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After 5000 BC: The Libyan desert in transition

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Abstract

The eastern Sahara of Egypt, Sudan and Libya – also called the 'Libyan Desert' – constitutes the most arid part of the entire Sahara, with almost no rainfall and thus a lack of any human occupation. For this reason, and because the climate regime is not influenced by higher topographic features, this region provides a unique study area for the relationship between changing climates and human occupation, using Man as a sensitive indicator of past living conditions. In a synoptic view based on some 500 radiocarbon dates, the Holocene human occupation of the eastern Sahara is presented here in four major time slices. **To cite this article: R. Kuper, C. R. Palevol 5 (2006).**

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Résumé

Après 5000 ans BC : le désert libyen en transition. Le Sahara oriental d'Égypte, du Soudan et de Libye – également désigné sous le nom de « désert libyen » – constitue la partie la plus aride de tout le Sahara, caractérisé par un manque quasi-complet de pluie et donc aucune occupation humaine. Pour cette raison et parce que le régime climatique n'est pas influencé par des éléments topographiques plus élevés, cette région fournit une zone d'étude unique pour examiner les relations entre climats et occupation humaine, en utilisant l'Homme comme un indicateur sensible des conditions de vie dans le passé. **Pour citer cet article : R. Kuper, C. R. Palevol 5 (2006).**

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1. Introduction

In the eastern Sahara, for more than 20 years, the archaeological and environmental researches of the

long-term projects of the University of Cologne B.O.S. ('Besiedlungsgeschichte der Ost-Sahara') and ACACIA (Arid Climate, Adaptation and Cultural Innovation in Africa), funded by the Deutsche Forschungsgemeinschaft (DFG), have been arranged along a transect of about 1500 km from the Mediterranean down to the Sahel zone. This is connecting the area of winter rains with the summer rains, taking into account the

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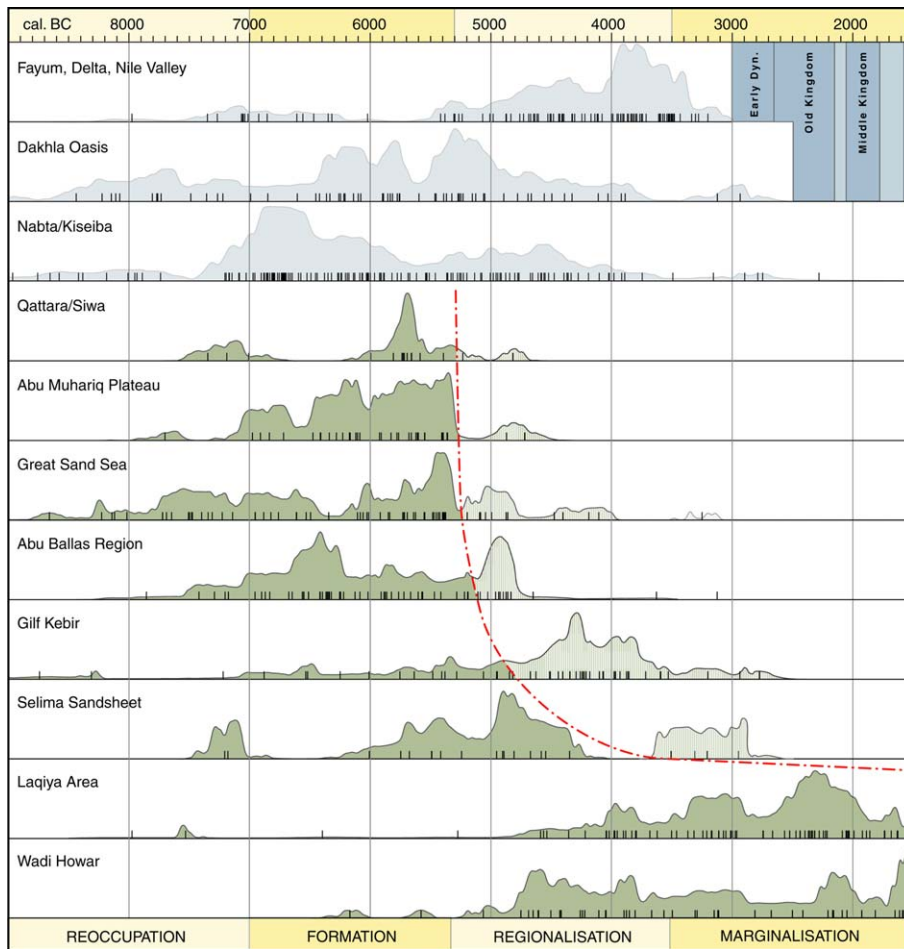


Fig. 2. Chronological table of the Holocene human occupation in the Eastern Sahara as indicated by radiocarbon dates from charcoal, ostrich eggshell and bone. The dashed line marks the onset of aridity in the Egyptian part of the Libyan Desert around 5300 cal. BC. Later dates (hatched curves) are from areas closer to permanent water. On top, for comparison dates from the Nile valley, Fayum, Dakhla oasis and the Nabta/Kiseiba area.

Fig. 2. Tableau chronologique de l'occupation humaine à l'Holocène dans le Sahara oriental, datée par radiocarbone à partir de charbon de bois, de coquilles d'œufs d'autruche et d'os. La ligne en tirets marque la mise en place de l'aridité dans la partie égyptienne du désert libyen autour de 5300 cal. BC. Les dates plus récentes (courbes hachurées) proviennent de zones proches d'eaux permanentes. En haut, pour comparaison, dates en provenance de la vallée du Nil, du Fayoum, de l'oasis de Dakhla et de la région Nabta/Kiseiba.

Wadi Howar in the South and chronologically from left to right, they seem to reveal a clear directional trend and to mirror the different occupation phases in the following rough scenario. Most striking features are:

- the general arrangement of the dates from the upper left to the lower right showing the older dates – starting from the 9th millennium BC – in the northern part of the eastern Sahara and the bulk of the younger ones in its southern part, suggesting a retreat of human occupation into this direction;
- the dearth of Early Holocene data in the Nile valley, while human presence in the desert and the oases is well documented;

- a break of settlement in the western Desert of Egypt after 5300 BC (6300 BP), except for some ecologically favoured niches like the oases and the Gilf Kebir, whereas in the Nile valley the Neolithic and pre-dynastic farming communities started flourishing.

In the following, the main occupation phases before this break will be outlined shortly, i.e. the roughly 3000 years of the Early Holocene wet phase, which include the crucial period of the rise and development of pastoralism in Africa, that obviously spread from here into the rest of the continent. Then, after the onset of the new desiccation, the focus will be laid on some new evidence that basically has changed our view of the

relation between Man and the desert in the centuries before and during the rise of the Pharaonic civilisation.

2. Before 10000 BC

Before the onset of the monsoonal rains, during the terminal phase of the Pleistocene, the Sahara desert, for at least 20 000 years, extended about 400 km further south than today [15 (p. 491)]. This is clearly reflected by the lack of sites in the desert regions, contrary to the Nile valley, where especially the area of the Aswan Lake (due to the archaeological activities in the early 1960s) shows a cluster of Late Palaeolithic sites. At the end of the Pleistocene, however, the Nile valley experienced major changes in the course of the river caused by increasing rainfall in the African highlands. Obviously caused by a 'Wild Nile' [6], living conditions along the river became harsh and may have caused competition for space and food resources, as suggested by drastic evidence of violence within the cemetery of Jebel Sahaba at the east banks of Lake Nubia, dated between 10000 and 12000 BC [33]. At this site near Wadi Halfa at the Sudanese border, many of the 61 individuals (among them nine children) show flint artefacts imbedded as projectile points in different parts of their bodies.

3. Re-occupation, 8500–7000 BC

Only about 2000 years later, at the beginning of the Holocene, with the arrival of monsoonal rains after 10000 BC, a savannah-like environment made the eastern Sahara habitable. From where the first people re-occupied the area is still a matter of speculation. Nile dwellers might have left the inhospitable valley, while groups from the south, already adapted to savannah ecology, just followed their traditional way of life. Their epipalaeolithic tool kit as well as archaeozoological evidence defines them as hunter-gatherers, who – following Wendorf's arguments [8,35] – in certain regions probably already practised some animal husbandry. While this evidence for '*pastro-foraging*' economy needs further proof, the existence of well-made pottery is a general achievement of the 9th millennium BC, also in other parts of the southern Sahara between the Niger and the Nile [12 (fig. 40)]. This re-occupation of the eastern Sahara must have proceeded rather quickly up to the far Northwest of Egypt (Figs. 3 and 4), since epipalaeolithic settlement is proved in the central Great Sand Sea already before 8000 BC [21 (p. 5),27].

Most striking in the overall distribution of sites of this period is an almost complete lack of evidence of



Fig. 3. View of site Regenfeld 96/1 in the central Great Sand Sea (Egypt).

Fig. 3. Vue du site de Regenfeld 96/1 dans la grande mer de sable centrale (Égypte).

occupation in the Egyptian Nile valley, where only the site of El Kab stands for the presence of Man during that time [31]. This corresponds to the Wadi Howar area in northern Sudan, which also shows a lack of dates before 6000 BC. Whether this pattern reflects historical reality, perhaps caused by unsafe living conditions in the swampy valley, or whether it is due to insufficient research or because sites are undetectable under metres of river sediments is not yet to decide.

4. Formation, 7000–5300 BC

After 7000 BC, human settlement became well established all over the Libyan Desert by respective economical and technological adaptation to the different regional ecological requirements. In the North, within the reach of the Egyptian limestone plateau, bifacial technology causes a complete change in the stone tool kit (Fig. 5), that later can be followed up into the pre-dynastic cultures of the Nile valley [14], while rocker stamp decorated pottery of Sudan tradition (Fig. 6) is well represented as far north as the Egyptian oases region and the Great Sand Sea [11 (pl. 50),17 (Abb. 5),29]. The most important achievement of this formative phase, however, is the introduction of domestic stock. Sheep and goat, for which early proof also comes from Sodmein Cave in the eastern Desert [32], must have been introduced from the Near East, where only their wild progenitors exist – possibly across the Red Sea and related to a new kind of undecorated pottery [19]. Cattle, on the other side, might have been domesticated locally [35]. According to regional factors, however, the economic base differs substantially, e.g., between areas like Nabta Playa and the Abu Ballas

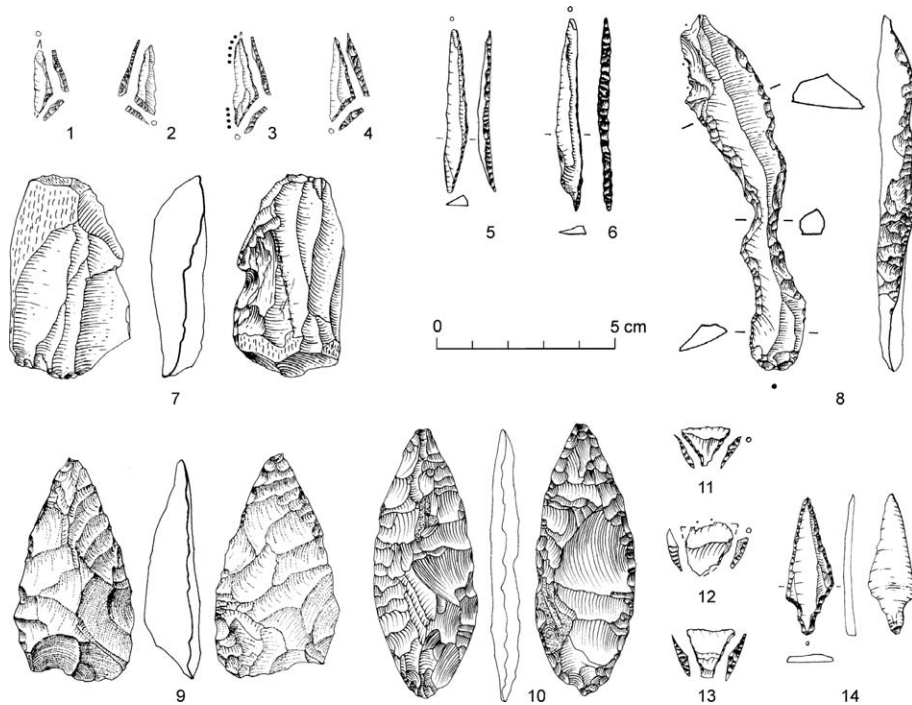


Fig. 4. Artefacts from the reoccupation (1–8) and the formation phase (9–14) at site Regenfeld 96/1 (Great Sand Sea, Egypt).

Fig. 4. Artefacts de la phase de réoccupation (1–8) et de la phase de formation (9–14) sur le site de Regenfeld 96/1 (grande mer de sable, Égypte).

area, where rich faunal material dated around 6400 BC revealed no evidence of domestic livestock [18]. At the end of this phase, however, *multi-resource pastoralism* seems to have become a major part of human subsistence strategies in the area under study.

While neither the dates themselves nor the curves indicate any break in the development during this phase, at some localities like Djara as well as at Mudpans, a change in pottery and stone artefacts is detectable before 6000 BC, which obviously coincides with the appearance of small stock and the beginning of the Middle Neolithic in the Naba-Kiseiba area. At the end of this period, however, a significant decline of data in the core desert of the Great Sand Sea and on the Abu Muhariq Plateau indicates a break of settlement at 5300 BC. Comparing for example the dates of Djara with those of Fayum and Dakhla oasis (Fig. 2), the supposed migration and its direction becomes obvious.

It can be shown that the few data beyond the 5300-line, belong to sites relatively close to permanent water and – in the case of Djara – might reflect episodic visits by small stock herders from the Nile valley or might result from locally available groundwater and occasional grazing from the oases region like at Eastpans at the eastern end of the Abu Ballas Region, where cattle is well documented in the archaeozoological record around 3000 BC [9].

5. Regionalisation, 5300–3500 BC

The retreat from the deserting regions into areas with permanent water, into extrazonal ecological niches like the Gilf Kebir Plateau or to the plains further south, where rainfall was still sufficient, fostered more regional cultural development. In the valleys of the Gilf Kebir, e.g., ceramic traditions developed, which can also be detected in the Laqiya Area in northern Sudan (Fig. 7) and neighbouring regions. So, for example, sherds of caliciform or 'tulip' beakers from Gilf Kebir and Jebel Kamil (Fig. 7: 4,5) have parallels at Jebel Ramlah near Nabta Playa [36 (p. 23)], at Abu Tabari in Wadi Howar (northern Sudan) and also at Kadruka and Kadada in the Sudanese Nile Valley. In general, the previously quite widespread uniform 'wavy line complex' is replaced by new regional developments in pottery and other cultural components. This includes in particular the rise of *specialised cattle pastoralism*, as it is reflected in the rock art of Jebel Ouenat and Gilf Kebir and in the later settlement of the Laqiya Area and Wadi Howar [13].

Comparing this Saharan way into productive economy with the traditional Near-Eastern model of neolithisation, it turns out to be a specific African variant of this basic change in human evolution: Instead of the transi-

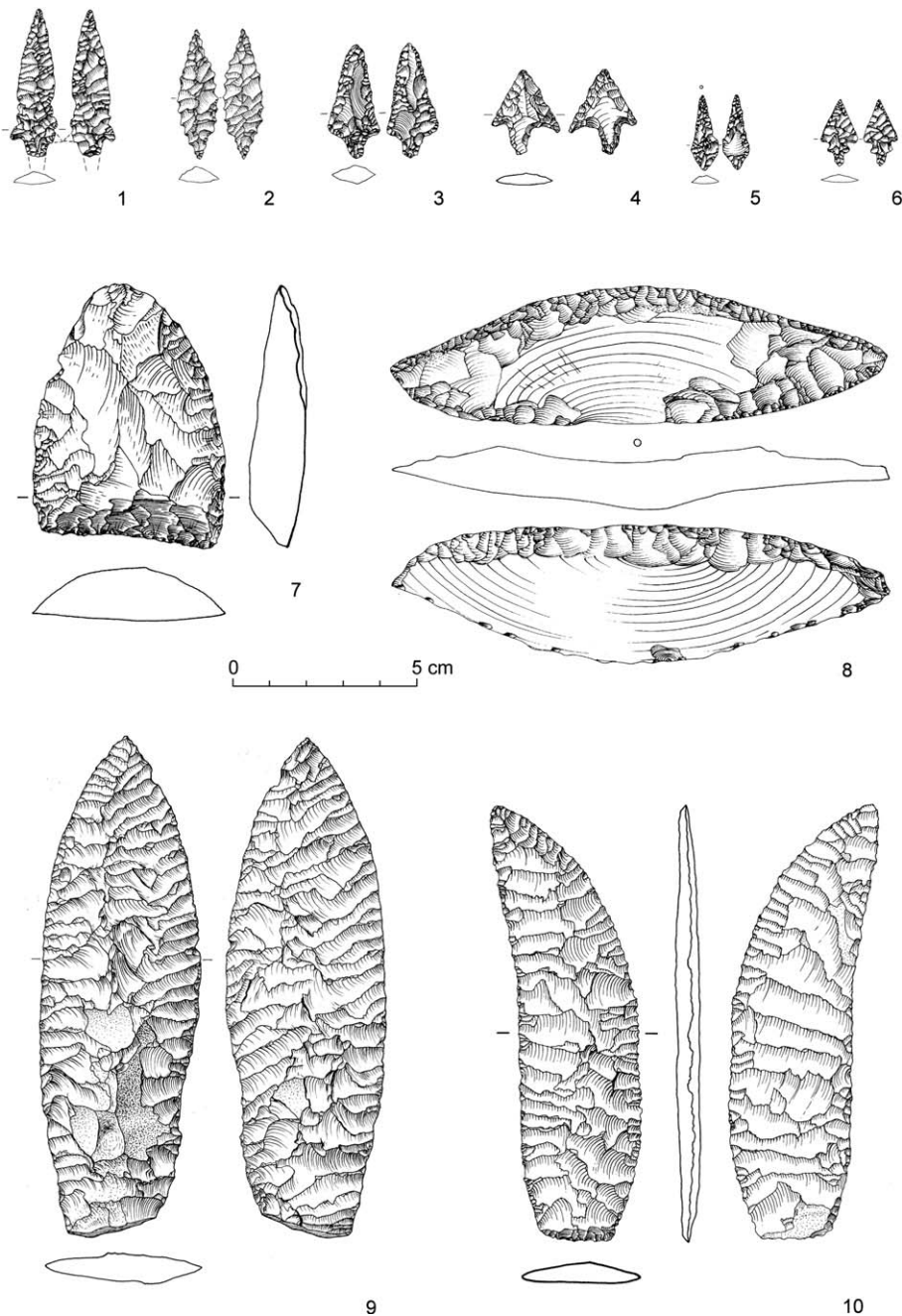


Fig. 5. Bifacial tools from the formation phase in the Djara region (Abu Muhariq Plateau, Egypt).

Fig. 5. Outils bifaces de la phase de formation de la région de Djara (plateau d'Abu Muhariq, Égypte).

tion from nomadic hunter/gatherer to sedentary, pottery producing farmer and stock keeper, we see relatively stationary pottery producing hunter/fisher groups replaced by nomadic cattle herders. Farming obviously has not been part of this specific way of the so called 'Neolithic revolution', since the desert-savannah still offered a wealth of wild growing grain, fruits and tubers.

A comparison between the distribution of human settlement around 6000 and around 4000 BC suggests that the exodus from the Sahara coincides with the rise of the first settled communities in the Nile Valley [21 (fig. 7)]. These first Neolithic groups, starting with fully developed agriculture in Fayum and Merimde around 5000 BC, with regard to their economic base (e.g., the old

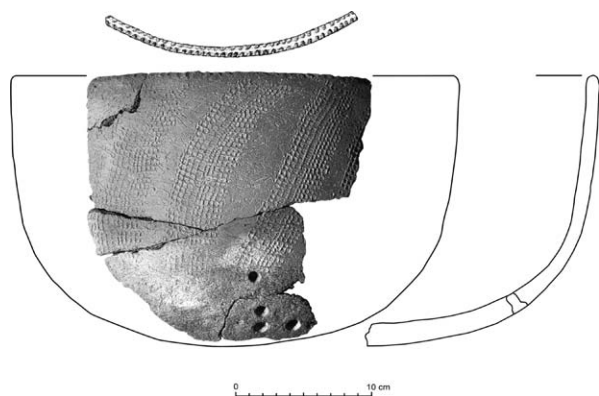


Fig. 6. Rocker stamp decorated pottery from site Chufu 02/14 (Abu Ballas Region, Egypt).

Fig. 6. Poterie décorée à l'estampe en provenance du site de Chufu 02/14 (région d'Abu Ballas, Égypte).

world cereals wheat and barley) are clearly rooted in the Near-Eastern Neolithic. On the other hand, however, alongside with the above-mentioned elements of stone technology, essential aspects of their social and cognitive world might be traced back to western origins. This concerns especially the role of Saharan cattle herders and their spiritual heritage in the Neolithic of the Nile valley. So recently in several articles it has been stressed that the Badari culture is mainly represented by graveyards [34 (pp. 128–129)]. Occupation sites mostly consist only of ash-layers, cultural debris and animal droppings and seem to recall African stock pans. Together with the lack of evidence for permanent dwellings and domestic architecture, this suggests a relatively mobile existence.

This goes along with the practice of cattle burials as also known from the Badari culture [5 (pl. X, 6)], obviously a religious custom that recently has been recorded also from the western Desert. Here the CPE team excavated from the Final Neolithic in the Nabta area burials of complete animal bodies, one of it interred in a carefully built burial chamber with wooden superstructure and dated to 5400 BC [36 (p. 20)]. So cattle pastoralism with its Saharan traditions might well have been an essential part of Neolithic life at the fringes of the Nile valley.

6. Marginalisation, since 3500 BC

After 3500 BC, even in ecological niches like the Gilf Kebir, the rains ceased and permanent occupation is only proved from areas like Laqiya and Wadi Howar further south in northern Sudan. For the Pharaonic Empire, well established along the Nile after 3000 BC, the western Desert obviously has played only a marginal

role, a situation also mirrored by the little interest that Egyptology up to now has paid to this region. Regarded generally as a country of evil and death, the western Desert seemed to have separated the Egyptian Nile valley from the areas further south where at Laqiya and Wadi Howar cattle herders still practised their Neolithic lifestyle. Only sparse finds of Egyptian origin, like a piece of a Meidum bowl found near Laqiya (Fig. 8) meet with the rare reports about desert journeys like the one carried out by Harchuf, governor of Aswan, during the 6th Dynasty. Such enterprises have been estimated as keen advances into the unknown [4] and the lack of any occupation data supported this view for long.

Recent discoveries now throw some new light on the desert during the period of already advanced aridity. To begin, some evidence about widespread human activity, even in the extreme outskirts of the desert, comes from an increasing number of quite unspectacular ceramic artefacts, often found at solitary rocks hidden in small shelters (Fig. 9). They consist of pottery cones, in shape and size similar to flowerpots without bottom, but always associated with a pierced pottery disc. In contrast to the shown position between rocks they also have been discovered on flat ground and hardly to discern between the dunes of the extreme western Great Sand Sea [28]. They were arranged in groups of 10 to 12, all with their disk inside, but excavation revealed no evidence as to their function. We also have no idea which lifestyle or subsistence strategy is related to these enigmatic artefacts, but, anyhow, their widespread distribution and some radiocarbon dates provide evidence for the presence of Man over a wide range of the western Desert still around 3000 BC and surely testify a special technique to cope with the demands of growing aridity.

Surprising new evidence for early Pharaonic presence in the desert now comes from the area west of Dakhla oasis (Fig. 10). Here the German desert explorer Carlo Bergmann discovered at the eastern slope of a solitary hill an artificial terrace fenced in by a dry stone wall and offering unique information. The back front is covered over and over with rock engravings and hieroglyphic inscriptions, and also shows the red-painted figure of a king in the well-known gesture of smiting his enemies [3]. A near by cartouche tells us who this king might be: no minor than Pharaoh Kheops, the builder of the great pyramid at Giza [16,23]. And a longer text informs us that in the 27th year of his kinship, two officers with 400 men came here to collect 'mefaat', apparently a mineral powder used for making colour (Fig. 11). In addition, we learn that such an expedition has been repeated under Kheops' son Djedefre, whose name we find among a

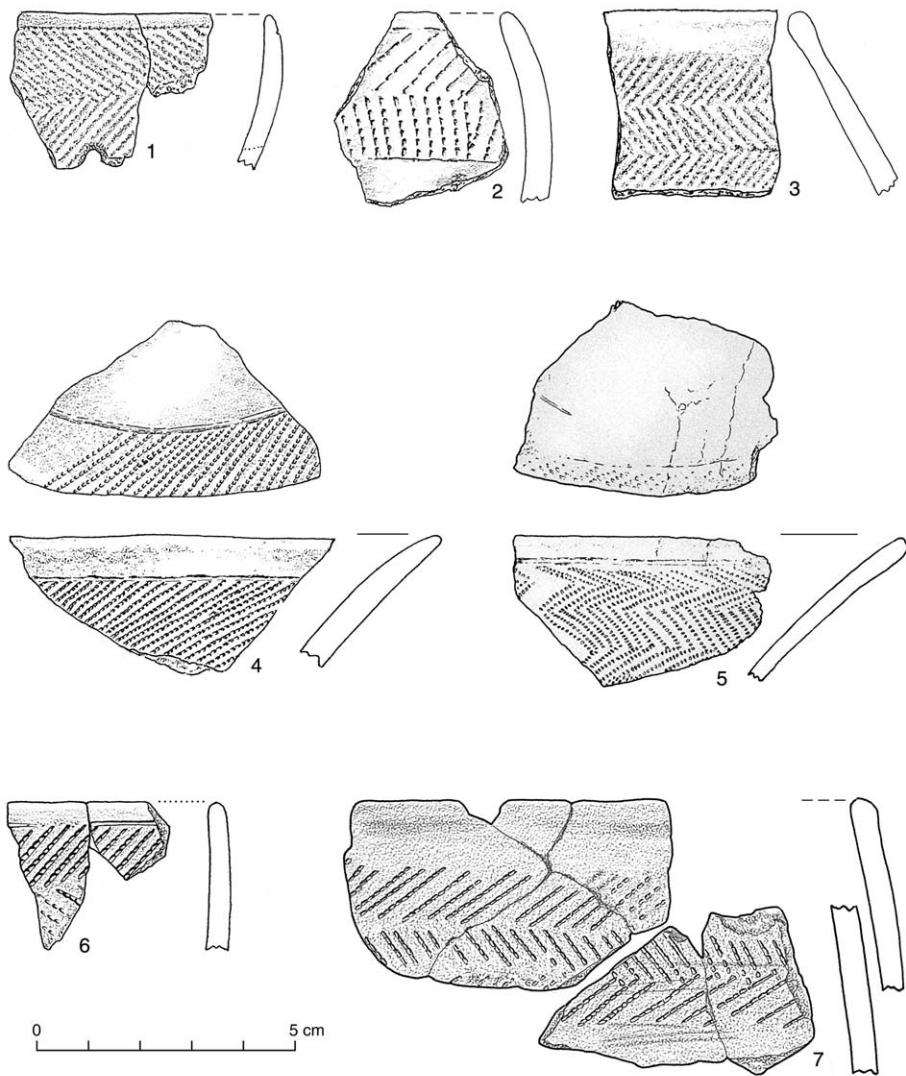


Fig. 7. Pottery with comb impressions from the Regionalisation Phase. 1–3, Wadi Bakht; 4, Wadi el Akhdar (Gilf Kebir, Egypt); 5, Jebel Kamil (Selima Sandsheet, Egypt); 6–7, Wadi Shaw (Laqiya Area, North Sudan).

Fig. 7. Poterie avec décoration d'or de hareng de la phase de régionalisation. 1–3, Wadi Bakht; 4, Wadi el Akhdar (Gilf Kebir, Égypte) ; 5, Jebel Kamil (Selima Sandsheet, Égypte) ; 6–7, Wadi Shaw (Laqiya Area, Nord du Soudan).

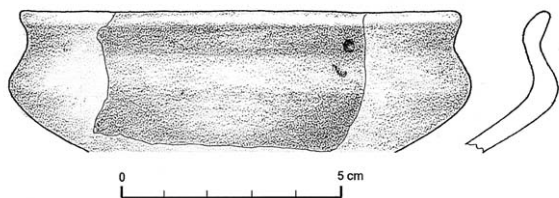


Fig. 8. Fragment of a Meidum bowl from Wadi Shaw 82/52 (Laqiya Area, North Sudan).

Fig. 8. Fragment d'un bol « Meidum » en provenance de Wadi Shaw 82/52 (Lagiya Area, Nord Soudan).

cluster of other engravings. A small test excavation, revealed surprisingly a stratigraphy of more than one metre and pottery well dating into the fourth Dynasty, as well as several fire places containing rare zoological evidence: roasted locusts, radiocarbon dated to 2600 BC. Moreover, some 50 seal imprints have been uncovered, supporting our expectation that a proper excavation will provide essential information about purpose, structure and environmental conditions of these unique enterprises, unmentioned in any ancient Egyptian record.

This earliest proof of mastering the desert coincides with a new evaluation of an old site known already



Fig. 9. Cache with Clayton rings and discs at site Eastpans 95/3 (Abu Ballas Region, Egypt).

Fig. 9. Cache avec disques et anneaux « Clayton » au site d'Eastpans 95/3 (région d'Abu Ballas, Égypte).



Fig. 10. View of site Chufu 01/01 (Abu Ballas Region, Egypt).

Fig. 10. Vue du site de Chufu 01/01 (région d'Abu Ballas, Égypte).



Fig. 11. Rock inscription with the name of Pharaoh Khufu at site Chufu 01/01.

Fig. 11. Inscription sur roche, avec le nom du pharaon Khufu, au site Chufu 01/01.

since 1918 and named Abu Ballas, because of some hundred of big jars found at its foot, and heavily looted since then [1,2]. There have been many speculations as to the purpose and the origin of this dump, but it has never been subject of serious scientific interest. The pottery however can clearly be dated to the 6th Dynasty, more precisely to the 1st intermediate period, and there is more evidence to support this: a simple rock engraving of a hunter and his dogs that can be found painted in the same manner on a bowl from Aswan, where it originates from a 6th-Dynasty tomb [22 (Fig. 3,4)].

This isolated and quite mysterious evidence of Pharaonic representation more than 600 km west of the Nile received some new light from other recent discoveries of Carlo Bergmann: a number of similar sites, all marked by a greater amount of pottery and obviously representing water depots, mainly dating from the Old Kingdom. There are about 30 stations arranged like a string of pearls over 350 km between Dakhla and the Gilf Kebir and obviously marking an ancient road leading to the southwest, where next localities with permanent water only can be found 500 km from Dakhla in Jebel Ouenat, or 600 km away in the Kufra oasis in Libya [20,22 (fig. 5)]. Taking into account that these distances had to be mastered by donkeys, which had to drink at least every three days (the camel had not yet been introduced into northern Africa), we might imagine the logistic problems posed by the hyperarid environment. Over long distances, the trail is marked by road signs and the desert surface even has preserved the tracks left by countless donkey hoofs thousands of years ago. The important role of these animals also seems to be mirrored in the simple drawing of two resting donkeys found on one of the jars (Fig. 12). The final destination of this trail is still open and so is its purpose. It might have served for trade, exploration and prospecting of minerals, military actions and desert patrolling by police forces. Probably all of these purposes once have played a role during the 2000 years of its use. At least it provides some explanation for the strong Pharaonic presence during the 6th Dynasty at Ain Azil in Dakhla oasis, where an extended fortress and impressive mastabas of governors excavated by the 'Institut français d'archéologie orientale' for 20 years now, are posing as many questions as answers [30]. Maybe the main objective of this most remote outpost of the Egyptian empire was to maintain control over the import of African goods like ivory, gold, ebony, leopard skins and other exotic items highly estimated in the centres of the First World along the Nile.



Fig. 12. Resting donkey on a New Kingdom jar from site Homar 99/33 (Abu Ballas Region, Egypt).

Fig. 12. Âne au repos sur une jarre *New Kingdom* en provenance du site d'Homar 99/33 (région d'Abu Ballas, Égypte).

In Conclusion, all available evidence shows that the Pharaonic expeditions may not be regarded as keen advances into the unknown, but that the development of the oldest Saharan caravan traffic was the result of a gradual adaptation to the changing environment. It only could be successful being based on a profound knowledge of the area, especially of its water resources. This apparently was rooted in the formerly broad contacts all over the Neolithic Sahara savannah, which continuously have been reduced to only a few linear, but never interrupted lines of communication.

After the onset of the actual arid phase about 5000 BC, we see the Saharan cattle keepers gradually shifting towards the Nile, contributing their cultural heritage to pre-dynastic Egypt. This process of transition lasting perhaps for 1000 years or more and marking a crucial period of Egyptian history is still poorly understood. In the past, there were only a few, but clear allusions to the role of the Saharan cultures for Egypt, e.g., with regard to correspondences between Saharan rock art and the

Nile valley cultures [24]. But in spite of the immense increase of our knowledge about the later prehistory of the eastern Sahara during the past 40 years and the changed view from there towards the Nile [7,36] proper research, above all fieldwork with focus on this essential historic period remains an urgent demand. This concerns especially the lower Desert on the west bank of the Nile between Fayum and, Assiut and, beyond, the zone of contact between the western Desert and the Nile, the possible range of herders roaming at the margins of the valley. In this area, since a few years, large land-reclaiming projects are rapidly progressing, unnoticed by the scientific world, and essential evidence concerning the economical, social and spiritual roots of the Egyptian civilisation is going to be definitely lost. Large-scale surveys are needed, followed by excavations. But time is already wasted and nobody comes to the rescue. If no measures are taken immediately, we may never find out exactly where, between Africa and western Asia, or between the Nile Valley and the Desert, stood the cradle of the Egyptian civilisation.

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