous period. Tombs are no longer strictly associated with settlements as they were during the Late Neolithic. Often built on elevated ground, on ridges, slopes, or rocky outcrops, they probably played a role as territorial markers (Cleuziou 2002b; Cleuziou & Munoz 2007: 298-299). At the top of mountain ridges, they overlook areas exploited

for their natural resources. They are found on the catchment slopes of wadis, especially those south of the Hajar mountain chain, the Wadi Silaim to the southeast, and at Ra's al-Khaimah to the north, where they probably marked the presence of settlements, of water holes necessary for oasis agriculture, and of grazing areas (Cleuziou 2002b; Giraud 2009; Deadman & al-Jahwari 2016; Deadman 2017). In the piedmonts of Jebel Hajar, they also seem to be linked to possible copper mines, the early exploitation of which is dated to the Hafit period (Deadman 2017: 170-172). On the Oman coastline, they occupy the rocky outcrops overlooking favourable fishing areas (sea or lagoons) (Giraud *et*

| Country | Site | N tombs identified (survey) | N tombs excavated | Team | Reference |
|--------------|--|-----------------------------|-------------------|--|---|
| Oman | Al-Ayn | 19 | 2 | Univ. of Tübingen | Döpfer & Schmidt 2014 |
| Oman | al-Mahatta (MHT-4/5) | 53 | 2 | Joint Hadd Project (JHP) | Cleuziou & Tosi 2000b; 2002c |
| Oman | Asimah | | 1 | Dept of Antiquities & Museums, Ra's al-Khaimah | Vogt 1994: 36-37 |
| Oman | Bat | | 2 | Danish team | Frifelt 1975b |
| Oman | Bisya | | 1 | Al Hajar Project | Orchard & Orchard 2007 |
| Oman | Dhank region (Abu Silah, al Aflaj, al Khu) | 700 | 21 | SoBo American Team | William & Gregoricka 2013, 2019, 2020 |
| Oman | Ghoryeen | | 1 | Sultan Qaboos Univ. (SQU) | al-Jawhari 2010 |
| Oman | Ibri | | 1 | Danish team | Frifelt 1975b |
| Oman | Khor Jaramah (KJ-97/98/99) | 225 | 2 | JHP | Cleuziou & Tosi 2002; Cleuziou 2002b |
| Oman | Maysar | | 5 | Deutsches Bergbau Museum | Weisgerber 1980, 1981 |
| Oman | Mudhai | | 3 | SoBo American Team | Williams <i>et al.</i> 2014 |
| Oman | Ra's al-Hadd (HD-10/7.3) | 22 | 11 | JHP | Salvatori 2001; Cleuziou & Tosi 2000b; Munoz 2019 |
| Oman | Ra's al-Jinz (RJ-6/27/31/12/-43) | 106 | 13 | JHP | Santini 1992; Cleuziou & Tosi 2000b |
| Oman | Ra's al-Khabbah (KHB-26/114) | 200 | 1 | JHP | Cleuziou & Tosi 2000b; Cleuziou 2002b |
| Oman | Salut | | 2 | Italian Mission to Oman | Degli Espositi & Philipps 2012 |
| Oman | Shenah | 325 | 8 | SQU | al-Belushi & ElMahi 2009 |
| Oman | Shir-Jaylah | 58 | 3 | Deutsches Bergbau Museum | Yule & Weisgerber 1998 |
| Oman | Shiya | 400 | 7 | French Mission to Shiya | Munoz <i>et al.</i> 2017 |
| Oman | Tawi Silaim | | 4 | British Expedition | de Cardi <i>et al.</i> 1979 |
| UAE | Buraimi | | 2 | Amateurs | During-Caspers 1971 |
| UAE | J. al-Emalah | 4 | 3 | Univ. of Sidney | Benton & Potts 1994 |
| UAE | J. Buhais | | 7 | Sharjah Museum | Jasim 2003, 2006, 2012 |
| UAE | J. Dhanna | | 1 | Dept of Antiquities, Al-Ain | Vogt <i>et al.</i> 1989 |
| UAE | Jebel Hafit | 163 | 80 | Danish team / French Expedition Iraqi/Emirati team | Frifelt 1970; Madsen 2018; Cleuziou <i>et al.</i> 2011; al-Tikriti 1981 |
| UAE | Kalba | | 3 | Eddisford & Phillips | Eddisford & Phillips 2009 |
| UAE | Mazyad | 317 | 19 | Danish team | al-Tikriti 1981; Frifelt 1975b; al-Noeimi n.d. (cited by Cleuziou, <i>et al.</i> 2011: 9) |
| UAE | Qarn Bint Saud | 45 | 13 | Danish team / Dept of Antiquities, | Frifelt 1970; al-Tikriti 1981 |
| UAE | Ra's al-Aysh | | 1 | Dept of Antiquities, Al-Ain | Vogt <i>et al.</i> 1989 |
| Total | | 2637 | 219 | | |

Fig. 5 – Number of Hafit-type tombs identified and excavated by site or region, in the United Arab Emirates and in Oman (the number of tombs identified do not reflect the reality, since only sites where tombs have been excavated are indicated) (Data compiled from syntheses by Benton 2006; Munoz 2014; Deadman 2017).

al. 2005; Cleuziou & Munoz 2007; Giraud 2009). Finally, some isolated monuments marked key routeways or boundaries between territories (Cleuziou 2002b). The tombs would therefore have been a way to visibly mark an area exploited by a particular group, for the benefit of enemies, competitors or rivals), legitimizing their claim through the presence of their ‘ancestors’ (Cleuziou 2002b). Identity was perhaps also indicated, as we will see below, through specific architectural traits.

The use over time of the tombs indicates an intense occupation of inland areas, other traces of which are rather sporadic for the Late Neolithic period. Except for some desertic or inaccessible areas, the entire territory seems to have been exploited. The tombs mark the presence of human communities and are indicative of an unprecedented anthropization of the territory.

It is difficult to estimate the time frame within which necropolises were used, or their spatial evolution. The picture now presented is only a snapshot of something that took centuries to be established, with numerous alterations that we cannot quantify. Due to their permanence in the landscape for 5000 years, tombs may have been subjected to pillage, reconstruction, or reuse, for funerary or other purposes. This makes it difficult for archaeologists to integrate them into a detailed chronology or to comprehend their evolution (al-Jahwari 2016). While artefacts may reveal a sequence of deposits over the long term, the same cannot be said for human remains. To date, less than 100 radiocarbon dates have been published for all the tower tombs and cairns of the Arabian Peninsula (Fig. 4). This number might appear high, but it is very low compared to the number of tombs excavated or identified (Fig. 5). No radiocarbon dates are available for the tombs excavated in the United Arab Emirates, and only two areas of northern Oman have recently benefitted from radiocarbon dating (Dhank area and Shiyā / Ra’s al-Hadd / Ra’s al-Jinz area). This lack of direct dating evidence is explained by the cost involved and, more importantly, by the lack of suitable organic material. When present, human bones are almost always devoid of collagen, which degrades due to the arid climate. Only recently has this obstacle been overcome; new technological progress make it possible to date the mineral component of bones (bioapatite), yielding

good results in arid contexts (Zazzo & Saliège 2011; Munoz 2014; Munoz *et al.* 2020; Williams & Gregorička 2020). In coastal areas, however, the dating of human remains poses one more difficulty. Coastal populations most likely consumed marine resources, subject to the marine reservoir effect, which artificially ages radiocarbon dates (Saliège *et al.* 2005; Zazzo & Munoz 2013). To calibrate ¹⁴C dates obtained on human bones from these areas, it is necessary to know not only the extent of the local marine reservoir effect – which varies over time – but also to estimate the proportion of marine resources in the diets of individuals. Considering the unknown variables, we must calibrate ¹⁴C dates obtained from human remains from coastal complexes by assuming 0-100% of marine input in the diet, which considerably reduces the accuracy of the calibrated date (up to 1400 years in error range, see Fig. 4).

In syntheses of the information available from sites where several tombs have been excavated, observations diverge. For Jebel Hafit, Madsen (2018: 237) estimates that, considering the artefacts and the low architectural variability, the necropolis was used for no more than a few centuries. In contrast, at al Khubayb, in al Kuthma (Dhank region) and at Shiyā (Sur area), where ¹⁴C dates were acquired, it appears the oldest tombs precede the most recent by 600-1000 years, excluding secondary reuse after a period of abandonment (see Fig. 4). At Shiyā, recent excavations (Munoz *et al.* 2017) have demonstrated that the oldest tombs (Tombs 4 and 5), which are also the most rudimentary, are built on the most visible ridges of the terrace whilst the most recent and better constructed examples (Tombs 1, 2, 6 and 7) are located at lower elevations (Fig. 6). This trend needs to be verified since it is not systematic, as attested by Tomb 3, contemporary with Tomb 2 but located on the higher terrace and relatively well constructed.

4.1 Architecture: a great formal variability

The appearance of Hafit-type tombs constitutes a true break with previous architectures. These circular monuments are built of stone and present an elevation in the shape of truncated conic towers or igloos. All include a single funeral chamber, surrounded by a wall made of two to five slabs and



Fig. 6 – Tomb locations at Shiyā (Oman) and architectural variability of the tombs excavated (Photos: O. Munoz).

covered by a corbelled vault. Their diameters vary from 3-8 m for the most imposing. While most tombs are currently ruined and preserved only to a height of 0.5-3 m, some perfectly preserved monuments can reach 7.5 m, as is the case at Shir (Yule & Weisgerber 1998 ; **Fig. 1a**). The surface area of the chamber varies between 1.5 and 2.5 m², is circular in shape, although sometimes ellipsoid or somewhat quadrangular (**Fig. 6**). The chamber floor is sometimes layed with irregular or unworked rock slabs.

When the chamber access is visible, it consists of an opening, the shape of which can vary (rectangular, trapezoidal, or triangular); its design (e.g., with or without a lintel, a threshold, or a corridor) can differ depending on the material employed. Some tombs, however, have yielded no identifiable openings, suggesting they might have been accessed through the cover. This was probably the case at Shiyā and at Ra's al-Hadd HD-7, and at Shenah (ST-2; al-Belushi & elMahi 2009: 34). Some tombs seem to have been definitively sealed by the addition of a wall across the whole or a part of the upper part of the monument, obstructing the accessway, as is the case at Jebel Hafit (Tomb 1319; Madsen 2018: 203), at Bat (Tomb 6603; Böhme 2011: 29) and at al-Ayn (Tomb 6; Döpfer & Schmidt 2014: 222).

These tombs therefore differ entirely from what is known for the Neolithic period, and required an important investment and previously unseen technical knowledge. Domestic architecture for the period includes rectangular buildings made of raw bricks and more temporary structures made of perishable materials (Azzarà 2009, 2013). Tombs differ from these not only by their circular plan but also in the use of stone. These differences could be linked to the availability and nature of materials close to the location of the structures (funerary and domestic), but it is very probable that the durable nature of stone was a key factor in its use in tomb construction; these monuments were definitely made to last.

According to available publications, the majority of the tombs are made of drystone, with non-squared rubble, and roughly put together. The construction material was locally acquired in the rocky outcrops on the summits where the monuments are located. In many cases, although not carefully prepared, the

rocks constituting the wall seem to have been chosen according to their shape to ensure maximum stability in their final placement.

While the choice of raw material seems opportunistic in most cases, at some sites such as Bat (Böhme 2011, 2012) and Ra's al-Hadd HD-7 (Munoz 2014: 217) it appears that the blocks of the external cladding were transported over a long distance (around 10 km). At Bat, Böhme (2011: 25) suggests the presence of mortar between some blocks. Some tombs seem to have been given particular attention, especially with regard to their external claddings, which have been renovated (Yule & Weisgerber 1998; Böhme 2011). On this topic, we must also mention the recurring presence of stone tools (hammerstones) near some tombs, leading us to think they might have been used to retouch the stone blocks (Munoz 2014: 230). A similar situation was observed near tombs from the Umm an-Nar period at Hili (Gagnaison *et al.* 2004: 101).

Despite the apparent homogeneity of the structures, we observe some variety, but it is not easy to determine which elements result from technical constraints (accessible raw materials and construction techniques), from cultural and regional choices, and/or from temporal evolution. There have been recent attempts at a typo-chronological classification of several monumental ensembles, suggesting an overall chronological evolution tending towards a gradual increase in structural complexity during the Early Bronze Age (Gagnaison *et al.* 2004; Bortolini 2012, 2014, 2019; Potts 2012; Williams & Gregorička 2019). As underlined by Böhme (2011: 24), however, the regional diversity of the raw material available for tomb building probably led to various architectural solutions being adopted in different localities and, by consequence, to tomb variability. It is therefore necessary to explore this formal variability in specific geographical areas. Moreover, studies at a local scale show that monuments of varying types could co-exist (see for example: Williams & Gregorička 2020), confirming that other criteria, some difficult to perceive (technical know-how, communal belonging, social status), could have played a role. As a rule, as far as Hafit-type tombs are concerned, the main problem with existing typo-chronological classifications is that they are not based on a rigorous analysis of construction techniques, nor on tangible datings.

Only one study has focused on the construction techniques, with an experimental reconstruction yielding important information on building time, technical constraints, know-how, and the resources necessary for construction (Böhme 2011, 2012). A recent study conducted in the Dhank region of Oman by Williams & Gregorička (2020) distinguished between various architectural types (tumulus, Hafit-type tomb, tower tomb, Umm an-Nar-type tomb) recognized within a single necropolis. It is a rare example of a published study based on absolute dating, in addition to our own at Shiyā.

To conclude, the appearance of Hafit-type tombs constitutes a clear rupture with the previous period from an architectural standpoint. Their construction requires a technical know-how, planning, and a consistent (probably a collective) investment (Munoz 2015, 2019). While these constructions follow a common model for the whole Oman Peninsula, the morphological variability documented raises further questions regarding regional particularities and chronological evolution. This is valid both within the Hafit period and in relation to the later architectural type of the Umm an-Nar period (Frifelt 1975a: 67-69; de Cardi *et al.* 1976; Vogt 1985; Yule & Weisgerber 1998; Bortolini 2012; Potts 2012; Williams & Gregorička 2019).

4.2 Recruitment, funerary practices, associated artefacts

The study of funerary practices associated with these tombs is limited by the poor preservation of the

human remains within them. Several factors can be held responsible: the mode of deposition (no burying), the arid climate of the region (rapid mineralization of skeletal remains), and various interventions following the original placement of the deceased (voluntary manipulation linked to tomb management, pillage, tomb destruction for material re-use, or later re-use with a funerary or other intention). As such, anthropological studies are scarce, and except for recent excavations, have almost always been conducted *a posteriori* (for example: Martin in Benton & Potts 1994; Munoz 2011, 2014). Detailed data on human bones within their context is rare. There is therefore very little information upon which to build a detailed and sufficiently representative portrait of either funerary practices or biological data.

Of 219 excavated and documented tombs, only 130 have yielded human remains. For over a third (n=53), only a few fragments are mentioned, some of which belong to ulterior deposits (Fig. 7). At most, we can suppose that at least one individual was deposited. For the 66 tombs for which a MNI (even provisory) is available, 25 contain at least one individual, 38 contain two to six, and 10 tombs contain more than seven and up to 29. The latter group is exclusively represented by tombs of Ra's al-Jinz RJ-6 (Santini 1992; Munoz 2014) and of Ra's al-Hadd HD-10 (Salvatori 2001), as well as one tomb from al-Buhais which was subjected to later re-use (BHS 89: Jasim 2012: 270, 314). Within these collective ensembles, we can observe the presence of children, men, and women. This evokes the

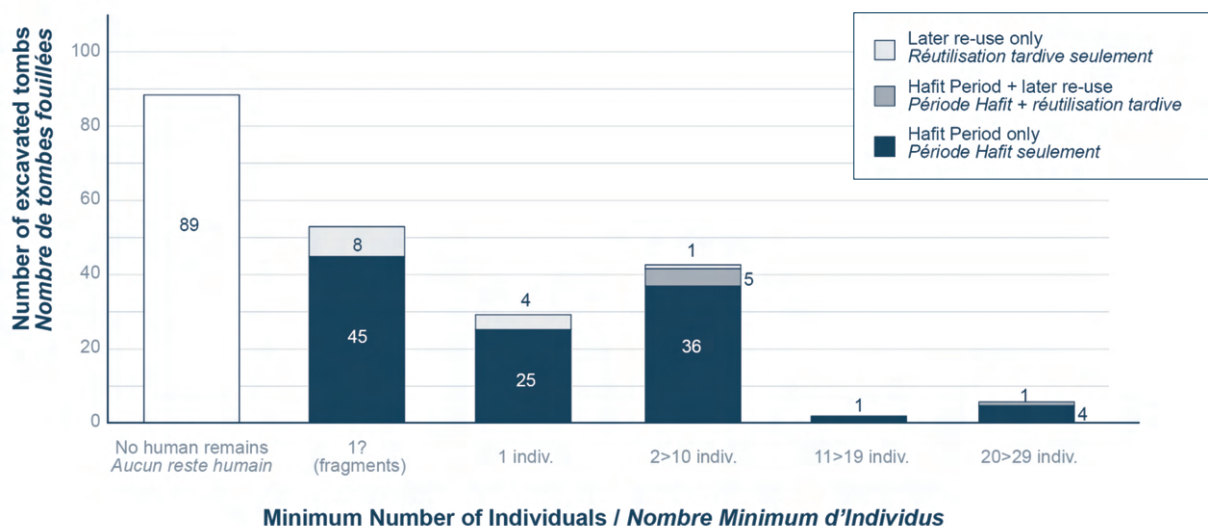


Fig. 7 – Minimum Number of Individuals (MNI) in Hafit-type tombs excavated within the Oman Peninsula (n=207).

possibility of tombs uniting various members of nuclear or extended families (Cleuziou & Munoz 2007; Williams & Gregorička 2013; Magee 2014) despite no biological or genetical analysis yielding any kinship links so far.

Tombs RJ-6 and HD-10, which each contain two to three dozen individuals, constitute exceptional examples which could be linked to intense frequenting of coastal settlements located nearby, and to the small number of constructed tombs present (less than 20) compared to other sites. When the period of use – up to several centuries – is added, the data currently available indicates that, for some tombs, the collective character of the monument was materialized more in the intention of the builders than in the reality of the deposits made within them. Of course, the poor preservation of remains within these tombs might bias our perceptions. Whichever the case, the disparity in the number of individuals

within tombs where the MNI is known – from a single individual to as many as 30 – show that the effort invested in tomb construction did not depend on ‘needs’ but rather responded to an ideology shared over an immense territory.

Within the funerary chamber, the bodies are not buried but rather deposited within a free space. The deceased are laid on one side, in a crouched position. There is no preferential orientation, and some may have been wrapped in a flexible container (Madsen 2018), as is documented for the Neolithic period (Munoz 2014). In the most densely occupied tombs of Ra’s al-Hadd and Ra’s al-Jinz, the deposition of new deceased individuals required the rearrangements and manipulations of the previously deposited remains (Munoz 2015, 2019).

The deceased are sometimes accompanied by ornaments (pearl necklaces or bracelets made of stone and shells), copper artefacts and imported



Fig. 8 – Examples of artefacts found in Hafit-type tombs at Ra’s al-Hadd HD-7, Shiyā and Jebel Hafit: soft stone beads (A, C, H, I, J), enstatite beads (B), shell beads (C-G), copper (K) and mother-of-pearl rings (L), perforated shell (M) and mother-of-pearl (N) plaques, curved (O-P) and gorge (Q) hooks made of copper alloy, pottery vessel with polychrome painting (R) [Credits: O. Munoz (A-Q), Madsen 2018, fig. 36a (R)].

ceramics (Fig. 8). These can reveal intra-regional contacts: we find marine shell objects in the inlands and copper artefacts on the coasts, which leads us to think that exchanges were valorized. In parallel, products issued from interregional exchanges are also integrated into the funerary sphere. As was previously suggested, small jars from Mesopotamia (Jemdet Nasr type) attest to recurring exchanges with this distant region, but also to their specific use within funerary contexts, since such items are apparently absent from contemporary settlement sites (Cleuziou *et al.* 2011; Madsen 2018). During the same period, the pottery found in non-funerary contexts (such as those found at Hili 8, period I), are locally made but imitate southeastern Iranian ceramics and those of the Pakistani southwest, a manifestation of technological transfer from that region towards the peninsula (Méry 2000).

5. Conclusion and perspectives

Fifty years after their discovery, Hafit-type tombs are still at the heart of the research conducted in the southeast of the Arabian Peninsula. The first explorations – within a *terra incognita* – answered the need to establish a chronology, to catalogue and to classify these monuments, the importance of which was already perceptible, in order to lay down the foundations of an archaeology of the societies of Eastern Arabia. Over the past ten years, a new investigative phase has started, with a renewal of research perspectives made possible in parts by new technologies (satellite images, GIS analysis, 3D recording, AMS dating), but also by disciplines bringing a different perspective on the tombs and their builders within their geographical, social and economic contexts through geoarchaeology, funerary archaeology, archaeometry, and statistics.

Among discussions animating current research, questions on subsistence and group mobility (pastoral nomads vs. sedentary farmers) are predominant. A future challenge will be to extract information on diet and group mobility through the analysis of the human bones found in the tombs (biological anthropology and geochemistry), with samples that would be well defined chronologically through absolute dating (e.g., Gregorička 2013; Zazzo *et al.* 2014; Munoz 2017). The other frequently discussed question is that of the structural variability of the

tombs, which can be related to technical constraints and available raw materials, cultural and regional preferences, to social factors, or to a chronological evolution. Systematic absolute dating associated with architectural studies that take account of local geographical specificities will allow us to better comprehend the factors operating within this architectural variability. This type of approach might also contribute to a better understanding of the technological know-how and the degree of specialization necessary to build the funerary monuments. From this, it might be possible to explore the socio-political context within which these tombs existed. A detailed analysis of the artefacts contained within the tombs could also be exploited towards this goal and may yield indications of the dynamics of the multiscale exchanges taking place at the beginning of the Bronze Age. Finally, while limited by the poor preservation of human remains, biological anthropology and palaeogenetics could provide clues to the diffusion of this phenomenon and evaluate kinship links within individual monuments or within an entire necropolis.

In conclusion, I would remind the reader that in the Arabian Peninsula, despite legislation being in place concerning heritage protection, urban expansion has intensified in the last few years. This development is exacerbated by mass tourism and has already led to the destruction of numerous tombs. Preventive archaeology programmes take place regularly, and we hope for those to be multiplied, just as we hope that the data produced by this research is published and disseminated to international standards.

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limité, s'embourbant dans des typologies de mégalithes mal définies qui ont obscurci plutôt que clarifié les limites entre les différentes traditions mégalithiques. En examinant en particulier les différentes approches des sépultures dolméniques, cet article décompose les hypothèses qui construisent le soi-disant "phénomène mégalithique" et suggère des approches taxonomiques et contextuelles alternatives qui pourraient nous conduire à de nouvelles bases théoriques.

Mots-clés : *Dolmens, Âge du Bronze, Levant, pratiques funéraires, géologie*

p. 905-920 – Cairns et tombes tours protohistoriques en Arabie sud-orientale (fin 4^e - début 3^e millénaire avant l'ère commune) par Olivia MUNOZ

Cet article propose une synthèse des connaissances sur les tombes tours ou tombes de type "Hafit", présentes par dizaines de milliers dans la péninsule d'Oman, au sud-est de la péninsule arabique, et qui sont communément attribuées au début de l'Âge du Bronze (fin 4^e - début du 3^e millénaire avant notre ère). Après une remise en contexte de ce qui apparaît être un phénomène funéraire de grande ampleur, l'histoire de la découverte de ces tombes et les orientations actuelles de la recherche sont brièvement exposées. Puis, le contexte chronoculturel de cette région est présenté avant l'exposé des traits qui caractérisent ces monuments funéraires. La présentation des données disponibles sur la localisation et la durée d'utilisation des nécropoles, l'architecture des tombes, les pratiques funéraires et les données biologiques des individus déposés au sein de ces sépultures est accompagnée, au fil du texte, d'un rappel des enjeux et perspectives qui nourrissent les recherches actuelles.

Mots-clés : *Péninsule d'Oman, Arabie, tombes Hafit, tombes tours, cairns, Âge du Bronze ancien*

p. 921-934 – Le mégalithisme au Moyen-Orient par Tara STEIMER-HERBET

Il y a 7 000 ans le Moyen-Orient voit l'émergence de nouveaux rites funéraires. De la simple inhumation en pleine terre, jarres ou ossuaires, les sociétés qui peuplent les montagnes du Akkar, le plateau du Jaulan, la vallée du Jourdain, al-'Ula et Khaybar, le Jawf, le Hadramawt et le Dhofar, pour ne citer que quelques régions particulièrement riches, ont choisi d'inhumer leurs morts à l'intérieur de tombeaux mégalithiques. Ces monuments connus sous le terme de dolmens ou de tombes tours sont des tombes monumentales en élévation formées d'une chambre de blocs mégalithiques plus ou moins régularisés qu'un tumulus peut recouvrir partiellement ou complètement. Les prospections systématiques récentes menées dans la région de Homs, dans le Leja, le Harra et à l'est de Jafr renouvellent l'image qu'on avait de la répartition des tombes mégalithiques dans le Levant. Jusque dans les années 2000, on pensait que les nécropoles de tombes mégalithiques se répartissaient sur une bande nord-sud qui suivait grossièrement le fossé du rift du milieu de la mer Morte jusqu'au niveau d'Alep, le long du Jourdain, du Litani et de l'Oronte. Or aujourd'hui, nous savons que les sociétés pratiquant le mégalithisme peuplaient des zones très différentes allant de régions boisées dans le Jaulan syrien à des zones très steppiques dans le désert du Sabatayn au Yémen. La condition de leur installation est la présence de ressources exploitables telles que des zones de pâturage, propices à la culture de l'olivier ou des figuiers, la présence de mines de silex, de lapis lazuli, d'obsidienne, de sel et bien entendu l'accès à de grandes dalles pour la construction de leurs tombeaux et parfois de leur habitat. Outre l'accès aux ressources, les sociétés à mégalithes semblent avoir privilégié les axes de communication favorisant les interactions commerciales avec les populations urbaines des côtes ou des grands

Megaliths of the World brings together the latest research on megalithic monuments throughout the world. Many of these sites are well known, others less familiar, yet equally deserving of close attention. Megalithic monuments in different regions of the world are far from being a single unified phenomenon, having varied chronologies, and diverse origins, but they all share a certain family resemblance through their common characteristic: the deployment of large stones. No fewer than 150 researchers have contributed 72 articles and inserts, providing a vital region-by region account of the megalithic monuments in their specialist areas, and the current state of knowledge.

The insights offered in these volumes emphasize the particular character and significance of these apparently inanimate stones. The use of such large blocks must surely have been an expression of power or prestige, yet the size and materiality of the stones themselves opens up new perspectives into the meaning and symbolism of these monuments, the places from which the blocks were derived, and the way they were manipulated and shaped.

Megaliths of the World takes the reader on a fascinating journey, offering new insights through encounters with megaliths and megalithic traditions that will often be new and unfamiliar. Highlighting salient themes, it provides a compendium of detailed information that will be vital to anyone interested in the phenomenon of megalithic monumentality.



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