Paléorient
Revue pluridisciplinaire de préhistoire et de protohistoire de l'Asie du Sud-Ouest et de l'Asie centrale

46 1-2 | 2020
Varia

Rose Jeffrey I., Hilbert Yamandu H., Marks Anthony E., Usik Vitaly I. 2019. *The first peoples of Oman. Palaeolithic archaeology of the Nejd plateau*

Huw S. Groucutt

Édition électronique
URL : https://journals.openedition.org/paleorient/437
DOI : 10.4000/paleorient.437
ISSN : 1957-701X

Éditeur
CNRS Éditions

Édition imprimée
Date de publication : 3 décembre 2020
Pagination : 203-208
ISBN : 9782271135278
ISSN : 0153-9345

Référence électronique
Huw S. Groucutt, « Rose Jeffrey I., Hilbert Yamandu H., Marks Anthony E., Usik Vitaly I. 2019. *The first peoples of Oman. Palaeolithic archaeology of the Nejd plateau* », *Paléorient* [En ligne], 46 1-2 | 2020, mis en ligne le 01 décembre 2021, consulté le 15 décembre 2021. URL : http://journals.openedition.org/paleorient/437 ; DOI : https://doi.org/10.4000/paleorient.437

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The first peoples of Oman. Palaeolithic archaeology of the Nejd plateau
The first peoples of Oman. Palaeolithic archaeology of the Nejd plateau. Oxford: Archaeopress and Ministry of Heritage and Culture, Sultanate of Oman (The Archaeological Heritage of Oman 5). 196 p.

1 The Dhofar region in the southwest of Oman is a peculiar, and special, corner of Arabia. It represents the eastern-most extent of the highland spine of Arabia which extends down the west coast and then swings eastwards through Yemen. Traditionally Dhofar had more to do with areas to its west than to the rest of Oman, with social and linguistic connections to areas in modern-day Yemen. Likewise, Dhofar is a primarily Sunni Muslim area in contrast to the Ibadism dominant in the north of Oman. Today Dhofar is clipped by the Indian Ocean Monsoon, the resulting wet season giving a small area of Dhofar a tropical and green character, very different from common stereotypes of Arabia. Due to its geographic position and environmental context, Dhofar is the fulcrum of the southern part of Arabia. Did the region act as a long term “refugia” for prehistoric humans? Was it a region that humans leaving Africa passed through as they, supposedly, followed the Indian Ocean rim?

2 This book reports some of the findings of the Dhofar Archaeological Project, led by Jeffrey Rose, who has been working in Dhofar for many years. The focus here is on their work between 2010 and 2013. The original aim of the Dhofar Archaeological Project was to explore the idea advanced by researchers such as Paul Mellars that the dispersal of *Homo sapiens* beyond Africa involved a single, rapid, and near-coastal migration. Dhofar, with its steep coastal shelf, abundant chert, and numerous caves and rock shelters, offered the ideal area in which to test this idea. The authors spent months excavating sites near the coast and found almost nothing. While frustrating, this valuable work added to the pool of evidence against the coastal super-highway model (see *e.g.*, Groucutt *et al.* 2015). Testing sterile cave after sterile rock shelter, Rose and his colleagues (p. xv) describe this time as "the least productive and most discouraging". The project then moved inland, to the plateau area and began to make numerous archaeological discoveries (table 1). These form the focus of this book.

3 The book is organised into five chapters. Firstly, geography and environments. Secondly, the Lower Palaeolithic. Thirdly, the Middle Palaeolithic. Fourthly, the Upper and Late Palaeo-lithic. Finally, a chapter offers conclusions and avenues for future research. Below I will outline the content out of the book, before evaluating its strengths and weaknesses, and summarising its significance.

4 The chapter on geography and environments offers a useful introduction and summary of relevant palaeoclimate. The prehistory of Dhofar is situated in terms of the long-term trend towards regional aridification over the Pleistocene. This general pattern, however, was interrupted by occasional wet periods, particularly interglacials, when monsoonal rains moved northwards into Arabia. This environmental narrative is rapidly connected to contrasting perspectives on the prehistory of Arabia. One model, the so-called *tabula rasa* (blank slate), suggests that arid conditions between occasional wet phases were so extreme that populations repeatedly became regionally extinct. The alternative model emphasises the idea of long-term continuity, in which populations could apparently survive through regional climatic downturns by contracting to "refugia". The authors firmly root the human story in Arabia in its environmental context.

5 The authors do an admirable job of describing the geology and ecology of Dhofar. Their focus is on the Nejd ("plateau") area, not to be confused with the more famous Nejd of the central part of Arabia. The Dhofar Nejd consists of the area between the escarpment to the south, which rises steeply from the coastal plain, and the sands of the Empty Quarter desert to the north. This plateau is a relatively flat area, incised by numerous wadis, with widespread chert sources. The archaeological record of the region largely consists of surface scatters in this rocky scrubland, supported by a small number of excavated sites.

6 The Lower Palaeolithic of Arabia remains a very poorly understood period, yet potentially a key one given Arabia's position as an inter-continental nexus (Petraglia 2003). Currently, only a single dated Lower Palaeolithic site has been published in Arabia, from the central part of the peninsula, and with a surprisingly young age of around 200,000 years ago (Scerri *et al.* 2018). The authors review the Lower Palaeolithic of Arabia, which they characterise as consisting of the Oldowan and the Acheulean. While there is a rich Acheulean record in Arabia, with many sites producing large numbers of iconic handaxes, the existence of Oldowan assemblages is less clear.

7 Rose and his colleagues report 92 Lower Palaeolithic surface sites from Dhofar. Aside from examples of isolated single artefacts, most of the sites are located between the villages of Shisr and Mudayy, around Wadi Aybut and Wadi Ghadun. They attribute sites to the Lower Palaeolithic based on both technology and weathering, and use these criteria to infer different phases. An older phase is characterised by relatively crude handaxes—typically broadly oval/triangular in shape, often retaining cortex on both surfaces, and seemingly not showing the use of large flakes as blanks—as well as other forms such as radial cores. Cleavers are notably absent. A putatively-younger Lower Palaeolithic phase has an emphasis on the unidirectional production of large blades. They believe that the latter, as found at sites such as TH.501b, falls chronologically between the Acheulean and the Middle Palaeolithic. How other sites, with somewhat generic core and flake technology and highly weathered lithics, such as TA.23, relate is unclear. Rose and his colleagues assign such sites to the Lower Palaeolithic, and from the range of technological variability in the region, argue for multiple waves of humans in the Early and Middle Pleistocene. While quite possible, it is also possible that the sites are all relatively late. The crude handaxes and large cores from Dawadmi in the central part of Arabia, after all, date to the final interglacial of the Middle Pleistocene (Scerri *et al.* 2018). Rose *et al.* discuss a small number of assemblages in their chapter on the Lower Palaeolithic, showing the highly varied nature of these assemblages, but are unable to really integrate these into a secure framework.

8 The third chapter takes us to the Middle Palaeolithic. This is a richly attested period, with the Dhofar Archaeological Project recording 262 Middle Palaeolithic assemblages between 2010 and 2013. Rose and his colleagues focus on assemblages they classify as belonging to the "Afro-Arabian Nubian Complex", and its supposed offspring, the "Mudayyan". They claim that the "Nubian Complex" dates to Marine Isotope Stage 5. In Dhofar, the only excavated Middle Palaeolithic lithics consist of a handful of lithics in a fluvial deposit. These, the authors admit, suggest a minimum age of around 106,000 years ago. I have recently extensively reviewed the notion of the Nubian Complex.[1] It suffices to say that it is an extremely problematic notion. For instance, the authors (p. 56) repeat the claim that the Taramsa burial provides strong support that the Nubian Complex was made by "anatomically modern humans". Even if we accept the utility in combining assemblages with simple similarities into a vast industry/technocomplex, then this narrative is fact undermined by optically stimulated luminescence ages from inside the skull of the Taramsa burial indicating a possible age of *ca.* 25 ka (Van Peer *et al.* 2010). This is quite possibly, then, an intrusive burial. The wider point here is that the "Nubian Complex" is not secure anywhere, so trying to force the emerging record of Dhofar into this framework should be avoided. I will return below to the problem of not sufficiently separating description and interpretation.

9 A small number of Middle Palaeolithic assemblages are described by the authors. Useful information on the typology of the information is given, as well as photographs, illustrations, and site plans. These are all useful data. The authors describe seemingly older assemblages which are more weathered and are dominated by relatively large Nubian Levallois cores and associated debitage. There are then seemingly-younger ("Mudayyan") assemblages, which are less weathered, have smaller lithics, and combine Nubian Levallois technologies with the use of non-Levallois, reduction (such as

a recurrent bidirectional method). The authors believe that the Mudayyan flowed directly from the older "classic Nubian Complex".

10 The authors are very focussed on linking the Dhofar Middle Palaeolithic assemblages to the "Nubian Complex", as a proxy for "anatomically modern humans". This "adding dots to the map" perspective downplays regional specifics. Dhofar in fact has much more "Nubian" technology than Nubia (or anywhere else) does. It is a fascinating and important finding that the Middle Palaeolithic record of the western Dhofar plateau area is dominated by Nubian Levallois technology. There is a story to be told about standardisation, and probably about the interaction between migration and local developments. These possibilities are, however, not explored in detail. The focus is very much on "Nubian" artefacts as stone breadcrumbs of Nilotic *Homo sapiens* marching on their way to world domination. For some reason, in Arabia they apparently stopped making their diagnostic artefacts once they moved east of Dhofar. It would be interesting to see more detailed comparisons between Dhofar Nubian Complex assemblages, instead of simply assigning them to one of two industries and describing typology and other basic features.

11 The Upper and Late Palaeolithic are covered in chapter 4. Rose and his colleagues suggest that Upper Palaeolithic assemblages are "virtually absent" (p. 110). However, they correctly point out that this "may be partially due to our inability to recognize techno-typological features of local Arabian lithic industries" (110). This is a key point: regional changes may produce "false negatives", but equally, and the example of the "Nubian Complex" discussed above springs to mind, there is surely also a chance of "false positives". The way through this mess is a clean separation of description and interpretation. It is clear from the Jebel Faya sequence, currently the only long multi-phase excavated sequence in Arabia, that a distinctive development trajectory occurs. Multiple assemblages in the Jebel Faya sequence are unlike those known from other regions (Armitage *et al.* 2011). The available data from Arabia hint at high levels of technological diversity, and a regionally and temporally complex pattern. Rose and colleagues describe occasional sites in Dhofar with an Upper Palaeolithic character, such as that of TH.68, and there is also the site of Matafah that these authors recently published elsewhere (Rose *et al.* 2019). These "Upper Palaeolithic" sites are, however, highly varied. Some, for instance, combine blade reduction technologies that would not be out of place in the Levantine Upper Palaeolithic, with bifacial points which the authors argue are more similar to technologies of the African Later Stone Age. Matafah, not discussed in the present book, adds another element of technological diversity to the archaeological record of Dhofar, including the production of geometric microliths at around 30,000 years ago (Rose *et al.* 2019).

12 While the Upper Palaeolithic as classically understood may be rare in Arabia (with seven possible examples described from Dhofar), the authors describe a rich "Late Palaeolithic" record from Dhofar (303 assemblages), which they situate in a wider regional (southern Arabian) tradition. This Late Palaeolithic dates to between 14,000 and 7,000 years ago. These assemblages demonstrate a focus on unidirectional blade production and rather diverse forms of retouched tools. These assemblages are widely distributed across Dhofar but are mostly still associated with raw material procurement localities. Based on a few chronometric age estimates, Rose and his colleagues suggest an older phase of the Late Palaeolithic in Dhofar with features such as backed blades, unifacial points and endscrapers, in contrast to a younger phase with features such as

large blades, burins on truncations and unifacial tanged points (p. 113). Rose and his colleagues are unsure if this variability represents a local developmental sequence.

13 The Upper and Late Palaeolithic scatters are often extremely dense; for instance, 500 lithics per square metre at TH.68. Through typological, technological, and refitting studies, the authors are able to show the high levels of diversity in these assemblages. TH.68, for instance, emphasises the production of blades, bladelets and segments. These segments are distinctive and were often used as blanks for burins. Other assemblages instead feature high numbers of small and finely worked bifaces. While Rose and his colleagues propose "industrial" classifications for some of the Upper and Late Palaeolithic assemblages, it is also clear that assemblages are highly varied. The authors, following their earlier work (*e.g.*, Hilbert 2014) have accumulated valuable insights into human prehistory in Arabia at the end of the Pleistocene and in the early Holocene. This is significant in terms of debates on refugia, and on how the Neolithic subsequently developed in Arabia. While much remains to be done, as always, the achievements of the authors in elucidating this previously very poorly known period of Arabian prehistory must be celebrated.

Table 1 – Summary of the authors' view of Dhofar Prehistory, as expressed in the book being reviewed and Rose *et al.* 2019.

Phase	Industry	Examples of sites	Chronology
Earlier Lower Palaeolithic?	(Oldowan?)	?	Early Pleistocene?
Later Lower Palaeolithic	Acheulean	TH.501a	Middle Pleistocene?
Latest Lower Palaeolithic	Sibakhan	TH.501b	Possibly ~ 400-150 ka by interregional analogy, no chronometric ages.
Early Middle Palaeolithic	Afro-Arabian Nubian Complex	TH.418, TH.123	One site (Aybut Al Auwal) ⇒ ~ 106 ka
Late Middle Palaeolithic	Mudayyan	TH.419	Possibly between 40 and 100 ka, no chronometric ages available.
Upper Palaeolithic		Matafah, TH.68	One site (Matafah) = ~ 33 ka
Earlier Late Palaeolithic	Hatabian	Al Hatab, TH.38	~ 14-11 ka
Later Late Palaeolithic	Khashabian	TH.34	~ 10-7 ka

14 Crosscutting the different cultural phases explored, the authors emphasise the importance of differential weathering and "lateral stratigraphy". This is a valuable and innovative part of their study. They used a total station to record lithics along transects at certain sites, and then combine this information with studies on technology and weathering of the lithics. This shows some very clear patterns, where lithics closer to eroding chert sources are clearly younger, both in weathering and technology. Moving away from the chert source the lithics give a story of the Prehistory of the area, and in some examples there are Neolithic artefacts close to the chert source, with Late

Palaeolithic blade material a bit further away, and then Middle Palaeolithic artefacts, and further still, Lower Palaeolithic material. The problem is how this maps on to "absolute" time. Given the dominance of deflation and erosion in landscapes such as that of Dhofar, the research on "lateral stratigraphy" presented here is a valuable contribution to the literature. Relative chronology is a perhaps undervalued approach, and it is important that archaeologists develop methods that can maximise information from surface assemblages, which are a major part of the archaeological record of the area (Groucutt and Blinkhorn 2013). It is also important to emphasise the point that, so far, the archaeological record of Dhofar, and indeed much of Arabia, is dominated by raw material procurement and early-stage processing localities (see also Groucutt *et al.* 2017). This must be kept in mind when comparing such sites to intensively occupied caves and rock shelters in other regions.

15 The key strength of this compact and well-written book is its presentation of a large amount of information on a poorly understood part of the world. Table 1 summarises the authors' discoveries and interpretations of the archaeological record of Dhofar. A particular strength is the richly visual nature of this book; the page after page of beautiful photographs and illustrations alone make this is a valuable resource. It is also good that the authors report the basic structure and character of the assemblages. Too many lithic assemblages reported in the literature lack even the most basic published information. In contrast, Rose and his colleagues present various forms of data, from typological lists, frequencies of particular characteristics (*e.g.*, forms of striking platforms), and valuable metric data (although reporting average values at up to eight decimal places may be somewhat excessive!). The point is that while researchers may disagree with this or that element of the authors' interpretations, by reporting actual data, this book allows other authors to consider alternative interpretations, should they wish.

16 The main problem of the archaeological record of Dhofar is the lack of chronometric age control. While surface sites are both a common and an important part of the archaeological record in areas such as Arabia, it is also imperative that the archaeological record is as well constrained as possible chronologically, and, relatedly, that archaeological research embraces highly interdisciplinary approaches (all four authors of this book are archaeologists with a specialisation in lithic analysis). While the relative chronology produced by "lateral stratigraphy" discussed above is valuable, without anchoring in absolute chronology it is hard to interpret the archaeological record of Dhofar. The other problem is that the authors report only a handful of the hundreds of sites they have discovered. It is not clear how these assemblages were selected. Furthermore, in some cases, systematic collections were conducted, but in others, a more random approach was used.

17 While the information reported by the authors is valuable, their wider interpretations of these data are less convincing, in my opinion. There is still no solid evidence for long-term refugia in Arabia, and the term "refugia" is not being used in a clearly defined way. Interpretations of rather fringe mitochondrial genetic approaches to support such claims does not come across as particularly convincing. Mitochondrial haplogroups do not equal human populations (see *e.g.*, Groucutt *et al.* 2015). And the distribution of modern haplogroups in contemporary populations says little about where populations were living thousands of years ago. Likewise, the exposition of prehistory through archaeological "industries", which seem to be seen as a proxy for

specific ancient populations, is a rather limited and culture-historical approach. Arguments that Middle Palaeo-lithic assemblages from Dhofar demonstrate dispersal out of Africa (and all kinds of other claims, such as being the background to the entire Upper Palaeolithic) are based on grouping assemblages into industries based on superficial similarities. Actual objective comparisons of assemblages have not been carried out. Given the high levels of technological diversity through time that Rose and his colleagues document in Dhofar, it is surely possible that some of this represents significant examples of convergent (independent) evolution of technologies superficially similar to those from elsewhere. It is also important to consider regional differences, as well as similarities. What does it mean, for instance, that a distinctive striking platform morphology ("dihedral chapeau") is seemingly only found on Nubian Levallois cores and Levallois flakes in Dhofar? Why is this less significant than the "similarity" of cores having a ridged shape at the distal end?

18 Researchers are still debating the relative importance of internal changes and inter-regional connectivity in Arabian prehistory. Bold claims are easy to make, but we should admit there is considerable equifinality in the character of the current archaeological record of the region. While it is, of course, natural to frame developments in Arabia against better-known sequences from neighbouring regions, distinctive local characteristics need to be emphasised. The emerging record of Arabia demonstrates some interesting features, such as young Acheulean (Scerri *et al.* 2018) and Epipalaeolithic (Hilbert *et al.* 2014) assemblages. Untangling the human prehistory of Arabia means taking the region seriously in its own right. A binary choice between "refugium" and "long range migration leaving trail of stone breadcrumbs" risks underselling the importance and specificity of the Arabian archaeological record. As evidence accumulates, it seems that prehistory in Arabia, an inter-regional crossroads and a natural laboratory for human-environment interactions, had a distinctive course. Work such as that reported by Rose and his colleagues here contributes essential data towards understanding the archaeological record of the area. Much remains to be understood on the meaning of these data.

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NOTES

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AUTEURS

HUW S. GROUCUTT

Extreme Events Research Group, Max Planck Institute for Chemical Ecology; Max Planck Institute for the Science of Human History; Max Planck Institute for Biogeochemistry; Jena, Germany – hgroucutt@ice.mpg.de