

# Prehistoric Rock Art Research in the Western Desert of Egypt

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*During the most recent past there has been an enormous increase in the discovery of new rock art sites in the Western Desert, which goes along with the growing tourism in this area. However, in contrast to this, Egyptian rock art in the Western Desert has not been properly recognized as a rich and important archive by specialists in the field of rock art research. This does not mean that surveys on rock art do not exist from the area west of the Nile, but the Western Desert rock art is generally less well-studied than the vivid rock paintings of the central Sahara or the depictions of the Eastern Desert and the Nubian Nile Valley. What can be summarized about the present state in rock art research is a frame of reference, in particular in chronology, evidenced from investigations in the climatic development and settlement history of the Western Desert during the past decades. The intention of this paper is, however, not only to present a brief overview of this groundwork, but to stress the urgent need of professional and systematic studies in rock art research.*

## Introduction

The following paper will focus on two aspects: First, it will argue from the most recent development as to why rock art research in the Western Desert is a desideratum and therefore most pressing in any future perspectives of professional archaeological work in this area. This aspect is the major conclusion of the paper, but stands at the beginning, as it introduces the state of art that forms the basis of any overview in the field of rock art research. Second, the paper will introduce what we know about Western Desert rock art viewed from archaeological research that aims at the reconstruction of cultural chronologies and socio-economic developments during the Holocene. This is not an overview *sensu stricto*, as it is primarily based on the results of two long-lasting research projects of the University of Cologne namely, B.O.S. from the 1980s (“Settlement history of the Eastern Sahara”) and the ACACIA sub-project “Settlement history and climatic development between the Nile Valley and the Central Sahara” between 1995 and 2007. Restricting this paper to only these two large-scale projects ultimately could have led to the dan-

ger of subjectivism, by possibly ignoring other valuable projects that conducted research in the Western Desert. However, the approach of B.O.S. and ACACIA was to view the Western Desert settlement history as a whole, focussing on a large geographical area, and referring to rock art as being part of a more extended corpus of cultural expressions. This should be a good starting point for an evaluation of the potential and need in any further research.

## Why rock art research is needed in the Western Desert

As it is not intended here to give an introduction to the history of rock art discovery and research in the Western Desert, interested readers are referred to competently written overviews given in Huyge 2003, Le Quellec *et al.* 2005, Le Quellec & Huyge 2008, and in Zboray 2005. This paper will stress the very recent development of rock art discoveries, as it illustrates a serious problem which rock art research currently has to deal with.

The majority of known rock art sites go back to the discoveries of amateurs. This is not the crucial point, as recordings made by some amateurs have archived valuable information, but it stands in sharp contrast to the number of systematic investigations in this field. We are not informed yet about the exact number of known sites, nor are there any final results published from the very few recent projects that have been carried out more detailed studies.

Thanks to the fine compilation by Zboray (2005), which has claim to being a complete list of the known rock art sites discovered in the Ouenat and Gilf Kebir region, a good overview about the number of sites and their history of discovery for this part of the Western Desert is at our disposal. It illustrates the dilemma in which rock art research became stuck during the past decades.

Zboray (2005) has listed nearly 600 rock art sites that have been discovered in the Ouenat/Gilf Kebir region since Hassanein Bey reached Jebel Ouenat and made the first discoveries of rock art on this mountain (**fig. 1**) in 1923. The following peaks of discoveries are connected to the early exploration of the Western Desert

starting with Kemal el Din during his 1925 and 1926 campaigns. The highest peaks of discovered sites per year are to be found in years where the earliest expeditions devoted to archaeology set off to the Gilf Kebir and Ouenat: the DIAFE 11 in 1933 (German Central-African Research expedition) by Frobenius, Rhotert, and Almásy (Rhotert 1952); and the Sir Robert Mond Desert Expedition in 1938 by Bagnold, Myers, and Winkler (Winkler 1938; 1939). After the heyday of desert exploration during the 1930s, rock art research stagnated during the decades after World War II, with the notable exception of the Belgian Mission to Ouenat in 1968/69 which led to the discovery of a substantial number of new sites (Van Noten 1978).

Since the beginning of the 21<sup>st</sup> century, the number of known rock art sites has been more than doubled (Zboray's work closes with the publication in 2005; for following years see Zboray 2008 and others in past issues of Sahara journal). During only three years, from 2002 until 2004, more than 100 sites were discovered per annum. This exponential increase in the number of sites resulted from discoveries of desert enthusiasts, a development which ultimately went along with the opening of the Western Desert for off-road tourism.

For other Western Desert regions we are less well-informed; but the change that Ouenat and Gilf Kebir have seen during the past years may be a good example for the entire Western Desert, though the development appears to be not fully identical in other regions. The increase of visits at the Djara Cave, evidenced by the entries of visiting groups in the guest book of the cave between its discovery in 1989 and the close of the statistic in 2000, indicate a tendency that appears to be congruent with the development in Egypt's southwest (**fig. 1**).

Despite the growing exploration, none of the sites discovered in the past years has seen any groundwork in complete documentation, systematic examination, or dating, a fact that is, likewise, connected to the general lack of well assessed scientific research in the field of rock art. It is, however, not only the unbalanced relation between scientific studies and amateur discoveries and the resulting growth of speculative interpretations of some images, which makes scientific research pressing; even more serious

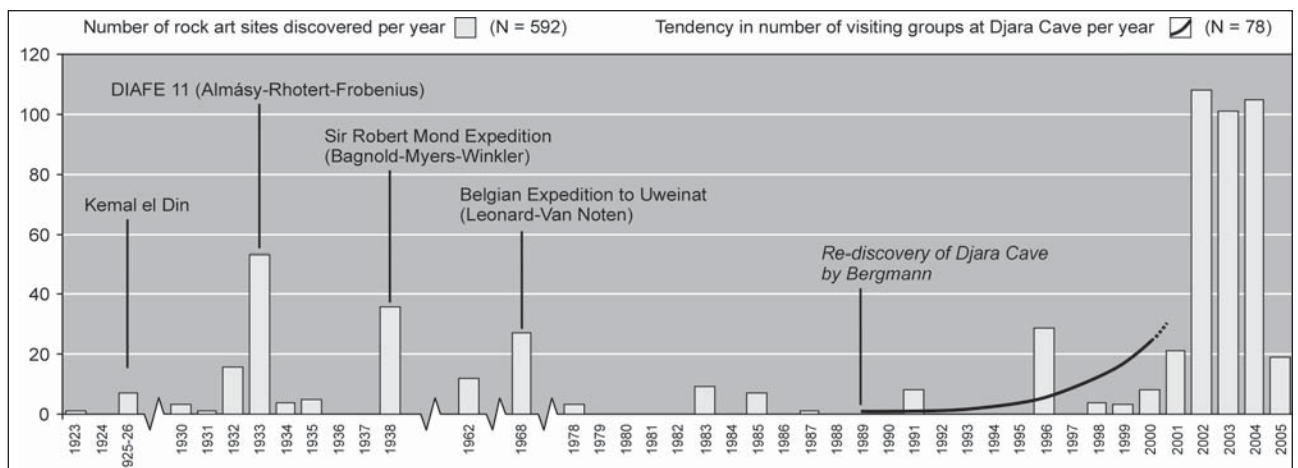


Fig. 1

Discoveries (or first reports) of rock art sites per year in the Gifl Kebir/Ouenat region (in columns) illustrating the results of the most important research expeditions and the increase of discoveries during the most recent past (source: Zboray 2005; the statistic closes with the publication of Zboray's DVD in 2005). The line gives the tendency of visits of groups at Djara Cave (after a statistic by Kindermann based on entries in the guest book posted in the cave after its re-discovery by Bergmann in 1989).

is the ongoing destruction of rock art sites during the past years. They suffer whenever there are increased numbers of visitors, in particular at unprotected sites in the desert areas. Although vandalism and criminal destruction exist, much damage is caused without intention; nevertheless it occurs. Modern carvings and inscriptions are added to the images; water and oil have been spread on the paintings to make them visible; moreover, trampling and artefact collecting destroys the prehistoric habitation sites in the surrounding area.

Recently, a number of attempts have been made, which claimed to better protect the sites in the Western Desert. Among them are activities of tour-operators and non-governmental initiatives, as well as governmental support, both from the Egyptian side and foreign countries. The declaration of the Gifl Kebir-Ouenat Park by the Egyptian Environmental Affairs Agency (EEAA) to protect the natural and cultural heritage of the area is the most outstanding result in terms of public response that can be listed (Kuper 2007). Nevertheless, how to protect archaeological sites efficiently in remote desert regions remains an unsolved problem.

The rock art of the Western Desert of Egypt has not received much professional study compared to rock art in other regions of the Sahara, although the corpus of rock art sites between the Nile Valley and the Central Sahara probably numbers nearly one thousand known sites. An overview of what is known in the field of rock art research is ultimately limited by the poor knowledge about the dating and interpretation of the rock art. Speculations referring to the

meaning of individual depictions are numerous, as well as comparisons of similar images in distant regions, which often led to postulations of far ranging cultural contacts over hundreds of kilometres. The latter applies, in particular, to the popular view that features of Saharan rock art can be attributed to Egyptian iconography pointing to hypothetical influences of desert cultures onto Predynastic, Early Dynastic or Pharaonic Egypt or vice versa. This kind of often poorly assessed and highly subjective interpretation creates an atmosphere of indifference to careful groundwork in rock art research, implying that dating, recording and interpretation of rock art in the Western Desert had fully been archived. In fact, the identification and cultural affiliation of rock depictions in the Western Desert suffer from serious problems in dating, which cannot be resolved by typological means alone. Direct dating or stratigraphical methods have not been applied to Western Desert parietal art as of yet; studies on the basis of long-lasting recordings and statistically sufficient corpora have not been carried out yet, although, a small number of valuable studies presented in this volume point to a beginning in this field. What currently exists is not more than what is known about the distribution of a number of sites and some careful assumptions that can be made about styles and techniques.

In contrast to the rock art research, the past decades have seen a growth in knowledge in the settlement history and the climatic and environmental development of the Western Desert during the last 12,000 years, derived from the intensive study of habitation sites with pot-

tery and lithic material through a number of large-scale excavation projects. More than 500 14C-dates were archived for the Holocene pre-history and provide a formidable background of the dating and chronology of the cultural and environmental change (Kuper & Kröpelin 2006). It is therefore the intension of this paper to start from this groundwork in climatic and cultural history to view aspects of distribution, chronology, and economic relevance of the Western Desert rock art.

## Rock art research in the light of climatic change and settlement history

Increased rainfall during the so-called Holocene humid phase, which lasted approximately from 9,000 to 5,000 calBC, turned the Sahara into a dry savannah-like environment with acacia trees and tamarisks (Kuper & Kröpelin 2006). The humid phase was associated with an intensification of the African Monsoon caused by greater northern hemisphere summer insulation, a process that was not only due to warming but also to a substantial upset in effective moisture in North Africa.

The human occupational history of the Western Desert, archived by more than 500 14C-dates and related archaeological sites, currently forms the best source to exemplify the climatic development during the Holocene (Kuper & Kröpelin 2006). The onset of the early Holocene warming and increase of humidity around 9,000 calBC coincides with the earliest dates of human presence in the Western Desert after the hyperarid Pleistocene. Increase in the number of 14C-dates and related archaeological sites at 7,500 calBC obviously followed the stabilization of maximal humid conditions, approximately lasting until the return of dryer conditions around 5,000 calBC. Earliest signals of the desiccation process are already indicated at 5,300 calBC in the core areas of the Western Desert, outside the oases and mountainous refuges, since there was no independent water resource to buffer aridity if rains had held off (fig. 2). The resulting loss of most parts of the Western Desert to human subsistence, and the

migrational shift of the desert dwellers into the remaining refuges and to the Nile Valley is an important factor for the formation of the early Predynastic cultures along the river Nile during the 5<sup>th</sup> millennium calBC (Riemer & Kindermann 2008).

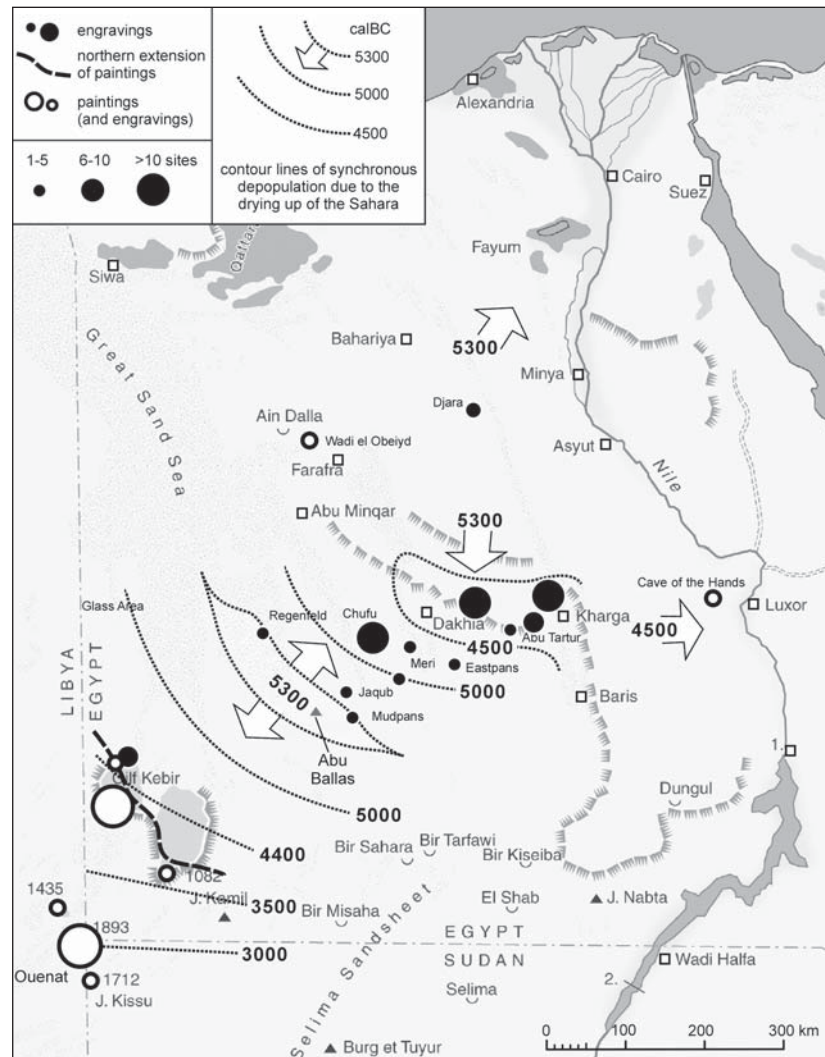
Although the general trend of the climatic development was that towards hyper-aridity, it needed thousands of years to complete. Consequently, in some desert refuges, the occupation history lasted until the decrease of settlement activities, somewhat longer than in other areas. This step-like retreat of the rains forms the basis to estimate when rock depictions could have been created in specific regions of the Western Desert.

During the Holocene humid phase there was green grass on sand dunes, and shallow water pools dotted the landscape when downpours had set on during the rainy season. The vegetation attracted game such as gazelles, antelopes, and ostriches, and to some extent, also giraffes (Van Neer & Uerpmann 1989), and in turn hunters and gatherers set off from the oases and the Nile Valley to the savannah for hunting activity and the exploitation of plants and wild grass seeds. To some minor extent, herding of sheep, goat or cattle represented an additional element of their economy, but did not tend to dominate the subsistence until the drying trend was under way during the 5<sup>th</sup> millennium calBC (Riemer 2007b). As a consequence, desert areas which turned dry during the earliest stages of the drying process at the end of the 6<sup>th</sup> millennium and the first half of the 5<sup>th</sup> millennium have never seen full pastoral subsistence. Therefore, pastoral elements, both in archaeozoology as well as in rock art can be used as a temporal marker for the dating of rock art.

During the climatic optimum, the Eastern Sahara was far from being a paradise. The amount of annual rainfall, estimated to a maximum of 100 mm during the Holocene humid phase (Neumann 1989) or slightly higher in mountainous regions, such as the Gilf Kebir (Linstädter & Kröpelin 2004), indicate a dry savannah with episodic rains and a patchy and unpredictable availability of surface water and related resources such as vegetation and wild animals. These factors created living conditions of high risk and stress for the foragers of the Eastern

Sahara. Highly variable spatial and temporal logistical and residential mobility patterns are likely to be adaptive expressions of risk minimization in the Western Desert. During the dry season when the rains had stopped, the water pools dried up and the prehistoric groups were forced to return to the wells and spring mounds of the oases. The rains were, however, highly varied in their temporal and spatial distribution, which is a general characteristic of arid regions. The prehistoric adaptation to the risk of finding water was a strategy of high mobility and flexibility of seasonal movements that could cover several hundreds of kilometres during the course of the year for which archaeological evidence is given in the distribution of pottery, exotic raw materials, mollusc shells and the like (Riemer 2007b).

The spatial distribution of the artefact traditions resulting from the seasonal macro-moves of the prehistoric groups strongly suggests that they basically represent territories of identity in the material culture that divides the Western Desert into a northern and a southern hemisphere. The traditions in the material culture are best represented during the mid-Holocene (*ca.* 6,600-5,000 calBC) by pottery with decorations in Khartoum style and microlithic elements in southern Egypt, while the oases and northern Egypt are dominated by undecorated thin-walled pottery and bifacial lithic technology (phase Gilf B after Linstädter 2005). In the southernmost regions the artefact traditions lasted somewhat longer, until *ca.* 4,400 calBC, because of the slowly progressing retreat of the summer rains. This is evidenced by 14C-dates from sites in Wadis of the Gilf Kebir. There, and in Ouenat, a fundamental change can be observed in the lithic and ceramic material by *ca.* 4,400 calBC when most other desert regions were abandoned. The most significant new elements of Gilf C (*ca.* 4,400-3,500 cd BC) are the introduction of thin-walled pottery often decorated with fine impressed or incised decorations and the disappearance of microlithic arrow heads (Linstädter 2005). These traditions in the archaeological culture have to be taken into consideration if one starts to debate the distribution of styles, their chronology, or pattern in iconographic influences from one region to another or through time.



**Fig. 2 •** Distribution map of rock art sites in the Western Desert showing the major clusters of rock art. The shift of the climatic drying trend and the resulting loss of desert regions to human subsistence are illustrated by contour lines of synchronous depopulation on the basis of 14C-dates from prehistoric sites (Kuper & Kröppelin 2006). They can be used as a frame of reference for the chronological affiliation of the rock art in the different regions of the Western Desert.

## Distribution of rock art sites

It appears from the distribution map that rock art sites cluster in two areas of the Western Desert (fig. 2). The first cluster is concentrated in the Gilf Kebir and Jebel Ouenat region, the border triangle of the modern states of Egypt, Libya, and Sudan. The second cluster is represented by the oases of Dakhla and Kharga and their vicinity. There are rock art sites in the deep desert, but they are rare. The Ouenat and Gilf Kebir region generally contrasts from the other desert regions in its occurrence of painted rock art and the high amount of pastoral elements. While Ouenat and Gilf Kebir have received great attention due to the colourful paintings, though engravings exist as well,

engraved depictions clearly dominate the rest of Egypt's Western Desert – ignoring here the paintings of the “Wadi el-Obeiyd Cave” at Farafra (Barich 1998) and the “Cave of the hands” between Kharga and the Nile (Darnell 2002: 160-161), both of which are unique among the Western Desert sites. As will be demonstrated in the following chapters, a number of general assumptions on type, distribution and dating of the rock art can be made.

## Rock art between the Nile and the Ouenat/Gilf Kebir

### The core zone of the desert

Most known rock art sites between the Nile Valley and the Ouenat/Gilf Kebir region in Egypt's southwest have been discovered within the oases' depressions or in their immediate vicinities, such as along the escarpment of the Abu Tartur Plateau between Dakhla and Kharga (Winkler 1938; 1939). The number of known sites in considerable distance to the oases and the Nile Valley is very small. The famous “pottery hill” or “Abu Ballas” was the only Western Desert destination with rock art between Dakhla and the Gilf Kebir known for a long time. Ironically, it has turned out that none of the depictions on this hill can be affiliated to prehistoric activity with much certainty, but many to the Late Old Kingdom/First Intermediate Period desert operations of pharaonic Egypt (Förster 2007).

On the one hand, the low density of rock art sites outside the oases may be a result of the relatively limited period of time during which the desert regions received higher humidity and occupation became possible. Moreover, there is a highly mobile subsistence of prehistoric groups and the low population density in the remote desert regions that has to be taken into account as possible reasons. On the other hand, the distribution displays where archaeological investigations have taken place.

What can be reported from the very few regions under study is not more than what occasionally came up during survey campaigns, represented by a very poor level of rock art documentation. There are, however, a number of considerable exceptions, such as the complete recording of the depictions within the Djara cave, halfway

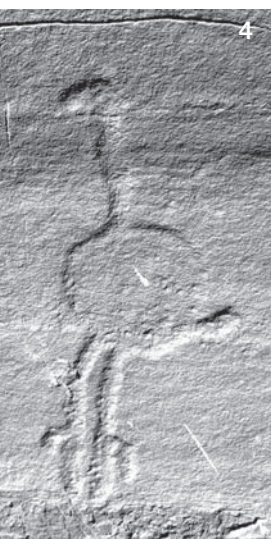
between Asyut and Farafra, during ACACIA's field work between 1998 and 2002 (Classen *et al.* this volume). To the south and southwest of Dakhla Oasis, there are further sites, most which are unpublished due to the very sporadic recordings of rock art sites during the B.O.S. and ACACIA missions, such as the rock depictions at Mudpans (tracings in 1985), Eastpans (survey in 1995/96), Meri and Jaqub (survey and tracings in 2002 and 2006). Finally there is the region around the 4<sup>th</sup> dynasty pharaonic desert outpost at the Chufu hill (“Radjedef's [water] mountain” or Chufu 01/1) some 80 km southwest of Dakhla, which has yielded more than 100 prehistoric rock art sites (pers. comm. Peter Schönfeld). These sites are currently under study by a team from the University of Cologne, which is focusing especially on the documentation and interpretation of the rock art. In light of the relatively poor documentation, it is hard to extract overall trends in the rock art of the Western Desert outside the oases. Carving and pecking are the favoured techniques often combined in the same figures. Moreover, one quickly comes to the conclusion that wild fauna is the central feature, though other elements such as zigzags or wavy lines (often interpreted as snakes) or simple anthropomorphic stick-figures exist. Indeed, it is the cosmos of typical desert or dry savannah animals which dominates the depictions at rock art sites of prehistoric age. Even if most of the species depicted are extinct from the Sahara nowadays, archaeozoology has evidenced that the same

Fig. 3

Two antelopes marked by their horn forms as *Oryx gazella dammah* (“scimitar-horned oryx”) and *Addax nasomaculatus* (spirally twisted) at Abu Tartur 02/29. The rectangular frame enclosing oryx is a most recent application made by treasure hunters to cut out decorated blocks for the antiquities market.

Fig. 4

Ostrich from the eastern panel at Abu Tartur 02/29.

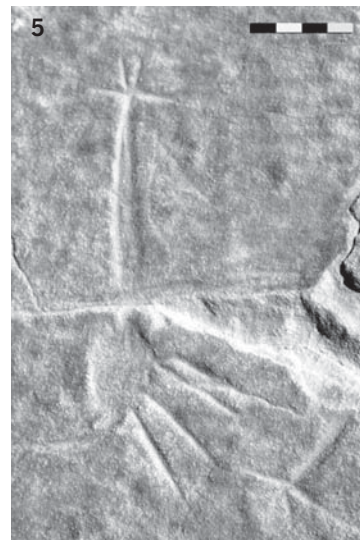


animals depicted in rock art are to be found in excavations of prehistoric camp sites dating to the Holocene humid period. There are various forms of gazelle (*Gazella dorcas*, *Gazella leptoceros*, *Gazella dama*) and antelope (*Oryx gazella dammah*, *Addax nasomaculatus*, *Alcelaphus buselaphus*), which are most frequent among the bone material, but can also be identified in the images (fig. 3). The existence of ostriches, though rare in bone material, is well attested in the many egg shells at nearly all larger habitation sites and appears as well in great number in the rock art (fig. 4).

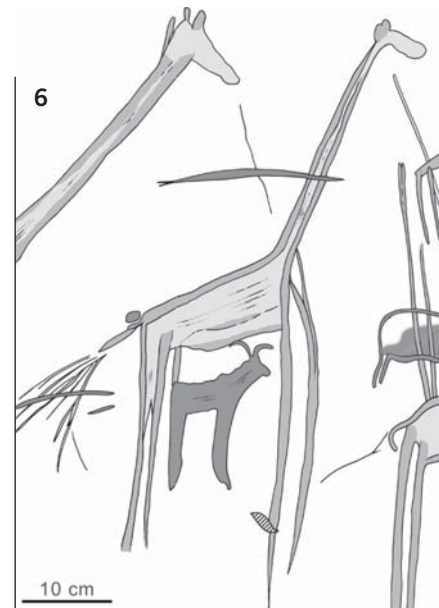
Giraffes have also been depicted (fig. 5). Although a typical savannah animal, it often penetrates the desert in good years, as it can feed on the foliage of trees which are beyond reach of other browsers (cf. Le Quellec *et al.* 2005, 160-161). Although rare, there is some evidence of giraffe from bone records, such as in the Gilf Kebir, and even farther northeast at Mudpans halfway between Dakhla and the Gilf Kebir (Van Neer & Uerpmann 1989).

Therefore, it is not going too far to say that prehistoric people in the Western Desert depicted the wild fauna they virtually saw and hunted, implying the dominance hunting played during the Holocene humid period (Riemer 2007b). The hunter's intimate knowledge of the animals can also be deduced from the way distinct species of game have been depicted in rock art. Emphasis has been put on characteristic attributes which nowadays help to identify the animals. Although hooves and tails were often depicted, the horns of mammals are the most prominent physical attribute that allows further subdivision, often down to the species level, such as in antelope: oryx is shown by the typical pair of elongated horns, while addax is marked by its long twisted horns (fig. 3). The long neck and the tufted tail are attributes found in giraffe depictions (fig. 6); but it is often only the typical silhouette of the head with four short lines representing the ears and the skin-covered short frontal horns which point to giraffe (fig. 7).

Yet for all this, normally there is no further differentiation. Body and legs are rather stereotype representations of quadrupeds in side view and often do not have the correct proportions in body measure. Although judging that the pre-

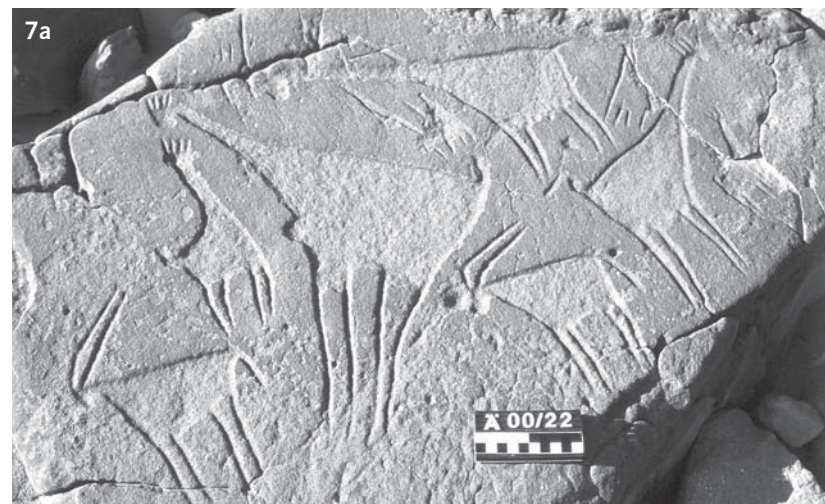
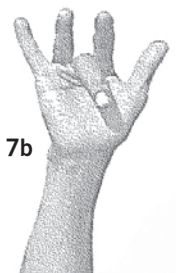


**Fig. 5**  
Giraffe at Mudpans  
85/50-20.



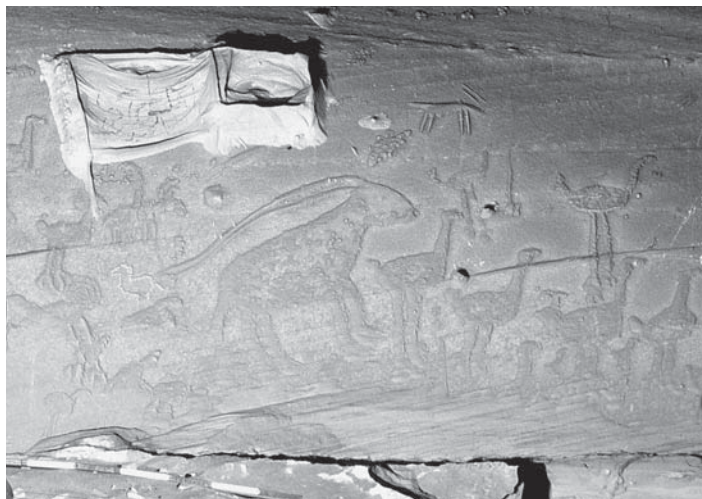
**Fig. 6**  
A group of giraffes  
with tufted tails at  
Meri 06/12.

historic groups were hunters well experienced in observation and reception of specific behaviour, emphasis was neither laid on displaying behaviour in postures or even dynamic representations, nor do we see scenic constellations that refer to some kind of interaction between the figures (Only very few images show human stick-figures connected to animals which may point to hunting activity). Exceptions are clusters of animals, often of the same species, which might refer to the representation of herds. Whatever the meaning of this always static representation was, it is obvious that neither the hunt itself nor the behaviour of the animals were the feature of the rock art.



**Fig. 7 • a.** Antelopes and giraffes on a sandstone block at site Jaqub 00/22. Four strokes upon the head (the ears and the short horns) designate giraffe;

**b.** How to mark a giraffe with minimal effort? A Kalahari hunter signals that he has sighted a giraffe spoor (after a picture in Lewis-Williams & Bannister 1991: 44).



**Fig. 8**

Group of ostriches and antelopes exclusively facing right on the eastern panel of Abu Tartur 02/29. Two blocks of unknown depictions were cut out from the rock face by treasure hunters.

As mentioned above, the rock art comprises the cosmos of the wild fauna that factually existed in the dry savannah environment during the humid phase; but it is not a one-by-one copy of what can be found in the bone records at camp sites. The first restriction is with respect to the smaller animals hunted, such as fennec, sand fox, and hare that are found in great numbers in the archaeozoological records, but have never been found depicted. And second, there is an artificial ranking in the number of depicted animals which contrast to the numbers as evidenced from the bone material. Archaeozoology has shown that small gazelles dominate the bone material among the mammals. Larger species, such as addax and oryx are less frequent among the animal remains, while giraffe is very rare. The opposite appears in the images where antelope and giraffe rank first among the species depicted. This might have something to do with the peculiar role larger and rarer animals played for the hunting community in terms of story telling, status or religious concerns.

Some assumptions can be made on the compositions of panels if more than one animal was depicted. The number of animals applied to an individual site or panel may vary from one to dozens or even hundreds of individuals. Unfor-

tunately, we do not know how many animals were applied to a surface during the same stay at a site. It cannot be excluded that larger panels showing great numbers of animals are the result of repeated events, even if archaeological evidence of multiply occupied habitation sites in the surrounding exist. Superimpositions of figures occur, but they are rare.

In many cases it has been observed that the animal bodies, drawn exclusively in side view, face the same direction, regardless if the animals belong to the same or different species. A good example is a wadi that deeply cut into the foot ridges of the Abu Tartur Plateau escarpment between Dakhla and Kharga. The wadi that once drained down the plateau in southerly direction yielded two panels of animal depictions positioned just opposite along the rock faces of both wadi flanks (listed as site 02/29). The eastern surface comprises a 20 m long panel with more than hundred depictions of animals among which antelope, giraffe and ostrich are dominant (**fig. 8**). With only very few exceptions, they all face to the right hand side (direction south). On the western rock face of the wadi, there is a group of ostriches heading left (again towards south). If the artists' aim was not astronomic orientation, which appears rather unlikely by the many differing orientations at rock art sites elsewhere, the orientation of the rock art could point to the specific landscape orientation of the wadi, which drained southwards. This is the direction in which the animals climbed down the plateau towards the episodic water pools that existed in the southern periphery of the plateau after the rains had set in. Orientation patterns can also be observed at many isolated rocks and hills in the rather plain landscapes of the Nubian Sandstone south and southwest of the oases (**fig. 9**), but here it is hard

**Fig. 9**

Jaqub 02/120 or "giraffes hill" is a typical rock art site on the Nubian Sandstone: a prominent isolated hill (left) bearing sufficient rocky surfaces above the rubble slopes.



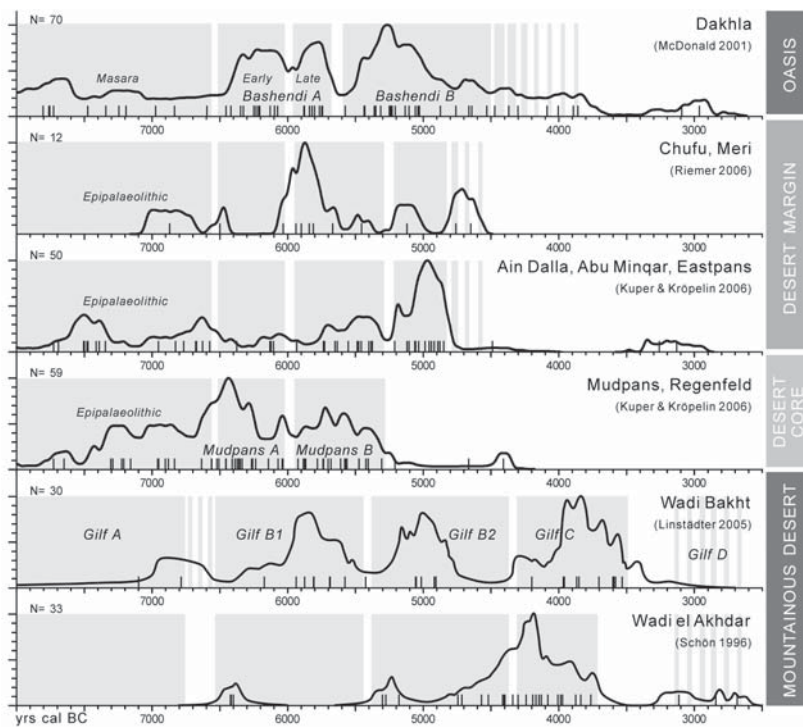


to detect any certain connection to individual landscape formations without any detailed studies of the sites and their landscape.

Rock art in the Western Desert was carried out on bare surfaces often on prominent rocks and hills well visible from the surroundings (the Djara cave is a notable exception from this rule), displaying nothing of what has been termed as “private art” (fig. 9). As habitation sites are nearly exclusively open air sites, there is no direct association with the rock art; but in most areas they can be found in the proximity of rock art. This is why it appears expedient to determine which artefact material is dominant in an area where rock art can be found (McDonald 1990, 43) and to investigate the cultural affiliation and dating of the imagery, given that there are considerable numbers of both rock art and habitation sites.

Most of the rock art sites outside the oases’ depressions were found in the Nubian Sandstone formation, whereas there are hardly any on the Limestone Plateau (fig. 2). The only exception is the Djara cave (Classen *et al.* this volume). However, here it is the rare case of a well-protected position inside a dripstone cave, where depictions were found in several places. Outside the cave, rock art did not remain, or it had never been applied to the rocks, as open-air parietal art neither exists at Djara nor in any other study area on the plateau, although camp sites have been found in great numbers. From the rock art on the Nubian Sandstone, it appears that the existence of sufficient rock surfaces greatly influenced where rock art was applied. Although only very few areas of the Nubian Sandstone desert have been systematically surveyed, it turns out that the pattern of rock art distribution in the Western Desert corresponds to the availability of rock surfaces. This might be the major reason why rock art sites often cluster in areas which feature rocky hills, while other areas dominated by sandsheets, dunes, serir, hamada, or gravel-sunken hills are void of rock art. There are quite a lot of preferable rocks and hills in various patches along the Abu Ballas Scarp-land, which connects Dakhla and Kharga with the Gilf Kebir; and these are the areas where rock art sites have a considerable percentage among the prehistoric remains.

Referring finally to the dating of the deep desert depictions, the occupational history of the desert regions offers a first approach to mark the period during which the rock depictions could have been created. The climatically induced ending of regular rainfall at 5,300 calBC (Fig. 2 & 10) especially affected the core zones of the desert far away of any groundwater supply. In these areas, rock art is mainly represented by the wild fauna as described above.



**Fig. 10** • 14C sequences given in calibrated cumulative histograms indicate the occupational history between Dakhla Oasis and Egypt’s southwest. It is evident from the curves that core desert areas (study areas Mudpans and Regenfeld) became unsuitable for human existence due to the climatic change by ca. 5,300 calBC, while the vicinity of the oases (Ain Dalla; Abu Minqar; Eastpans; Chufu; Meri) were depopulated by ca. 4,500 calBC, and the sequences of the Gilf Kebir Wadis lasted until ca. 3,500 calBC. Ticks on the x-scale represent individual dates. The regional cultural sequences based on pottery and lithic traditions are marked in grey. Sources of date series are given in the figure. Date series are calibrated and arranged using group calibration of CALPAL 2005 ([www.calpal.de](http://www.calpal.de)).

### The oases and their vicinity

The oases, in particular Dakhla and Kharga, and their vicinities have yielded a great number of rock art sites. The first systematic recording goes back to the work of Winkler (1939), and even his basic typology, including the prehistoric styles of “Earliest Hunters” and “Early Oasis Dwellers”, have survived until now. The Polish rock art branch of the Dakhleh Oasis Project (DOP) under the direction of Lech Krzyżaniak started new work at Dakhla in 1985 (Krzyżaniak

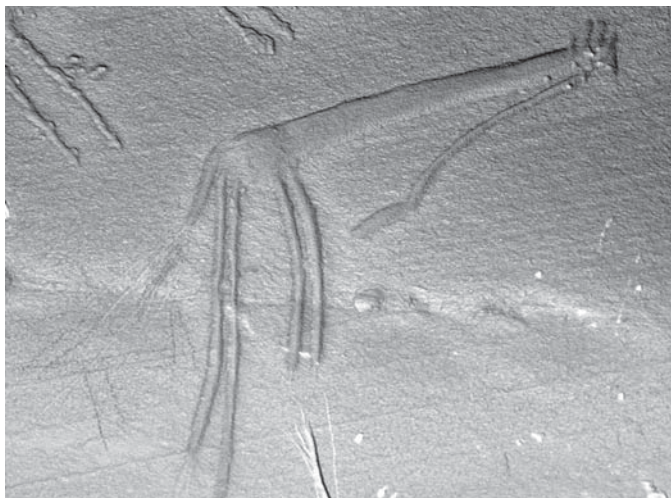
1990; Krzyżaniak & Kroeper 1990). Unfortunately, he passed away before final results could have been published, but work has most recently been continued by Kobusiewicz and the former team.

As with most parts of the Western Desert, the oases' rock art is dominated by engravings. Winkler's "Earliest Hunters" style comprises the wild fauna as can be found outside the oases. It constitutes a great proportion of the oases' rock art, but there are some additional elements to be found here. This is factually a result of the settlement continuation in the oases after the climatically induced end of the desert occupations, primarily based on the fact that the oases receive underground water from the Nubian Aquifer. Depictions of "historical" age are frequent among the corpus of rock art in the oases beginning with the pharaonic occupation during the Old Kingdom. This long-lasting history makes the cultural and chronological affiliation of the oases' rock art even harder, as images of different styles and age often occur in close proximity. Nevertheless, there are also some features of obviously later prehistoric age that can be found in the oases, but not in the deep desert. An important element to be found in the oases are stick-figures designated as hunters with attributes, such as bows, spears, sticks, or lassoes; and animals, in particular giraffes, that have been roped up (**fig. 11**). Winkler has

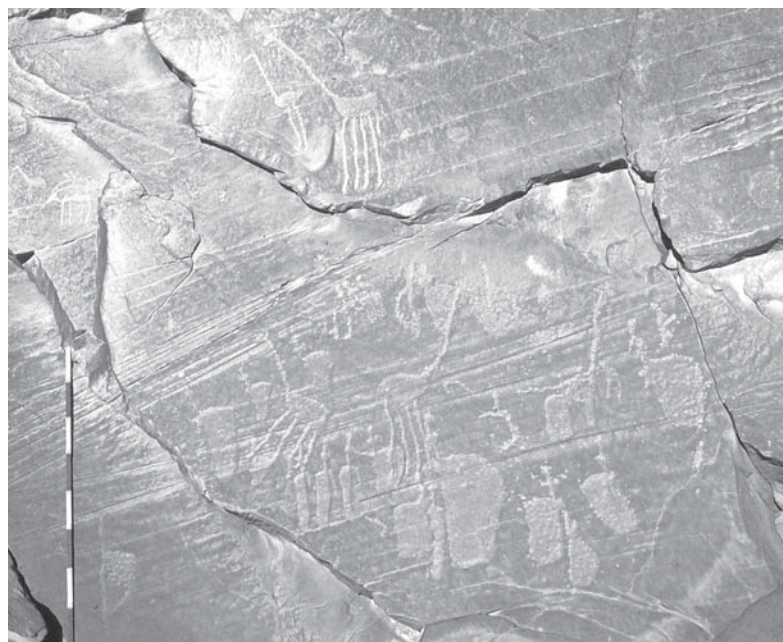
summed up wild animals and hunting elements among the "Earliest Hunters" style.

Winkler's "pregnant women" are another oasis element (Winkler 1939: 27; Krzyżaniak 1987). The figures are characterised by breasts and obese bodies or voluminous skirts often decorated with geometric designs. They constitute Winkler's style of the "Early Oasis Dwellers". This story becomes even more interesting since "pregnant women" have been found at some places in the wider vicinity of the oases during the recent years, such as at the so-called "Ladies Hill" (listed as site Meri 99/36; Riemer 2006: 500) (**fig. 12**) and at numerous hills in the Chufu area, both which are situated between 50 and 80 km southwest of Dakhla. This may point to a dating of these elements in the later prehistory when the core zones of the desert were lost to human subsistence, but environmental conditions had not yet fully reached the present level of hyper-aridity. In terms of absolute chronology the first drying spell at 5,300 calBC may form the terminus post quem for the rock art. It is of importance that, in contrast to other regions, the area of Chufu and Meri has yielded some dates and artefacts from the late prehistory (**fig. 10**). Two dates on charcoal from the open air camp site 02/17 centring at 4,700 calBC (Riemer 2006) can be paralleled to the Bashendi B unit in Dakhla (McDonald 2001). There are also

**Fig. 11**  
Part of the eastern panel at Abu Tartur 02/29 showing the "lassoed giraffe".



**Fig. 12**  
Female figures (Winkler's "pregnant women"), together with giraffe at "Ladies Hill" (Meri 99/36).



some pottery finds associated with the Sheikh Muftah unit, but they are few and display only very sporadic and short-termed activities during the 4<sup>th</sup> or 3<sup>rd</sup> millennium.

The so-called “water-mountain” is another dominating motif among the rock depictions in the Chufu area. It consists of an incised rectangle with two wings on the upper left and right filled with parallel horizontal zigzag lines – what Kuhlmann (2002: 135) attributed to a combination of the hieroglyphic signs for “mountain” and “water”. The remains of a “water mountain” at the Early Old Kingdom outpost of Chufu 01/1 enclosing in it the name of the 4<sup>th</sup> dynasty ruler Radjedef (Kuhlmann 2002: 135; Kuper & Förster 2003) seems to provide the preliminary hieroglyphic reading as “water mountain”, but, as already noted by Kuhlmann (2002: 135, footnote 13), “the hill-signs belong to Protodynastic rather than Pharaonic sign inventory”. In fact, the name of the king usurped the symbol after the zigzags had been sanded down and the 4<sup>th</sup> dynasty can only be seen as a terminus ante quem for the dating of the water mountain symbol (Kröpelin & Kuper 2006-2007).

## Rock art of Ouenat and Gilf Kebir

The region of Jebel Ouenat and Gilf Kebir is unique in the rock art traditions of the Western Desert. It is the dominance of paintings that separates it from the rock art farther east. Moreover, a great range of motifs and styles occur in the paintings: Animals as well as humans have been depicted, often combined in vivid sceneries that may display hunting and domestic life, as well as creatures and scenes of enigmatic character often in close conjunction with humans. Although hunters and their equipment have been depicted, it is the great amount of cattle and the non-disputable character of pastoral life depicted that contrast with the rest of the Western Desert rock art.

Diversity in the paintings has even increased with the rapidly growing number of new discoveries, which now allows for some assumptions about regional clusters of styles (Zboray 2005; Le Quellec *et al.* 2005). Moreover, superimposi-

tions now exist at a number of key sites, such as Karkur Talh West 21/A (Ouenat) and the “Cave of the Beasts” (Wadi Sora, Gilf Kebir), which has been used to create outlines of the relative chronologies of the styles. According to Zboray (2005) and Le Quellec *et al.* (2005), the engraved wild savannah fauna predates the paintings; the wild fauna is overlain by hand stencils and the “Wadi Sora style” in the Gilf Kebir, and “Ouenat Roundheads” and small human figures in Ouenat, displaced in both areas by cattle herders which appear to form a horizon of pastoral images.

### Approaches to dating

Dating the rock art of Ouenat and Gilf Kebir remains difficult, as there are no direct or context dates, though some important assumptions have been drawn up mainly based on the most recent evidence in the dating of the climatic and occupational history of the region (Zboray 2005; Le Quellec *et al.* 2005). The latter produced a kind of framework for absolute dating, but has left some inconsistencies in the dates and data used. It is therefore time to check the individual dating sources and to reassess some of the dates given in the literature.

The most important dating approaches can be listed as follows (*ibid.*):

- (1) The onset of humid conditions at the beginning of the early Holocene and the resulting re-occupation of the Eastern Sahara create a terminus post quem for the rock art;
- (2) The introduction of domestic animals and pastoralism to the region may constitute a terminus post quem for the pastoral rock art;
- (3) The climatic shift towards hyper-aridity and the resulting close of the occupational history is suggested to give a terminus ante quem for the time when art could have been applied to the rocks.

While the beginning of the settlement history of the Eastern Sahara around 9,000 calBC or slightly later remains undisputable, there are some reassessments needed for the other arguments listed above.

### Pastoralism and pastoral rock art

The pastoral elements in the rock art of Ouenat and Gilf Kebir not only comprise the depictions of domesticated cattle and ovicaprines,

but also vivid scenes of a subsistence fully based on pastoralism. While Le Quellec (2008: 35) argues that the “florescence of regional rock art is dated to around 4500 +/- 500 [cal] BC”, Le Quellec & Huyge (2008) now place the pastoral images in the 4<sup>th</sup> millennium calBC.

In the archaeology of the region, the evidence of domesticated animals is, however, rather poor. A 14C-date on ostrich egg shells around 5,900 calBC associated to cattle bones collected by the Combined Prehistoric Expedition in Wadi Bakht (Wendorf & Schild 1980: 219) has been cited as the earliest evidence of domesticated animals in the region. In light of the B.O.S. and ACACIA work in Wadi Bakht between 1980 and 2000, the connection of the date with the bones remains questionable, as the place where the material was collected yielded artefacts and dates from the early Holocene to the end of the occupation history in Wadi Bakht (Linstädter 2005).

Le Quellec *et al.* (2005: 335), referring to dating evidence of earliest domesticated animals elsewhere in the Eastern and Central Sahara, finally come to the conclusion that a date of “5500 +/- 300” years calBC is a realistic terminus post quem for pastoral life in the Ouenat/Gilf Kebir region. Some more recent archaeozoological evidence from Djara and other sites in the Western Desert can be added, which at least provide a dating around 6,000 calBC or slightly later (Riemer 2007b). Most of these dates are connected to bone remains of goat and/or sheep, in particular at desert sites outside the oases. The crucial point, however, is that most sites in the Western Desert yielded only very small amounts of domesticates, while hunting of wild animals remained the primary subsistence strategy. This is basically supported by the high proportion of arrow heads in tool assemblages which does not show any significant decrease at sites comprising domesticated animals. It is, therefore, of importance for any further discussion to separate the earliest introduction of domesticated animals, on the one hand, from the beginning of a full pastoral economy, on the other. The hunter-gatherers of the 6<sup>th</sup> millennium calBC displaying nothing of the socio-economic culture of a fully adopted herding subsistence can, at best, be labelled as “pastro-foragers” (Riemer 2007b).

Due to the lack of sufficient archaeozoological data from the Ouenat and Gilf Kebir, it cannot be argued with certainty, whether the region totally followed the development of the Western Desert; but from the frequency of microlithic arrow heads during the phase Gilf B, *ca.* 6,600-4,400 calBC (Linstädter 2005), it can be subsumed that hunting ranked first in the subsistence during this period. Taking into account that pastoralism does not appear prior to the Gilf C phase starting at *ca.* 4,400 calBC, the latter which did not yield distinctive arrow heads, a full-fledged pastoral economy appears not to have been introduced before the second half of the 5<sup>th</sup> millennium calBC in the region. Judging from this, it cannot be argued for a starting point of the pastoral style in the rock art prior to *ca.* 4,400 calBC.

### **Climatic deterioration and termination of human occupation**

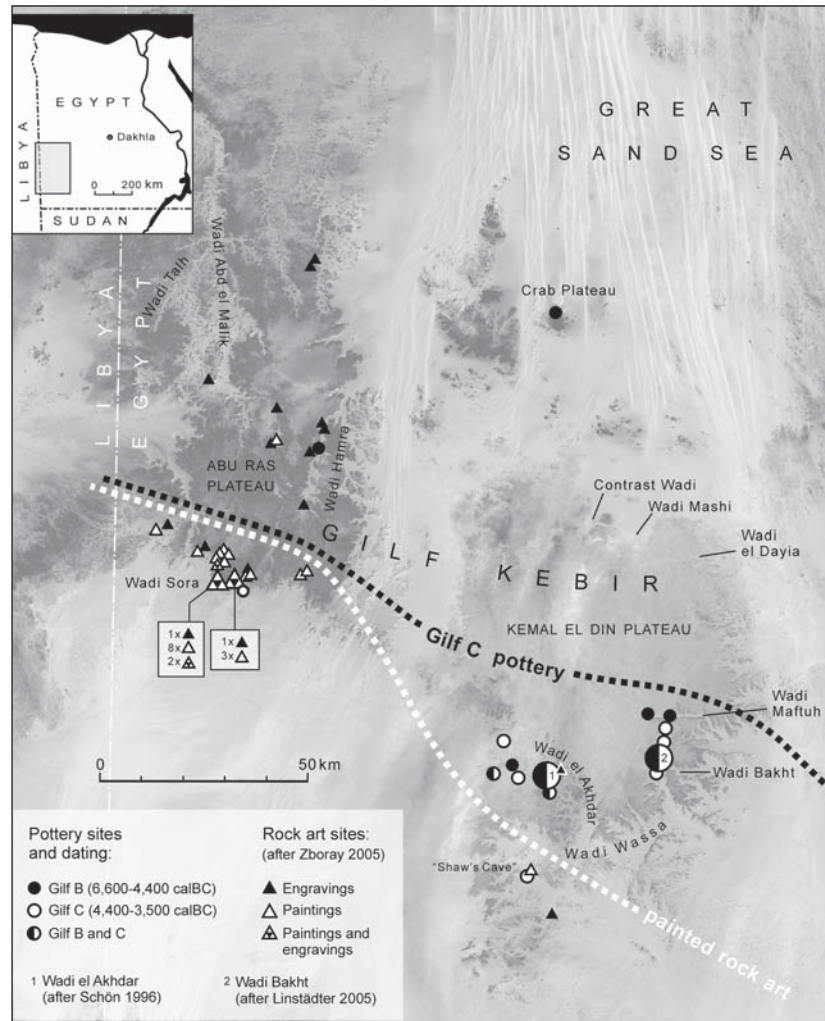
The second “event” in terms of absolute chronology that seems to be defined with reasonable certainty, is the end of the Holocene humid phase and the resulting loss of the Sahara for human subsistence. While a number of desert areas farther north became unsuitable for human existence by *ca.* 5,300 calBC, followed by a second wave of depopulations around 4,500 calBC, the Ouenat and Gilf Kebir in Egypt’s southwest received rains significantly longer due the southwards retreat of the monsoonal rain belt. Although the climatic conditions in the Gilf Kebir tended to moderate aridity around 4,200 calBC (evidenced by a 14C-date from the bottom of the homogenous playa top layer in the Wadi Bakht stratigraphy), Linstädter & Kröpelin (2004) argue from the base of archaeobotanical data for a moderate increase of Mediterranean winter rains during the phase Gilf C that allowed a (seasonal) herding subsistence on the Gilf plateau surface.

The end of regular rainfall can be dated by two sources of varying significance. At first, there is the stratigraphical evidence from the Wadi Bakht playa. Although no absolute date exists from the top of the playa sediments, extrapolated sedimentation rates indicate the stop of playa sedimentation between *ca.* 3,800

and 3,500 calBC (ibid.). It should be noted, however, that the stop of playa sedimentation in Wadi Bakht is only indirectly linked to the progressing aridity of the climate, as it primarily represents the breaking of the blocking dune that had dammed the water of the wadi for several millennia during the humid phase. The collapse of the dam, however, directly resulted in the end of human occupation in Wadi Bakht, which stopped by *ca.* 3,500 calBC (fig. 10) (Linstädter 2005). A similar situation appears in the neighbouring Wadi el Akhdar where habitation sites around the playa existed until *ca.* 3,700 calBC (Schön 1996). To summarise, it seems reasonable to suggest that the end of the occupation at 3,500 and 3,700 calBC (fig. 11), respectively, indicate the drying of the playa pools in Wadi Bakht and Wadi el Akhdar. Likewise, the breaking of the blocking dunes in the Wadis can be linked to a progressing trans-Saharan drying trend evidenced in Saharan and marine archives elsewhere around 3,500/3,600 calBC, such as the increase in aeolian dust in core 658c off Cape Blanc, Mauritania (deMenocal *et al.* 2000) and the switch to semi-desert environmental taxa and increase of organic matter deposition in Lake Yoa, Chad (Kröpelin *et al.* 2008). The end of the occupational history in the Gilf Kebir at 3,500 calBC may serve as a proxy for the ending of pastoral rock art as well (fig. 2). However, there are some arguments that point to the assumption that the Gilf C pastoral culture survived somewhat longer south of the Gilf Kebir, which would support Zboray's (2005) proposed ending date for Ouenat around 3,000 calBC. The thin-walled pottery with impressed or incised decorations characteristic for the phase Gilf C in Wadi el Akhdar and Wadi Bakht is also known from Ouenat (Menardi Noguera *et al.* 2005: 113; Linstädter 2007). Moreover, the 2005 survey by the University of Cologne in western (Libyan) Ouenat shows that the bulk of habitation sites comprising potsherds can be affiliated to this ceramic tradition. Although there are no absolute dates in close conjunction to archaeological material from Ouenat, there are a number of dates from A-group contexts in the Laqyia region in northern Sudan where pottery decorated with patterns in the Gilf C tradition exist (such as

the herring bone motif), which strongly suggest a dating between 3,500 and 3,000 calBC (Kuper 1995; Lange 2006). The same appears for a yet unpublished site at Jebel Kamil west-northwest of Ouenat (fig. 2), where 14C-dates around 3,000 calBC are connected with the characteristic thin-walled and decorated pottery of Gilf C.

It is therefore suggested that the Gilf C pottery is closely connected to the pastoralists' culture, which probably created the pastoral rock art in the Gilf Kebir/Ouenat between approximately 4,400 and 3,500/3,000 calBC. The same appears from a more detailed mapping of the distribution of Gilf C pottery sites and painted rock art sites in the Gilf Kebir region (fig. 13), which



**Fig. 13** • Distribution of pottery affiliated to certain phases of the Gilf Kebir chronology, and rock art sites in the Gilf Kebir region. The distribution pattern of pottery of phase Gilf C, *ca.* 4,400-3,500 calBC, and the painted rock art show an overlapping in the northern spread of the traditions which may point to the interpretation that painted rock can be dated preferably to the same period of time.

illustrates a close overlapping in the northernmost spread of both phenomena along the southern fringes of the Gilf massif. The only exceptions are the Wadis Bakht and el Akhdar for which no painted rock art site can be listed. The reason why these nuclei of seasonal habitations did not yield painted rock art is open to debate. In lack of a well-grounded explanation, one may refer to the lack of sufficient rock surfaces along the gravel-sunken slopes of the Wadis; if one does not claim the other extreme: That the paintings post-date the terminus of settlement activity in the Wadis around 3,500 calBC.

## Perspectives

The discovery of unknown rock art sites is the most thrilling attraction for many people visiting the Western Desert; but it is only the beginning of the archaeological enterprise. In addition, it is not the most important part facing the meticulous analytical documentation and interpretation of depictions, objects, and their special relations on a site which have to be done before we are able to understand what these things mean for human history. Since the days of Rhotert, Winkler and others, only very few attempts have been made in the systematic recording of rock art. In viewing needs and possibilities of any future research, a number of important aspects appear:

(1) Chronology is one of the most pressing aspects. Although a vague outline of the chronological frame of rock art in the various regions has been expressed in this paper and elsewhere, we have to face the lack of any direct dating evidence of rock art or archaeological contexts that can be linked to the rock art.

(2) Although the newly discovered rock art sites in the Western Desert have immensely pushed up the corpus of known sites, more intensive field work on selected sites is needed. Professional rock art research can now use the unique chance to select those sites which appear to be sufficient for further detail studies facing the various aspects in modern rock art research. Such approaches may include systematic surveys as well as the careful analysis of individual sites, both implying descrip-

tive documentation as well as a focus on relevant questions in dating and interpretation of the many expressions of rock art.

(3) Archaeology has to integrate rock art research into concepts that claim to study the entire prehistoric heritage. Questions of dating and interpretation of the rock art can only be answered if the context being studied includes habitation sites, pottery and lithic material, the subsistence and the environmental background.

(4) Moreover, any future research has to deal with the rapidly growing tourism in the Western Desert that endangers the preservation of the sites. Concepts of sustainable site protection are integral to any future investigation, including the physical protection of sites as well as rather psychological strategies, such as training and teaching of desert guides and tourists. At the most famous sites, vulnerable due to repeated visits, scientific documentation is needed as a complementary strategy and perhaps as the last chance to preserve the historical information those sites can offer. In this view, research strategies have to be guided by adequate concepts that combine protection strategies as well as research goals.

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