



ROYAL ACADEMY FOR OVERSEAS SCIENCES

**THE SIGNS OF WHICH TIMES?
CHRONOLOGICAL AND PALAEOENVIRONMENTAL
ISSUES IN THE ROCK ART OF NORTHERN AFRICA**

Guest Editors: D. HUYGE, F. VAN NOTEN & D. SWINNE

2012



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International Colloquium

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Brussels, 3-5 June, 2010

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Introduction

by

Francis VAN NOTEN*

Madame la Présidente,
Madame la Secrétaire perpétuelle,
Mesdames et Messieurs,

Je suis heureux de pouvoir dire quelques mots à l'occasion de l'ouverture de notre colloque "The Signs of Which Times? Chronological and Palaeoenvironmental Issues in the Rock Art of Northern Africa".

Some years ago, Dirk Huyge and myself conceived the idea of organizing an international conference on the rock art of northern Africa. Dirk, more involved with the Nile Valley and the Eastern Desert of Egypt, proposed to restrict the planned colloquium to the region he knows so well. I thought it would be more appropriate to have the whole of northern Africa as a possible subject. After discussion with the Permanent Secretary and the relevant committee within the Royal Academy for Overseas Sciences, we finally agreed to deal with the larger region. We also agreed on the title you know by now.

As I entered the subject of rock art more or less by accident more than forty years ago, I will be brief on the actual theme of the meeting. I do not at all consider myself an expert in this particular field. A good friend and colleague at the Royal Academy told me that, in introductions such as this one, one should not talk about oneself. Nevertheless, I will do that.

In the winter of 1968-69, a combined Belgian military-scientific multidisciplinary expedition was undertaken in the Libyan desert. As we then lived in pre-Khadafi times, it was still possible to organize the expedition without great difficulty. The scientific team was composed of a botanist, a geologist, a zoologist, two Quaternary geologists and an archaeologist (myself). The

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main geographical focus was Jebel Uweinat. Well known for its rock art for a long time, this Jebel had been scientifically “unknown” territory in any other way. As I was there in the first place in order to do archaeological research, rock art was not my main interest. Archaeologists at that time were still very much concerned with chronology, and, from that point of view, rock art did not have many clues to offer. Our surveys, however, led to the rediscovery and discovery of a large number of rock art sites. All of us became more and more aware of the enormous richness of Jebel Uweinat and Gilf Kebir. We took endless series of pictures of the art. But how were these paintings and engravings to be understood? Could the variability among them be seen as the result of chronological “evolution”? Did they reflect the way in which the inhabitants of the area responded to a changing environment? Or were these differences from one location to another the reflection of the presence of different “ethnographical” groups?

I am very pleased that this colloquium focuses on aspects of chronology and palaeoenvironment specifically. These approaches must make it possible to better understand the people who lived in prehistoric and early historic northern Africa and who produced these marvellous works of art we all know so well. The protection of this art is also one of our major concerns, but our initiative at that time had no result. I hope this topic will also be duly discussed during the meeting.

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North Africa's Place in Rock Art Research

by

Paul BAHN*

KEYWORDS. — Early Discoveries; Petroglyphs; Pictographs; Copying; Casting; Photography; Damage; Vandalism.

SUMMARY. — The presentation will focus on the history of rock art research in general, with particular reference to events in North Africa, starting with the first discoveries by the world of scholarship; the earliest art known in the region at present; the problems of dating — from stylistic comparisons and the range of fauna depicted to attempts involving patination, archaeological levels in potential association with the art, archaeological levels that actually cover art, and most recently some examples of direct dating of deposits on the rock surface, or of sediments masking figures; the history of recording by stampings, tracings and photography; and finally current concerns regarding conservation, such as tourist access, the erection of unsuitable fences (as in the Libyan desert), former chalking (*e.g.* Qurta, on the Nile), new graffiti (notably in the western Sahara and Libya), and deliberate destruction (as at el-Hosh/Abu Tanqura Bahari in Egypt), as well as the dangers of excessive publicity, as with the famous Dabbous giraffes (Niger).

Introduction: Rock Art in Africa

It was the 18th century which saw the first discoveries of rock art in Africa by the world of Western scholarship (BAHN 1998). The earliest reference is from 1721, when an ecclesiastic in the Portuguese colony of Mozambique mentioned paintings of animals on rocks in a report to the Royal Academy of History in Lisbon. In 1752, explorers led by ensign August Frederick Beutler, when more than two hundred miles out from their Cape Town base, noticed rock paintings in the valley of the Great Fish River in the Eastern Cape, which they recognized to be the work of the “Little Chinese” (Bushmen).

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The first known copies of rock art were made in 1777/78 on an expedition to the Sneeuwbergen (Snowy Mountains) of the Eastern Cape led by Governor Joachim van Plettenberg. They were made by Colonel Robert Jacob Gordon and his draughtsman servant Johannes Schumacher — the latter had already copied probable petroglyphs or rock paintings (he called them “teekeningen”) in 1776 on an expedition to the south or west area of the Cape led by H. Swellenberg.

North-African Engravings

Rock images were observed by Europeans in North Africa, the Sahara, and the Nile Valley by the mid-19th century. Their weathered appearance, alien style and exotic subjects suggested that they had to be of some antiquity and had possible associations with vanished peoples. The first discoveries of rock art in these regions were made in 1847 by two soldiers (Dr François Félix Jacquot and Captain Kook of the Foreign Legion), part of General Cavaignac’s expedition against the Ksour tribes (FLAMAND 1921). They reported large engravings of animals (elephants, lions, antelopes, ostriches, gazelles) and of humans with bows at Thyout and Moghar-et-Tathani in the Ksour Mountains (southern Oran, Algeria). Thanks to the costumes and scenes depicted, they had no doubt whatsoever that these were ancient works, dating from an era before the Arab invasion but after the time of Carthage (in 1847 the concept of prehistory had not yet become established). They assumed them to be the work of idolaters believing in fetishes, who had been brought to the oases of southern Oran in caravan expeditions from the south of Africa, and they believed the artists to have been Tuareg.

Jacquot published two engravings of the rock figures (“a family out hunting” and “a warrior’s lesson to his son”) (fig. 1a, b)*, but noted that others were of appalling indecency, which would prevent them ever emerging from his files: “One can see, in full view and with no secrecy, the unnatural intercourse that brought the storm of fire down on the cities whose names you know well; a hideous coupling... the strange perversion of desire which, according to Theocritus, brought together the shepherds of Sicily and their goats, also has its analogues at Thyout, only here that peaceful animal is replaced by the lion”.

In 1848, J.-J. Ampère mentioned the engravings of Nubia on the banks of the Nile in his “Voyage et Recherches en Egypte et en Nubie”, as did the

* Cf. figures at the end of the text (pp. 20-25).

1842/45 expedition of Karl Lepsius. Ampère focused on the engraved rocks on the west bank near Philae: “Ces signes ne sont point des hiéroglyphes et ne ressemblent aux lettres d’aucun alphabet connu”. Among the figures he noticed the “symbol of life”, and various animals “grotesquely drawn” — lions, giraffes, elephants, ostriches. He also mentioned some not very artistic depictions of humans, often indecent.

In 1849, the German explorer Heinrich Barth set out from Tripoli for a four-year trip; he became the first to discover a large number of rock engravings, including the now famous site of Tilizzaghen (Telizzharen), and the first engravings in Fezzan, Libya. He included some reproductions in a series of five volumes published in Gotha in 1857 and 1858 (“Reisen und Entdeckungen in Nord und Central Afrika in den Jahren 1849 bis 1855”), and noted that some parts of the figures seemed unfinished, especially the lower extremities of animals’ limbs. He interpreted some scenes as allegories, and noted differences in quality and technique between engravings which he saw as of chronological significance. The fauna represented, especially the herds of cattle, led him to the conclusion that climatic conditions had once been very different in these desert regions.

For example, Barth published (1857/58) a drawing of a rock art panel in its landscape at the Wadi Telisaghé (fig. 2a), together with a detailed description of three sets of images:

1) “Scarcely had we pitched our tents, when we became aware that the (Wadi Telísaghé) valley contained some remarkable sculptures deserving our particular attention... the sandstone blocks which studded it were covered with drawings representing various subjects, more or less in a state of preservation. With no pretensions to be regarded as finished sculptures, they are made with a firm and steady hand, well accustomed to such work, and, being cut to a great depth, bore a totally different character from what is generally met with in these tracts. The most interesting sculpture... represents a group of three individuals... To the left is seen a tall human figure, with the head of a peculiar kind of bull, with long horns turned forward and broken at the point; instead of the right arm he has a peculiar organ terminating like an oar, while in the left hand he carries an arrow and a bow — at least such is the appearance, though it might be mistaken for a shield: between his legs a long tail is seen hanging down from his slender body. The posture of this figure is bent forward, and all its movements are well represented. Opposite to this curious individual is another one of not less remarkable character, but of smaller proportions, entirely human as far up as the shoulders, while the head is that of an animal which reminds us of the Egyptian ibis, without

being identical with it. The small pointed head is furnished with three ears, or with a pair of ears and some other excrescence, and beyond with a sort of hood... This figure likewise has a bow in its right hand, but, as it would seem, no arrow, while the left hand is turned away from the body. Between these two half-figures, which are in a hostile attitude, is a bullock, small in proportion to the adjacent lineaments of the human figure, but chiselled with the same care and the same skilful hand, with the only exception that the feet are omitted, the legs terminating in points... There is another peculiarity about this figure, the upper part of the bull, by some accident, having been hollowed out, while in general all the inner part between the deeply-chiselled outlines of these sculptures is left in high relief. The animal is turned with its back towards the figure on the right [*sic*], whose bow it seems about to break. The block on which it was sculptured was about four feet in breadth and three in height. It was lying loose on the top of the cliff. No barbarian could have graven the lines with such astonishing firmness, and given to all the figures the light, natural shape which they exhibit... the sculptures have nothing in them of a Roman character. Some few particulars call to mind the Egyptian sculptures. But on the whole it seems to be a representation of a subject taken from the native mythology... two divinities disputing over a sacrifice” (fig. 2b).

2) “On the cliff itself there is another sculpture on a large block which, now that the western end is broken off, is about twelve feet long and five feet high... It represents a dense group of oxen in a great variety of positions, but all moving towards the right... Some of these bulls are admirably executed, and with a fidelity which can scarcely be accounted for, unless we suppose that the artist had before his eyes the animals which he chiselled... The only defect... is in the feet, which... have been negligently treated” (fig. 2c).

3) “Not far off (we) found another sculptured stone representing... an ox jumping through or falling into a ring or hoop, which I should suppose to have an allegorical meaning, or to represent a sacrifice, rather than... to represent any games of the circus”.

A Frenchman, Henri Duveyrier, set out in 1859 on a journey which took him to western Tripolitania and the eastern Algerian Sahara; in 1865, he published copies of rock engravings in Tassili in his “Les Touaregs du Nord”, and concurred with Barth about allegorical interpretations and about the existence in earlier times of abundant pastures and water resources. Farther east, in 1869, among the Tuareg of Tibesti, Dr Nachtigal noted the presence of rock engravings of bovids, camels and humans (in his “Sahara und Sudan”, 1879). To the west, in Algeria, an engraved rock was published

by Captain Charles de Vigneral in his “Ruines romaines de l’Algérie” of 1867. His somewhat incorrect drawing included humans, bovids, dogs and an ostrich.

Rabbi Mardokhai-Abi-Sourour, on a journey of exploration in south-west Morocco in 1875, discovered numerous rocks bearing animal figures and inscriptions, and was the first explorer, in this part of the world at least, to make a stamped copy by pressing a thin layer of clay, contained between two sheets of paper, onto the reliefs and depressions of the rock surface (by coincidence, in 1874-78 the famous Finnish linguist and ethnographer Matthias Alexander Castren was working in the Yenisei valley, Siberia, and likewise developed a mechanical stamping method for copying rock drawings and inscriptions; BAHN 1998). Some sixty-eight stamps, including forty-six of engravings, were sent by the Rabbi to the *Société de Géographie de Paris*, where they were studied by Duveyrier. They featured depictions of elephant and rhinoceros, as well as horse, giraffe, fox, birds, etc., as well as objects such as harnesses and shields. Duveyrier noted a difference between lines drawn deeply and clearly, made with a metal point, and lines that are broad and blurred, made by percussion or rubbing with a hard stone, though he attributed everything to a single period — inevitably, working from a uniform stamped impression, he could not see differences in patinas and weathering. Rejecting an attribution to modern people, Portuguese merchants, Romans and Phoenicians, he eventually ascribed the figures to an indigenous black race, the “Ethiopians-Daratites” mentioned by the Romans.

It was only in 1882 when Dr V. Reboud became the first person to suggest that the North-African engravings might be prehistoric; and in 1889, Dr Bonnet of the Paris Natural History Museum, on a botanical expedition in Algeria, was the first to note the presence of worked flint tools by some of the rock art sites (BONNET 1889). He produced some exceptionally accurate copies of the engravings of Moghar-et-Tathani, and was less shocked than Jacquot (see above) by what he saw: “à la vérité quelques chasseurs exhibent effrontément de monstrueux phallus, mais dans la plupart des cas il est facile de reconnaître, par la forme et la couleur du trait, que ces organes sont des additions postérieures au reste de la figure”. Bonnet is especially important for his archaeological observations: he noticed prehistoric weapons and tools around the engraved rocks, on the ground surface — worked flints, arrowheads, knives, scrapers, etc. — and he supposed that it was probably with a fragment of worked flint that “the primitive artists engraved this gigantic page of their history”. He was thus able to concur with Reboud that the figures were prehistoric, particularly those depicting pachyderms or ruminants which had already left this region for Central Africa by Roman times.

Pictographs

Rock paintings (as opposed to engravings and petroglyphs) were first reported in North Africa in 1933 when a camel-corps officer, Lieutenant Charles Brenans, ventured into a deep canyon of the Tassili n'Ajjer during a police operation (BAHN 1998, 2010). As he rode slowly on his camel, he saw strange figures on the cliffs of the wadi: the animal and human engravings of Oued Djerat. He also saw very delicate paintings, the very first to be seen by Europeans. He was guided by Machar Djebrine Ag Mohammed, a Tuareg, and he documented some of the paintings between 1933 and 1938. It was Brenans who initiated the French explorer Henri Lhote into prehistory, and he entrusted his excellent drawings of the rock art to Lhote, who took them to Paris and passed them to the abbé Breuil (LAJOUX 2006, pp. 128-29).

Lhote was one of the most famous of the 'amateurs' involved in making rock art known to the public. Indeed, through his popular books (*e.g.* LHOTE 1958) and media coverage his name became so synonymous with the rock paintings of Algeria's Tassili that he is often assumed to be their discoverer. Brenans was warned by his military commander that Lhote was not held in high regard because of his behaviour in the Hoggar, and indeed that he was considered a parasite who profited from the work of others (LAJOUX 2006, p. 131). There are, of course, numerous examples in archaeology as a whole, and more particularly in rock art (including some notable examples in recent years), of individuals who have become rich and famous by exploiting the discoveries of others, travelling far and wide, and presenting the finds in illustrated lectures and popular books, while the actual discoverers are marginalized or completely ignored. That Lhote was a pioneer of this kind of exploitation is made clear in a revealing article by Jean-Dominique Lajoux, who was a photographer on his Saharan expeditions (*ibid.*).

Lajoux tells us that Lhote was entirely dependent on Djebrine, his local Tuareg guide who knew the Tassili like the back of his hand. Lhote himself had absolutely no sense of direction, and was incapable of moving around the landscape without getting hopelessly lost. Contrary to claims by Lhote that he himself discovered certain sites or panels, Lajoux states categorically (*ibid.*, p. 132) that he never found a single one, but was simply taken by Djebrine to all those already discovered and recorded by Brenans and others. Moreover, it seems that rock art was simply the pretext for gathering money from sponsors to mount Saharan expeditions which provided material for the adventures — some true, others imaginary — which fill his books and articles. According to Lajoux, Lhote himself spent as little time in the desert as possible — just a few weeks per year, and never in the summer —,

frequently returning to France and leaving his team to do all the work of copying.

These working conditions inevitably led to a certain amount of mischief, and Lajoux tells of four major copied panels which were simply made up, while others were jokes to test Lhote's judgement, but unfortunately he took the copies seriously (*ibid.*, pp. 134-35). The most notorious example is that of "bird-headed Egyptian goddess" figures (see HACHID 1998, p. 187) which Lhote published in his books, even leaving them in later editions after the culprits had admitted their guilt! In addition, some copies of human figures were given the profiles of French film stars of the time such as Jean Gabin or Edith Piaf!

Besides, some of the copying methods used by Lhote's team were so damaging that nowadays they horrify rock art researchers, but in Lajoux's opinion (*ibid.*, p. 147) rock art was of far less importance than the privileges and power which these masterpieces could bring to an individual — once again, a phenomenon which is still with us. What is even worse is that Lhote made a vast amount of money from this work, which was not only damaging to the art but also yielded no scientific results.

Being a photographer, Lajoux wonders why Lhote decided on commissioning watercolour copies of figures which could have been — and subsequently have been — far more reliably recorded in photographs. Indeed, Lhote actually forbade him to photograph the paintings (LAJOUX 2006, p. 138). Yet, there were no lighting problems, nor any problem of standing far enough away to take photographs. Some painted figures were very faded, and were moistened for the copiers to see them, but this could just as easily have been done for photographs.

Lhote seems to have held photography in contempt, but had great admiration for artists, and indeed some of the copiers on his team were highly talented. He loved to have actual-size copies made on paper, so that, at his public talks, great sheets of paper, 4 m in height and 6 to 10 m in length, could be unrolled by two assistants. One problem is that the six or seven Lhote expeditions produced more than a thousand copies on rolls of paper, whose transportation and storage posed major problems, as did the later retrieval of a particular copy from the pile (*ibid.*, pp. 138-40)! They were numbered, but there was apparently no detailed inventory of them. Moreover, in order to have them published, it was necessary to photograph them, and for copies of such size this is often far more difficult than photographing the originals on the rocks!

Lajoux also points out that no copy is perfect, and that photographs often reveal details missed by the copier. Indeed, he claims that a great deal of

subjectivity crept into the copies made for Lhote, as almost invisible or highly degraded images led to the copiers using some imagination or wishful thinking, linking spots of colour to make figures which they thought they could see. Moreover, the really difficult multiphase panels, with numerous complex superimpositions, were not copied on Lhote's expeditions (*ibid.*, p. 140). Lhote's copies predominantly involved only the most beautiful figures, or a selection of figures from a panel. They are now seen as *restitutions poétiques*, and when they are compared with the original panels, anomalies sometimes appear — for example one composition he published actually comprises two scenes from two completely different sites (HACHID 1998, pp. 187-88).

Another point made forcefully by Lajoux is undeniably true, *i.e.* that a copy or tracing of rock art is a finished, definitive, closed entity; it is a record of what its maker saw, and can never yield any further information or a different reading. Photographs, on the other hand — like the original works on the rock — always have the potential for yielding new data, especially today through digital processing and computer enhancement (LAJOUX 2006, p. 142).

Problems in Conservation

HACHID (1998, p. 185) reported that Henri Lhote's copiers in 1956-57 wetted the paintings repeatedly, and also rubbed the dust off with sponges and brushes (and indeed LHOTE (1958) himself described this method at some length). The wetting certainly contributed to severe damage — it makes the figures clearer in the short term, and far less clear in the long term. Indeed, it caused a crust to form in places, or the images faded radically. Even distilled water can activate bacteria in the sandstone. The Lhote copying led directly to some masterpieces being lost forever. “On ne comprend pas pourquoi ces relevés n'ont pas été doublés de photos, l'occasion étant parfaite pour constituer toute une photothèque” (HACHID 1998, p. 186). At least if photos had been taken when the figures were wetted, their sacrifice would have been slightly less pointless as a complete record of them would have survived.

In the Tassili, Hachid has also encountered rock art panels with a different kind of damage: at Tiout (Saharan Atlas) engravings are covered with tar; at Tissoukaï (Djanet plateau) some painted panels have been covered with varnish, which has flowed everywhere, while some figures have been broken or pulled off, or cut, or drawings have been gone over with graphite (*ibid.*,

p. 187). In the 1960s, equally destructive attempts at preservation by means of various chemical products were also carried out in the Tassili and the Tadrart Akakus (Le Quellec, pers. comm.).

The wetting or coating of decorated panels is far from the only kind of damage to which North-African rock art has been subjected over the years. Some factors are purely natural: for example, HANSEN (1999; 2009, pp. 504, 517) has shown how whole panels have disappeared in the Central Sahara over a period of ten to fifteen years through climatic change, without any human influence. The sandstones under the harder superficial oxidized crust on the surface begin to alter through changes from humidity to aridity. The sandstone, through the transportation of minerals to the surface due to surface evaporation, then loses its internal cohesion and tends to become weakened. So it is easily eroded, even by the wind; and hence the surfaces are detached from their bedrock, and a few centimetres or even decimetres away from it. These are then predisposed to collapse, and when the climate becomes more humid, these surfaces fall very quickly (HANSEN 2009, p. 518). Where engravings have been made in the oxidized crust of the sandstone's surface, and in some cases where the crust falls, a kind of 'tracing' of the engraving can sometimes be discerned in the bedrock.

In parts of North Africa, graffiti have become a plague in recent years. The Saharan site of 'Ain Duwa was vandalized by a garrison of soldiers and police who were stationed in it (LE QUELLEC *et al.* 2005, pp. 134-36) — they produced lots of graffiti, and some famous paintings were violently hammered (since the rock here is very hard). The root causes were clearly ignorance and boredom, and the same is doubtless true of the Western Sahara, where rock art was recently sprayed with graffiti — some of it signed and dated — by UN peacekeeping officers drawn from thirty countries (ALBERGE 2008). Fortunately, this situation has now greatly improved (J. Soler, pers. comm.)

However, neither ignorance nor boredom is to blame for the latest outrage, of which reports and photographs are emerging at the time of writing — seven sites in the Libyan Akakus have been vandalized with spray paint by a former tourist guide, a Tunisian of Libyan origin, who was recently fired by an Italian tourist agency. The graffiti, in red and black and white, consist of abuse against the Libyan government and against Italians. In particular the exceptional paintings in the famous shelter of Ti-n-Anniwen have been obliterated and destroyed (fig. 3) (DI LERNIA *et al.* 2010).

Quarrying has also done a great deal of damage over the centuries. In Egypt it is known to have already been destroying rock art in 1907 and the problem increased through the century. Petroglyphs were found at Elkab in

the 1980s — most notably a tableau of bulls, 3,500 years old. But within two years they had been hammered away completely, and four years later the metres-high rock formation with lots of other drawings had been completely razed through quarrying (HUYGE 1998) (fig. 4a, b).

But vandalism needs not only be mindless — sometimes there are specific reasons for the destruction. For example, HANSEN (2009, p. 548) presented a painted lion at the site of Ti-n-Zouzat West (Algeria), whose head was destroyed in the 1970s to ward off the evil eye.

In the Libyan Akakus, a few years ago, the authorities were very ill advised to erect hedges around some important painted shelters, and to put up yellow signs at the most prominent rock art sites (fig. 5). The hedges were useless, in that many are so far from the paintings that, even with binoculars, it is almost impossible to see them clearly; and in any case most hedges are being broken through and bypassed; and because this is a World Heritage Site one is only supposed to visit these sites in the company of a guide, so there is (theoretically) little chance of vandalism occurring. The signs and the hedges also draw attention to the sites, making them far more visible in the landscape, and might thus attract the attention of unauthorized visitors, which exposes the art to possible damage.

However, the most extraordinary episode of this kind occurred in October 1998, when the world's media were taken by storm by the so-called 'discovery', the previous November, of two huge giraffe petroglyphs at the site of Dabbous in north-east Niger (the larger being 5.4 m tall) (fig. 6). Photographs of these magnificent images appeared in newspapers across the globe, as well as in the *National Geographic* magazine. In fact, these figures had already been known for at least a decade, since the French scholar Christian Dupuy had studied and published this site a decade before — yet this did not prevent claims on the website and in the newsletter of TARA (the Trust for African Rock Art) that the Dabbous giraffes were recorded for the first time in 1997 by David Coulson, Alec Campbell and Jean Clottes (LE QUELLEC 2006, p. 244). Indeed, it has even been claimed (AMERY & CURRAN 2001, p. 138) that the site was “discovered by an international team of experts in November 1997”.

In January 1998, an expedition, funded by the National Geographic Society and the Bradshaw Foundation (a group of wealthy rock art aficionados), carried out the casting of the giraffe panel (CLOTTE *et al.* 1999). Leaving aside the possible risks to ancient rock art caused by any casting process (fig. 7), it is difficult to see why such a vast sum — rumoured to be several hundred thousand dollars — was wasted on the reproduction of a panel which was under no immediate threat of disappearance and showed only

minor traces of deterioration. Imagine what such a sum could have accomplished if spent on a multitude of less spectacular rock art sites in desperate need of protection or recording. One's impression is that the primary *raison d'être* of this largely pointless exercise was for PR, and it resulted in a 25 m² aluminium cast of the giraffes being installed at Agadez airport (CLOTTE 2001). However, the tragic and inevitable result of this media blitz and casting operation was that a hitherto little-known site at no serious risk of damage suddenly became a 'must-see' for rich tourists, and very rapidly had to be placed on the World Monuments Fund's (WMF's) list of endangered sites (AMERY & CURRAN 2001). Such are the dangers of cynical manipulation of the media for self-promotion and self-aggrandizement. In the WMF's own publication (*ibid.*, p. 138), it is stated that: "The Giraffe Rock carvings have survived in their preserved state due to the isolation and secrecy of their location. Now that their presence and importance have been publicized, the threat to their continued safety has grown. Groups such as the Trust for African Rock Art and the National Geographic Society are currently finding ways to continue to safeguard this fragile site. By raising awareness of the threats to the carvings, engaging in further conservation studies, and advising the local authorities on tourism management, perhaps Giraffe Rock can become an example for preservation efforts throughout the region". This text is supremely ironic, since the two bodies mentioned are the very ones which zealously promoted the publicizing of the site and thus caused the danger in the first place!

Conclusion

Although North Africa's rock art was discovered relatively late by the world of scholarship, it has made up for lost time, and in recent years new discoveries of world importance have been made, such as the *Grotte des Bêtes* at Wadi Sora (south-west Egypt) (LE QUELLEC & DE FLERS 2005), and especially the Pleistocene petroglyphs along the Nile (HUYGE *et al.* 2012). In addition, new attempts to date North-African rock art — not only along the Nile but also in the Tassili (HACHID *et al.* 2012) — are providing a long-needed breakthrough which will at last enable this corpus of images to take its rightful place at the heart of archaeological investigations of the region's past. The next few decades will undoubtedly transform our knowledge and appreciation of this hugely rich resource, and one hopes that this appreciation will help to preserve it from both natural and man-made damage.

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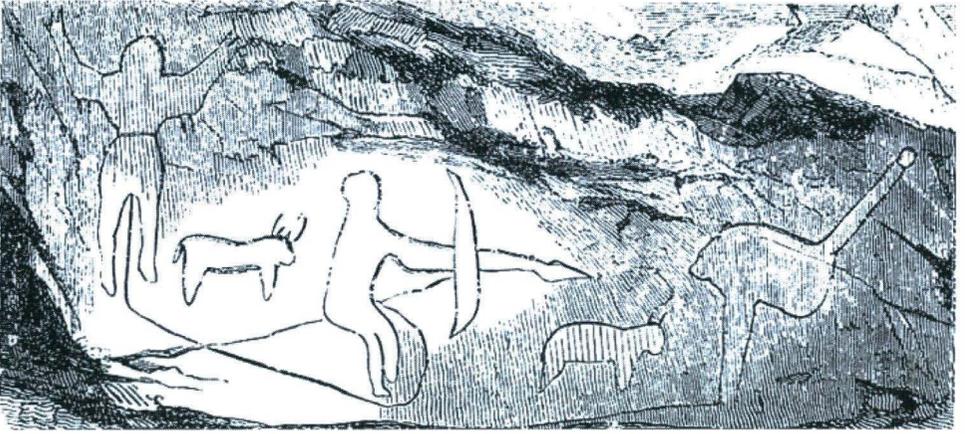
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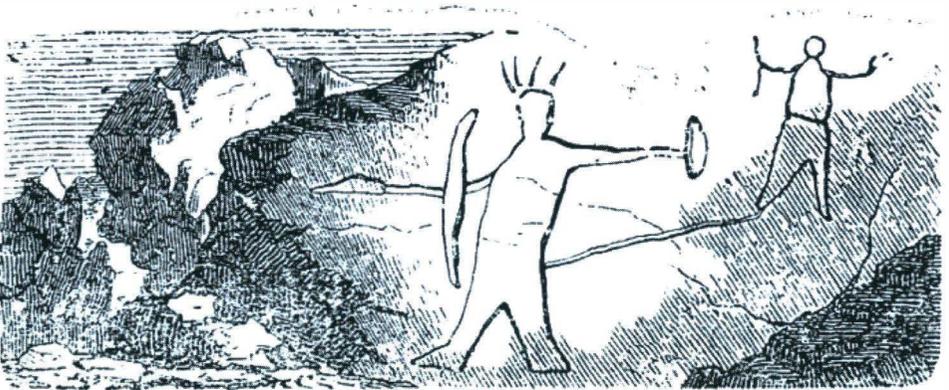
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a

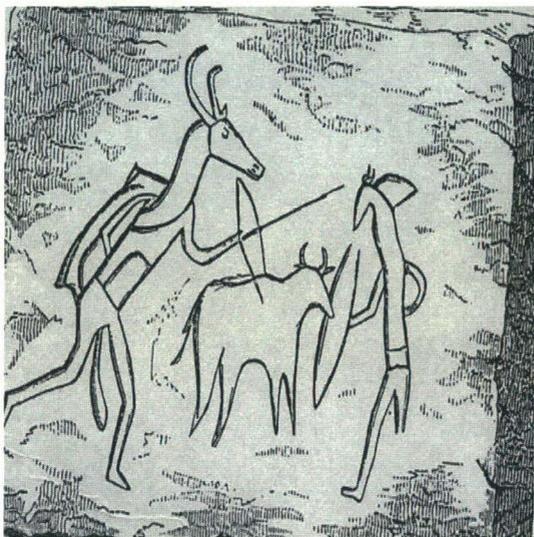


b

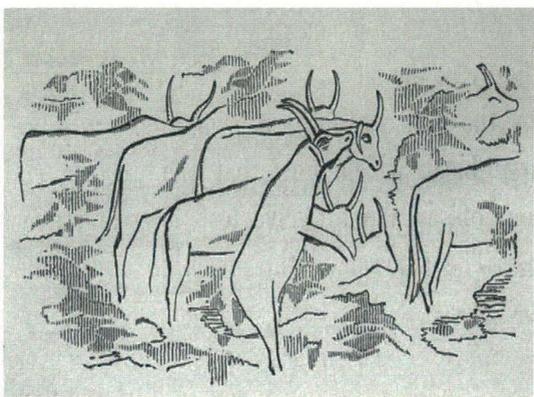
Fig. 1a, b. — Jacquot.



a



b

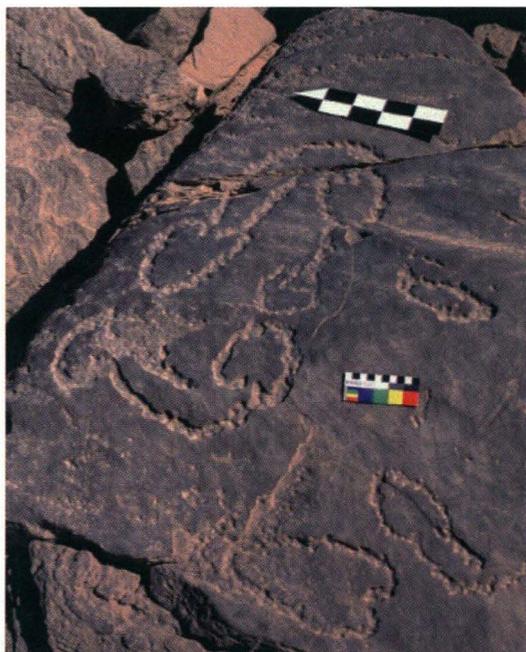


c

Fig. 2a, b, c. — Barth.



Fig. 3. — Graffiti at Ti-nan-iwen (photo: J.-L. Le Quellec).



a



b

Fig. 4a, b. — The deliberate recent destruction of ancient petroglyphs of probable fish traps at el-Hosh (Abu Tanqura Bahari), Egypt — the pictures date from 1998 and 2004 (photos: D. Huyge).



Fig. 5. — The prominent hedge and yellow sign at the shelter of Uan Amil in the Libyan Messak.

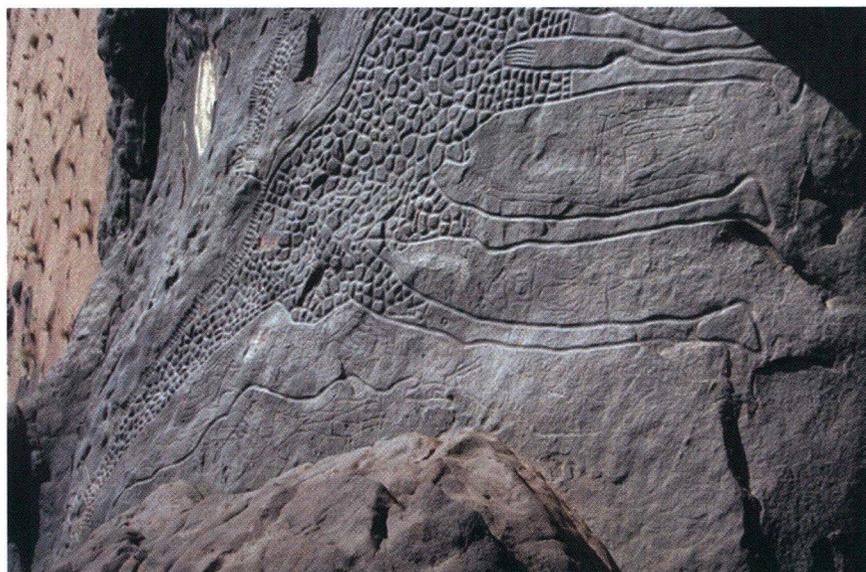


Fig. 6. — The larger of the Dabous giraffes, Niger.

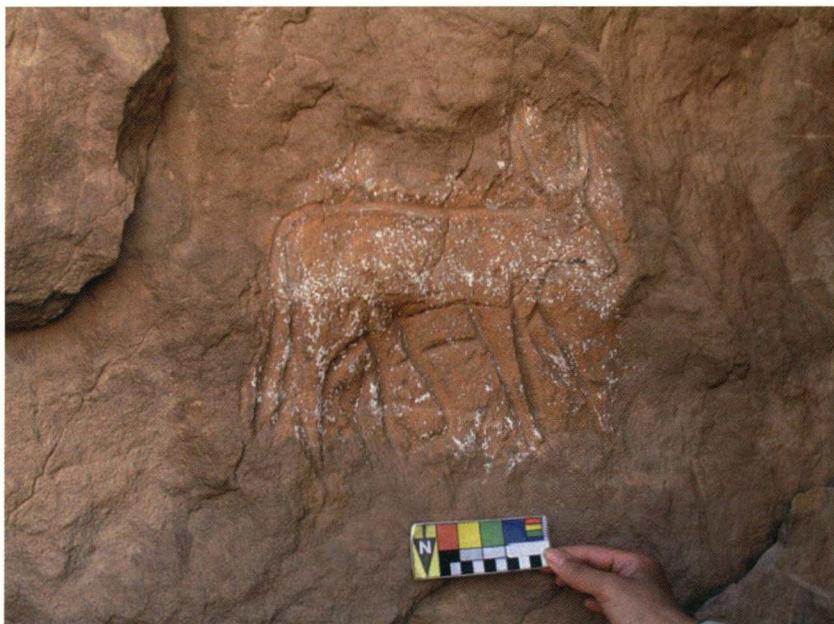


Fig. 7. — The particularly bad effects of a casting of a bovid figure at Tiksatin in the Libyan Messak.



Fig. 8. — The recently rediscovered bovid petroglyphs at Qurta (Egypt), which were chalked in the 1960s.

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The Age and the Natural Context of the Western Saharan Rock Art

by

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KEYWORDS. — Rock Art; Prehistory; Sahara; Zemmur; Western Sahara; Style; Chronology.

SUMMARY. — This paper shows the results of a research on the painted rock shelters of the Zemmur (Western Sahara). Here are presented a stylistic classification of these paintings, a proposal of their age and, finally, a plausible link between one of these pictorial styles and another well-known Saharan engraving style, the Tazina style. In the latter part some explanations about the Tazina style's geographic extension in the Western Sahara are given.

Introduction

The first reports on the Western Saharan rock art arrived shortly after 1940 as a result of the Spanish colonial expansion. Before that, there had only been a footnote into an article from ASENSIO (1930) with, probably, a list of rock art sites. However, the lack of geographical precision and the absence of photographs or reproductions make it difficult at the present time to find out which sites are mentioned. Asensio had never visited the places and the origin of his information seems to be the indigenous saharawi population. Following such sources, Asensio talks about “sepulcros con piedras escritas en letras no árabes” and “piedras grandes o gleibs con inscripciones cristianas y árabes”, which later Spanish scholars interpreted as references to rock art sites (PELLICER CATALAN *et al.* 1973-74). Asensio never considered them as true archaeological Saharan products, but as remains of previous Punic, Roman, Portuguese or Spanish dominations. Thus, his dubious list, more than

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a true rock art report, serves only as evidence of the delayed state of the archaeological research in the Spanish Sahara before 1940.

Such situation is due to the fact that the Western Sahara was assigned to Spain on paper, but in reality it was still controlled by the natives until the 1930s. These sahwari tribes only tolerated a nominal Spanish presence in order to block the French penetration from present Mauritania. Spanish colonizers and adventurers were confined to several forts and emporia on the coast and they were not able to move freely into the hinterland, where most of the rock art sites are located. During that precolonial period, the only archaeological activity was a very short excavation of a prehistoric habitat and concentration of shells on the coast developed by the Catalan priest and hydrogeologist Norbert FONT I SAGUE (1902).

The situation changed in the 1930s. At that time, Spain took advantage of some sahwari internal conflicts and succeeded in occupying the territory. Immediately, the government felt obliged to obtain some economic benefit from the country in order to encourage the colonial adventure. Consequently, several scientific missions were sent to explore the inner parts of the Western Sahara in the quest for natural resources and to study the population from a cultural anthropological point of view (HERNANDEZ PACHECO *et al.* 1949).

Such intense scientific exploration was crucial because, during the following decade, many prehistoric rock art sites had been discovered. The protagonists of that era were the archaeologist Julio MARTINEZ SANTA-OLALLA (1941a, b), the entomologists Eugenio MORALES AGACINO (1942, 1944) and Joaquim MATEU I SAMPERE (1945-46, 1947-48), and the archaeologist Martín ALMAGRO BASCH (1946). All of them published the first descriptions and reproductions of engravings and paintings. Among them, Almagro, who effectively gathered and synthesized all the early discoveries in his book of 1946, in which he combined reproductions and photographs. Before him, MARTINEZ SANTA-OLALLA (1944) had published a volume of photographs on the prehistoric engravings, but a second volume with the accompanying text was never finished.

Twenty-five years later emerged a second generation that contributed with new discoveries and efforts of synthesis (PELLICER CATALAN & ACOSTA 1972; PELLICER CATALAN *et al.* 1973-74; BALBIN BEHRMANN 1975; NOWAK *et al.* 1975; NOWAK 1971, 1976, 1977; MILBURN 1971, 1975). While the first generation of scholars had focused on the northern part of the country, the second reached the most meridional and distant sites.

Such fecund scientific research came abruptly to an end in 1975 with the Spanish withdrawal from its colony, the parallel Moroccan conquest and the sahwari liberation war in consequence.

Finally, in 1995, in the context of the actual cease fire between the Polisario Front and Morocco, our team from the Girona University could begin its archaeological research and other cooperative activities on the heritage field, in collaboration with the Ministry of Culture of the Western Sahara. Since then, we have been studying a large North-South land strip near the Mauritanian and Algerian boundaries, which almost coincides with the most oriental third part of the country. Our intensive work in this area has allowed us to catalogue several inedited sites (SOLER 2007) and to fully document with new techniques those already known during the colonial period (SOLER *et al.* 1999).

In the context of my doctoral thesis, I have studied the rock paintings of several places in the Zemmur region (fig. 1)*. The sites are, in order of importance, Rekeiz Lemgasem, Wadi Kenta, Wadi Ymal, Rekeiz Ajahfun and Asako. In total, the study comprised more than a hundred and twenty inedited rock shelters and approximately two thousand eight hundred figures (SOLER 2007). They are a valuable set in order to know the age and the natural context of the prehistoric western rock art.

Methodological Considerations

I have studied those images using a traditional methodology composed of three major steps. First, I defined several styles based on multiple morphological and technical markers, which were all intersubjectively observable in the images. Secondly, I analysed the overlappings between images of different styles in order to obtain the relative chronological sequence of the styles involved. Finally, I tried to date each style in an absolute manner by means of the weapons, alphabetic signs and fauna depicted in each case, as Théodore MONOD (1932) and Raymond MAUNY (1954) did.

Shortly after the beginning of my research, I realized that I could not classify the Western Saharan rock art using the classical sequence of styles elaborated on the Central Sahara and the Saharan Atlas data (LHOTE 1970). The figures from the west, especially the painted ones, were too different to fit in such classifications.

After that first impediment, I expected that the sequences elaborated by MONOD (1938) and MAUNY (1954) upon the Mauritanian data would be much more useful. Unfortunately, those are not style sequences but successions of periods, each of them defined by some chronological markers. In practice

* Cf. figures at the end of the text (pp. 40-45).

this means that stylistically very distinct figures should end merged into one period because of the chronological classificatory criteria used.

Such ignorance of the stylistic diversity in Monod's method was not a mistake. In fact, Théodore Monod avoided stylistic considerations because he believed they were irrelevant when trying to date the prehistoric images (MONOD 1932). He was right because stylistic information does not convey any intrinsic chronological information. Style is only a very distinctive manner of doing something, and every style must be dated by independent methods.

However, objectively defined rock art styles are a methodologically correct tool to enhance our rock art classifications and chronologies. Styles can be used, for example, to track the geographical extension of a community or individual. Or to measure the diversity, evolution and optimization of the prehistoric communication systems. In the case of the Western Sahara, they also serve to chronologically order the rupestrian images in shorter time slices than the periods proposed by Monod or Mauny, which are still necessary to date them.

The most obvious limitation of Monod's dating method is that it requires a good knowledge about the true age of the indirect dating evidence (weapons, alphabets, fauna) used to assign an absolute age to rock art. This information is not always accurate for the Western Sahara and during our research we could not improve it. In this context it would be great to obtain direct radiometric age results for rock art, which could overcome that deficiency. Unfortunately, our sole previous attempt was not successful because of the lack of organic matter in the sample (SOLER 2007). My conclusion was that the lack of organic matter is still a greater limitation than all the deficiencies associated with Monod's, Mauny's and our method because there is no way to overcome it.

The Western Saharan Prehistoric Rock Art Styles

As a result of the mentioned methodological programme, I have defined five new pictorial styles using multiple morphological and technical criteria (SOLER *et al.* 2006, SOLER 2007): Dancers' Style, Stroked Style, Shaped Style, Dark Figures' Style and Lineal Style, which I will illustrate now. In the case of engravings, I am not able to give new precisions because we are working on them and still do not have definitive conclusions. I will only mention the already well-known Tazina Style and introduce a new group which is very particular for the Lajuad area (human-sized anthropomorphs from Devil's Cave).

DANCERS' STYLE

This is one of the most common styles in the Zemmur area, both on the Western Saharan and on the Mauritanian sides. It appears on many rock shelters of Rekeiz Lemgasem, Wadi Kenta, Asako and, as we can see in Théodore Monod's publications, in Oummat Chegag and Oummat el Lham sites (MONOD 1951).

Its technical characteristics are: the usage of red and white flat painting, the stroking of lines with millimetric width and the display of the depicted beings in latero-frontal perspective. From the morphological point of view, the main characteristics of this style are: the small size of the figures (between 5 and 15 cm approximately) and the depiction of people showing bent legs, L-shaped feet and fingers on hands. Some individuals wear hats similar to those used in the present times by the Spanish bullfighters (or combings with a similar shape). They can also wear belts or skirts and carry bows and throwing sticks, but they never use shields, spears or swords.

The themes depicted in this style consist of narrative scenes involving human beings and, in some cases, also animals. Some recurrent scenes depict people in processions and dances (we have named the style after such depictions), but others are not easy to interpret. It is also difficult to distinguish people by their sex but, on the contrary, a few very clear depictions of children do exist. Curiously, some of the many handprints which overlap these scenes are also infantile.

In several other cases, people are depicted along herds of oxen, which seem to be domestic because of their peaceful behaviour (there are no scenes of bovine hunters). For this reason, I think the Dancers' Style should be related mainly to pastoral populations. However, not all the fauna depicted in this style is domestic. There are many examples of wild animals like elephants, giraffes, rhinoceros, ostriches and caprids, but gazelles or antelopes are rare. Horses or camels are absent.

This style is found below all the documented overlappings. Therefore, it must be the oldest pictorial style in the Zemmur area. However, it is very hard to get an idea of its absolute chronology. If my opinion on the domestic nature of the depicted oxen is correct, the Dancers' Style could not be older than 5000 BC. This is the period of the earliest domestic bovines in the Sahara (FERHAT 2003). However, the upper temporal limit is much more complicated to estimate. One possibility is to study some depictions of human beings carrying weapons similar to halberds (fig. 2) from Rekeiz Lemgasem site. If this appreciation is correct, the upper temporal limit of the Dancers' Style could be somewhere between 1700 and 1000 BC, which is

the chronology accorded to these weapons in the southern Iberian Peninsula and Morocco (CHENORKIAN 1988; see MUZZOLINI 1995, p. 382, for an alternative opinion). In Monod's dating sequence, this style would be part of the "Ancient Group" or "Bovine Prehistoric", which is the second and later stage of the Precamelid, Analphabetic and Bow Period.

Unfortunately, this dating will always suffer from some degree of uncertainty because the representation is not as clear as desired. And to be frank, this is the sole depiction of halberds I know in the whole Western Sahara.

STROKED STYLE

The Stroked-Style images are only found at Rekeiz Lemgasem site and only represent rows of animal beings (mostly bovines and giraffes). Technically, the Stroked Style is characterized by big figures reaching sometimes one metre. They are depicted in a frontal-lateral perspective, mostly in red, although there are also two-colour red-white figures (especially giraffes). A very solid ("stroked") line clearly delimits the figure, most of the times on top of the flat tint or a soft gradient which fills the inner part of the bodies. Morphologically, the figures have round-shaped muzzles and legs with hoofs. Giraffes and bovines have the hind legs joined as an inverted V.

In those rows all animals show distinctive traits such as the shape of their horns, details of their body and colouring, which had never been the case in the previously exposed styles.

A typical theme of the depictions in Stroked Style are the rows of giraffes (fig. 3). There are also groups of bovines, but there is no evidence of domestication. Horses or camels are absent. The analysis of overlappings shows that the figures in Stroked Style are younger than those in Dancers' Style.

SHAPED STYLE

The Shaped Style appears at the sites of Rekeiz Lemgasem, Wadi Kenta and Wadi Ymal. The realistic modelling of the bodies, in comparison to the other styles, is its main morphological characteristic. Human beings show other indicators, such as the triangle-shaped feet and the position of one leg behind the body (in Dancers' Style it would commonly be in front of it). It can also be defined by the use of latero-frontal perspective and the preference for red and white flat tints, which are commonly combined in the same figure. Human beings in Shaped Style do not show fingers and do not wear hats or combings. They also lack skirts or belts. As weapons they carry bows. No throwing sticks, shields, spears or swords are depicted.

The animals also show very clear morphological traits that serve as stylistic indicators. The most important are: the rectilinear foreheads and the very round muzzles and bellies. Animals are often incomplete due to the fading of their parts originally painted in white. Antelopes and gazelles are the most represented animals, although there are a few depictions of other wild animals like rhinoceros, ostriches, giraffes, canids, elephants and perhaps also a donkey. Horses or camels are absent.

The themes depicted in Shaped Style are narrative scenes with a good indication of movement involving humans, animals or both at the same time. There are also many positive handprints. There is no clear evidence of domestic animals or pastoral behaviour. A common scene depicted in this style is a couple of persons joining their hands. Animals depicted alone are very rare.

When people and animals take part in the same scene they are related in an allegorical way. Examples of such behaviour are scenes with people touching rhinoceros or facing antelopes without any aim to hunt them. In the Two-Roofs rock shelter (Rekeiz Lemgasem) a group of men are standing around a rhinoceros, carrying throwing sticks (fig. 4). One man seems to touch the back of the animal, which would be very uncommon in the real world. Moreover, the men are not depicted in a hunting behaviour and their throwing sticks would surely not be the best-suited weapons to kill such a big and dangerous animal. We believe that the story depicted can be seen as an example of the “person-touching-an-animal” theme. Also at Rekeiz Lemgasem, in the Bower’s rock shelter, there is another man touching the muzzle of an antelope. The man carries a bow which clearly is not going to be used to kill the animal (fig. 5). These themes, here depicted in Shaped Style, are common to other parts of the Sahara (LE QUELLEC 1993).

The analysis of overlappings shows that the figures in Shaped Style are younger than those from Dancers’ Style and Stroked Style.

DARK FIGURES’ STYLE

The figures in Dark Figures’ Style are painted in a very dark red flat tint. They are not large (between 10 and 20 cm) and are always depicted in a strict lateral perspective: the humans are represented with a single leg or arm and the quadrupeds never have more than two legs or one horn. Only some women, depicted with one breast over the other, break this rule. People and animals are represented with a certain robustness.

Morphologically, the bodies of human beings and animals are rounded and do not have segmented but curved contours. Humans are depicted with big buttocks and some of them carry large sticks and bows.

The scenes in Dark Figures' Style are very dynamic and always clearly organized in rows, *i.e.* figures aligned one after the other. This repetition gives the impression of movement and action to the scenes but, because of repetitions, there is a tendency to schematize the figures. And this may be the reason why people lack faces, fingers, combings or clothes.

Rows of women (fig. 6, bottom) and rows of gazelles (fig. 7) are the most typical themes depicted in this style. However, there are also some elephant huntings (fig. 6) and other scenes more difficult to describe. There are neither herds of domestic animals nor depictions of pastoral behaviour. Horses and camels are not depicted in this style.

This style is present at the sites of Rekeiz Lemgasem and Wadi Kenta. After consulting the reproductions by Théodore Monod, I think it is also present in Oummat el Lham and Oummat Chegag (MONOD 1951). Finally, the Dark Figures' Style might have been detected in a rock shelter in Laouianate (SEARIGHT & MARTINET 2001). This is at least our impression after seeing the published photographs. In 2007, we also discovered bas-reliefs in Dark Figures' Style in the Devil's Cave from Lajuad (fig. 8), which is 550 km away from Rekeiz Lemgasem and around 700 km from Laouianate.

Scenes involving human and animal beings depict the already mentioned elephant huntings with bows.

Since the images in Dark Figures' Style are overlapping those in Dancers' Style and in Shaped Style, this style seems to be the youngest. However, there is one image in Stroked Style painted above a gazelle possibly represented in Dark Figures' Style. For this reason I am only allowed to distinguish an older style (Dancers' Style) and consider the remaining three styles as younger and contemporary between them.

LINEAL STYLE

The images in Lineal Style can be recognized by their unrealistic frontal and lateral views, their wide, straight lines and light red colour and their schematism. There are figurative and non-figurative images painted in this style, always drawn with the same wide, light and straight red lines.

The non-figurative images are very abundant. From simple linear shapes (traces, crosses, circles, circles with internal crosses, anthropomorphic traces, reticula and squares) some more complex images are constructed connecting these initial simple shapes. Another special kind of non-figurative images are the Lybico-Berber texts, which accompany the figurative images depicted in this style and which use the same technique.

The figurative images in Lineal Style concern human and animal beings. The human beings carry spears and shields, but never bows, and they ride horses but not camels.

In the Zemmur this style has been documented at Rekeiz Lemgasem, Rekeiz Ajahfun, Wadi Kenta and Asako. The overlappings in the Zemmur area show that the Lineal Style is the most recent of the already mentioned styles. In the southern Western Sahara it is also present (ALMAGRO BASCH 1946, BALBIN BEHRMANN 1975, NOWAK *et al.* 1975), but I am not aware of significant overlappings. Those southern paintings had always been related to the recent prehistory and protohistory because of the mentioned alphabets and weapons which accompany them. Following the actual knowledge on the arrival of horses, shields spears and the Lybico-Berber alphabet (MUZZOLINI 1995), this style could not be older than 1000 BC. The lack of camels, on the other hand, indicates that it must be older than 500 AD (WILSON 1984, DUPUY 2009). This Lineal Style represents the most recent period of rock art production in the Western Sahara because there it has no clear successor style. In the Zemmur area, I am only aware of a sole Arabic text in Rekeiz Lemgasem. In the Lajuad area, there are also other graffiti in Arabic, but they are not associated with other depictions.

Finally, another fact to take into account when studying the last rock art in the Western Sahara is the non-existence of the Lybian Warrior group of engravings, although it is very present in the neighbouring Mauritania.

TAZINA STYLE

I am not in the situation to enhance the definition of this style synthesized in MUZZOLINI 1995 with other technical or morphological criteria. Neither can I contribute with other chronological evidence. In the case of the Western Sahara, however, a geographical precision needs to be considered: the Tazina style is absolutely absent in the *Río de Oro* province, although it is abundantly present in the northern *Saguia el Hamra* province (see fig. 1).

The lack of horizontal sandstone and quartzite slabs in the southern part of the Western Sahara (which is dominated by sandy areas and granites) may be the reason for this absence, although this is a very weak explanation because we could expect to find the same style implemented on other surfaces. This case has been attested, for example, with the Dancers, Dark Figures and Lineal Styles, which are not only implemented as paintings but also as incised engravings and bas-reliefs.

The major Tazina site in the whole Western Sahara is Sluguilla Lawash (still to be fully studied), where along thirty-two kilometres the engraving slabs

appear one after the other. However, during the colonization several other major Tazinian sites were discovered around the city of Smara (ALMAGRO BASCH 1946). In spite of the abundant presence of this style, not all the engravings in the northern Western Sahara can fit in it and are still awaiting to be fully classified. If we could distinguish what should be named Tazina and what not (HECKENDORF 2008), we could surely better describe and date the style.

HUMAN-SIZED ANTHROPOMORPHS FROM DEVIL'S CAVE (LAJUAD, TIRIS)

The site of Devil's Cave, although already known during the colonization, still preserves a lot of rock art to be discovered. The work is in progress and here I will only consider some real-size engravings of anthropomorphs.

The first notices on the rock art of Devil's Cave, in Lajuad, have already indicated the presence of real-size human engravings in bas-relief in the left side of the cave (PELLICER CATALAN *et al.* 1973-74). They are made by removing flakes of gneiss until two or three centimetres deep. Perhaps those figures were later filled with colour, but today, because of all the faded later rock paintings which overlap them, this is difficult to guarantee.

Later in 2006, we recognized many more figures all along the rest of the wall because we worked at night with artificial illumination. In contrast with the humans which were already known, the ones we discovered in the centre of the cave wore dresses, or at least this is our interpretation of the abundant decoration of their bodies (fig. 9). Both arms and legs were bare. Heads were represented without internal details of the faces, hats or combings.

As mentioned before, the site is still under study but we have documented at least one overlapping. A bas-relief of a quadruped in Dark Figures' Style cuts one of those real-size anthropomorphs (fig. 9).

Unfortunately, between 2005 and 2007 the site was seriously damaged with spray and charcoal due to the misconduct of a few UN military observers. After some media coverage and political pressure it has been possible to remove the damage and to restore the site. This effort was directed by Eudald Guillamet, with the collaboration of myself as archaeological supervisor and the investment of MINURSO, the United Nations Mission for the Referendum in Western Sahara, and the involvement of the Ministry of Culture from the Sahrawi republic (Soler *et al.*, forthcoming). After that interruption, we hope to finish the study of the site soon.

The age of this group of engravings (not defined as style yet) is still unknown, but there are some arguments to consider. In the first place, the human-sized anthropomorphs from Lajuad are older than the Dark Figures' Style because of one overlapping detected in this cave. In the second place,

the contrast between the internal geometric decoration of the bodies and the only suggested heads and extremities relates those figures to some anthropomorphs from Yaggour (High Atlas, MALHOMME 1959-1961).

Conclusions

The dating of the Western-Saharan prehistoric rock art is still a confusing exercise. For the last few years we have acquired a better knowledge on the nature and geographic extension of rock art but the problem of its age remains intact.

In the case of the Zemmur area, after a deep stylistic study on the rock paintings, we could establish a sequence of five different phases into Monod's "Bovine Prehistoric" group (Dark Figures, Stroked, Shaped, Dancers Styles and the human-sized anthropomorphs from Devil's Cave). Their age perhaps varies between 5000 and 1000 BC (fig. 10). After them, there is still a Lineal Style with Lybico-Berber texts, which could spread until 500 AC, when the camels could have arrived in Western Sahara (WILSON 1984, DUPUY 2009). Some texts in Arabic illustrate the prolongation of the rupestrian tradition during history. None of these ages is supported by a direct radiometric dating. Taking into consideration the nature of the sites and the experience of previous attempts, it seems unlikely that we could get them in a nearby future. Therefore, we have focused on the relative dating by means of overlappings and relations between styles. However, the results are still disappointing because of the large amount of unclassified data (especially engravings) awaiting to be studied.

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Fig. 1. — Map of the Western Sahara with indication of the mentioned places.

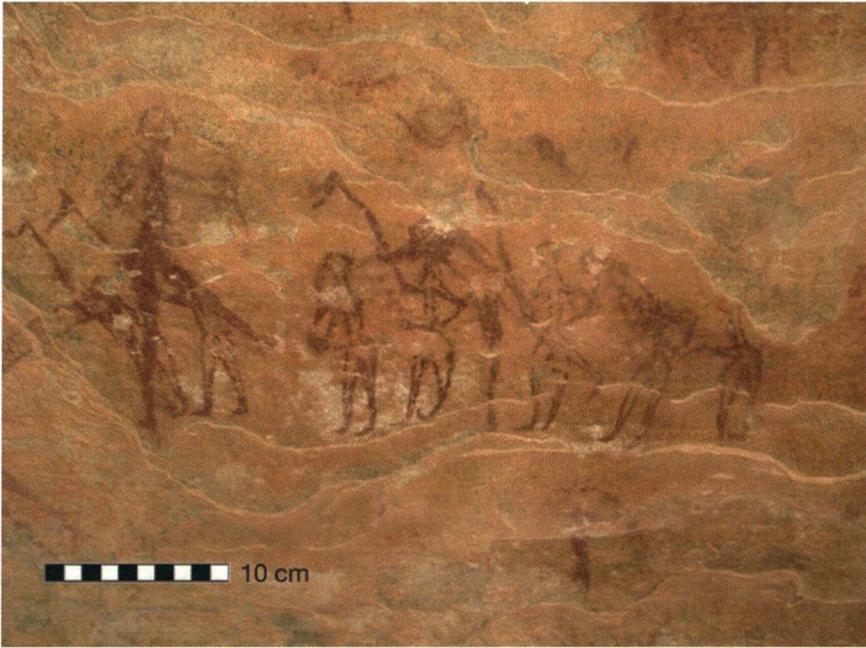


Fig. 2. — Big rock shelter of the Small Wadi (Rekeiz Lemgasem, Zemmur). Probable representation of halberds. Dancers' Style.



Fig. 3. — 100 Hands rock shelter (Rekeiz Lemgasem, Zemmur). Giraffes in Stroked Style. Below them (although hard to see from this distance) there are figures in Dancers' Style. Above the giraffes, a text in Arabic (scale: see handprints).



Fig. 4. — 2 Roofs rock shelter (Rekeiz Lemgase, Zemmur). People in Shaped Style with throwing sticks approaching a rhinoceros in a curious, probably allegoric, way.

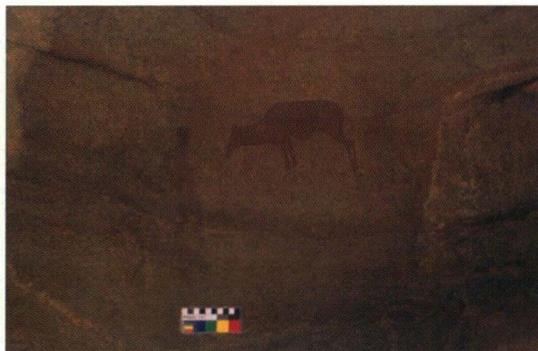


Fig. 5. — Bower's rock shelter (Rekeiz Lemgasem, Zemmur). Person facing an antelope in a probably allegoric way (there is no hunt or domestication signs). The antelope's forelegs were painted in white (now faded).



Fig. 6. — Elephant hunt rock shelter (Rekeiz Lemgasem, Zemmur). Hunting of an elephant by bows, with a row of women below the main scene. Dark Figures' Style.



Fig. 7. — Big rock shelter at south (Rekeiz Lemgasem, Zemmur). Dynamic row of gazelles in Dark Figures' Style.

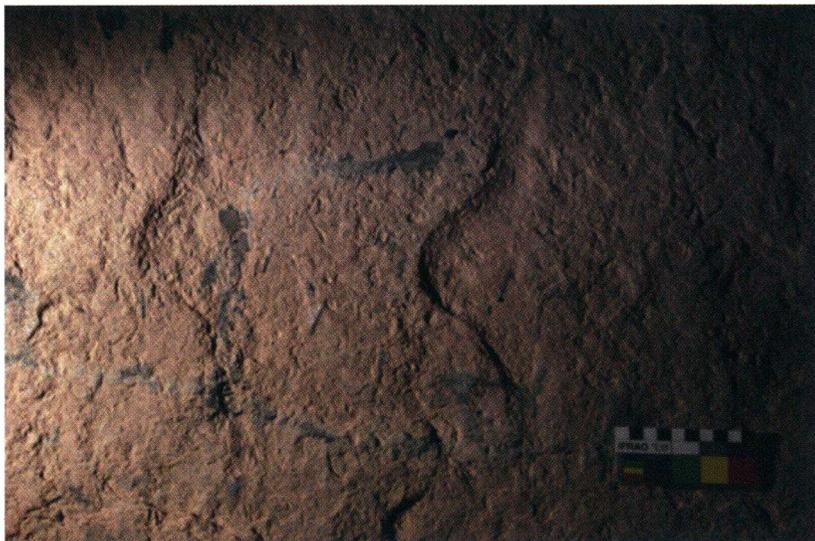


Fig. 8. — Devil's cave (Lajuad, Tiris). Women in Dark Figures' Style in bas-relief. In the same cave there are rows of gazelles or antelopes in the same style.

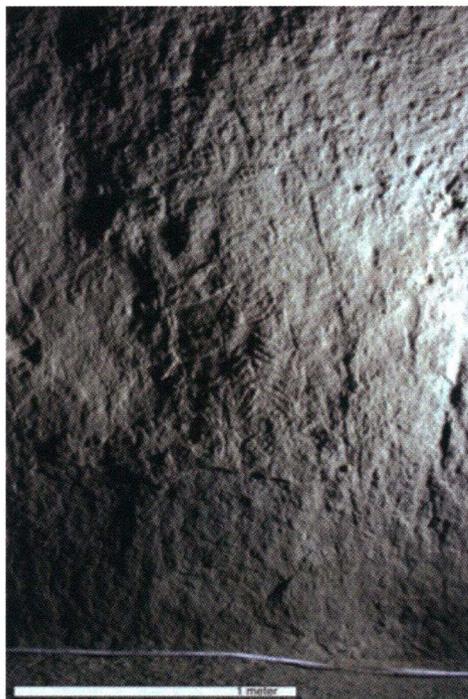


Fig. 9. — Devil's cave (Lajuad, Tiris). Real-size anthropomorph with almost no head or extremities. Remark the inner decoration, which has been overlapped by a gazelle (left side).

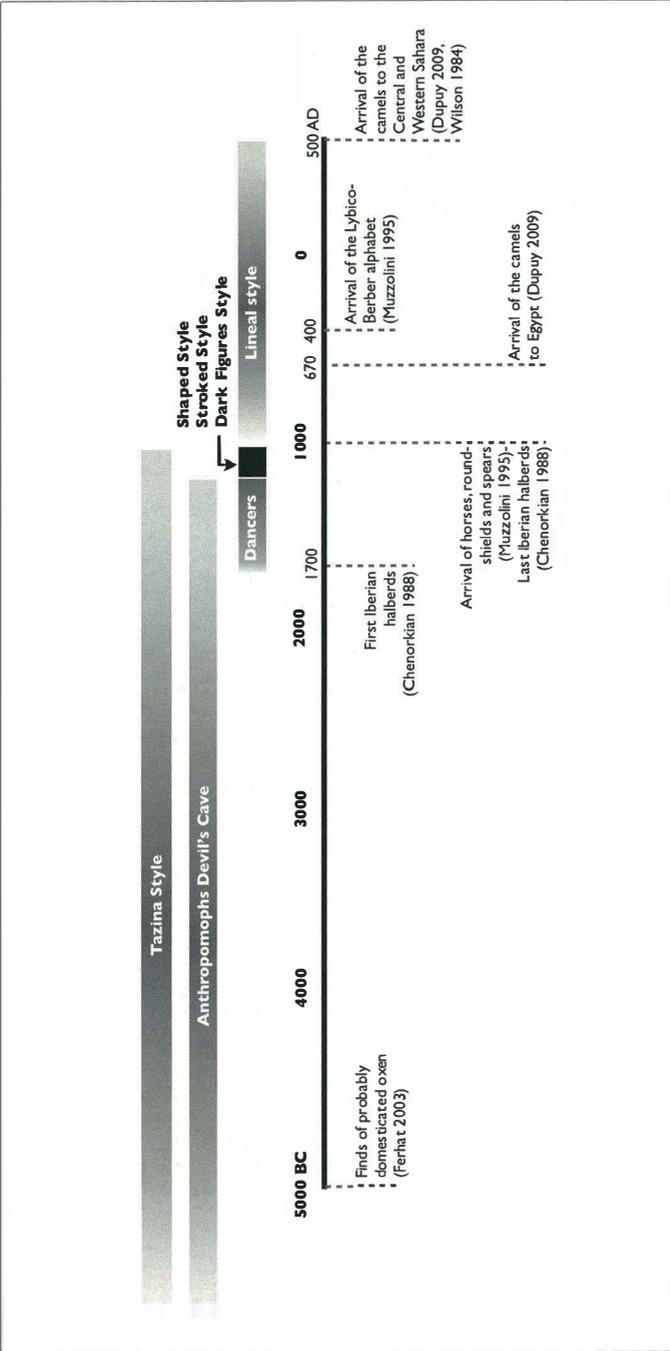


Fig. 10. — Attempt to date the rock art of the Western Sahara after MONOD (1932) and MAUNY (1954), after stylistic classification.

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Trois époques de gravure rupestre en Adrar des Iforas (Mali)

par

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MOTS-CLES. — Néolithique; Age ancien des métaux; Protohistoire; Pastoralisme; Interactions culturelles.

RESUME. — L'analyse des thèmes, des styles et des superpositions dans les gravures rupestres de l'Adrar des Iforas permet la reconnaissance: a) d'une époque ancienne au cours de laquelle l'élevage des taurins était pratiqué et la pluviosité suffisante pour la survie de la grande faune sauvage; b) d'une époque remontant aux deux derniers millénaires av. J.-C. caractérisée par la transmission d'idées et de biens de prestige sur de longues distances et par une accentuation des inégalités sociales; c) d'une époque témoignant de la mise en place vers le v^e siècle apr. J.-C. d'une société aristocratique d'éleveurs de chevaux et de dromadaires dont descendent les Touaregs.

Introduction

La première mention de gravures rupestres dans l'Adrar des Iforas (fig. 1)** remonte à 1908; elle est due au capitaine M. Cortier. Ces manifestations artistiques vont ensuite régulièrement retenir l'attention de voyageurs et d'archéologues, jusqu'à ce que le statut de zone militaire attribué à la région en 1963, au lendemain de l'indépendance du Mali, interdise toute recherche. Les gravures publiées jusqu'alors témoignent d'une diversité d'expressions que l'on pressent d'une grande valeur archéologique. De 1986 à 1990, l'Institut des Sciences humaines de Bamako me confie le recensement des stations d'art rupestre de la région dans le cadre de l'inventaire des sites archéologiques du

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** Cf. figures en fin de texte (pp. 58-69).

Mali. Mon objectif est de relever de manière systématique les gravures dans un secteur déterminé afin de restituer sur papier leur position et leur contexte de réalisation. Mes recherches se concentrent dans six vallées successives du versant nord occidental où les prospections révèlent trente-quatre stations de gravures. Toutes sont localisées avec précision grâce aux photographies aériennes au 1/50 000 de l'Institut géographique national. La position topographique de chaque paroi ornée est reportée sur un plan de situation. Les gravures qui ne peuvent être photographiées par manque de recul sont décalquées au feutre sur des films transparents posés à même les rochers. Le travail de laboratoire consiste à reproduire à l'encre au 1/20^e les quelque huit mille motifs relevés en plaçant les négatifs dans un agrandisseur photographique et les transparents sur des quadrillages aux mailles de dimensions appropriées. Les milliers de dessins sont rassemblés dans un corpus (DUPUY 1991). Des bourses de la Fondation Fyssen et de la Fondation de France me permettent d'exploiter cette riche documentation qui engage à de multiples réflexions parmi lesquelles les questions de chronologie occupent une place éminente.

Les expressions anciennes

Le versant nord occidental de l'Adrar des Iforas recèle une cinquantaine de représentations humaines et animales que singularise leur allure dynamique due à un traitement élaboré des membres (fig. 2). Par commodité, elles sont qualifiées de «naturalistes» pour les différencier des milliers d'autres figures de la région qui, soumises à de nombreuses stylisations, coupent court à toute animation. Les taurins (*Bos taurus* ou bovinés domestiques à dos droit) aux robes parfois compartimentées et aux cornes variées arrivent en tête des sujets gravés. Viennent ensuite, par ordre décroissant d'importance, les éléphants, les girafes, deux personnages, deux lionnes, deux autruches, deux rhinocéros blancs, un rhinocéros noir, une antilope guib.

Six gravures naturalistes de taurins et onze d'animaux sauvages sont sous-jacentes à d'autres plus schématiques renvoyant à des thèmes différents. Les premières présentent souvent des patines plus foncées que les secondes. L'ordre inverse de recouvrement ne s'observe sur aucune paroi, ce qui suppose que les auteurs des gravures naturalistes furent les premiers à s'exprimer dans l'Adrar des Iforas avec des préoccupations distinctes de celles des graveurs qui, à des époques plus récentes, se remirent à inciser les granites de la région. Les taurins qu'ils représentèrent étaient à un stade de domestication avancé comme l'atteste la diversité de leur robe et de leurs cornes. Les plus

anciens ossements connus de ces animaux dans le Sahara malien sont datés des III^e-II^e millénaires av. J.-C. (RAIMBAULT 1994, 1995; RAIMBAULT *et al.* 1987; SMITH 1975, 1979). Ce qui n'implique pas forcément que l'apparition de l'élevage dans la région remonte à cette époque. Elle pourrait s'avérer beaucoup plus ancienne d'après les dates obtenues dans le nord du Niger autour de l'Adrar Bous, soit sensiblement aux mêmes latitudes que l'Adrar des Iforas, où ont été exhumés les restes de trois taurins datés des VI^e-V^e millénaires av. J.-C. (CARTER & CLARK 1976, PARIS 1997, ROSET 1987). Notons d'autre part que du gros bétail était toujours élevé au centre de l'Adrar des Iforas à la fin des années 1980. Compte tenu de ces divers éléments, les représentations gravées de taurins ne sont pas opérantes pour dater avec une précision convenable les expressions rupestres régionales. Les figures de la grande faune sauvage ne fournissent pas de meilleur résultat. Parmi les espèces gravées de façon naturaliste, le rhinocéros blanc et le guib sont de loin les plus exigeants en eau. Ces deux herbivores évoluent dans des secteurs avec points d'eau permanents où la pluviosité assure la formation d'un tapis herbacé relativement continu. Les données interdisciplinaires enregistrées sur l'holocène du Sahara malien (PETIT-MAIRE & RISER 1983) montrent qu'une telle situation a prévalu à l'ouest de l'Adrar des Iforas jusqu'aux III^e-II^e millénaires av. J.-C. comme l'attestent des restes de guib harnaché retrouvés dans deux gisements préhistoriques (GUERIN & FAURE 1983; SMITH 1975, 1979). Dès lors confrontés à la détérioration du biotope sous l'effet d'une aridité croissante, ces animaux purent se réfugier dans la moyenne vallée du Niger et dans les vallées ouvertes de l'Adrar des Iforas, véritables impluviums naturels et y survivre jusqu'à des époques relativement récentes. De fait, leur représentation gravée ne permet pas de se prononcer sur leur âge ni sur celui des expressions anciennes qui leur sont associées. Reste une possibilité: se tourner vers des régions septentrionales au sein desquelles et non loin desquelles sont présentes des gravures naturalistes comparables à celles de l'Adrar des Iforas et où un cadre chronologique peut être délimité.

Plus de quinze mille figurations renvoyant par leurs styles et leurs thèmes à celles de l'Adrar des Iforas ont été relevées surtout dans les Messaks libyens et les Tassilis algériennes, mais aussi dans l'Aramat, les Tadrarts Akoukas et méridionale, l'Ahaggar, le Djado et le Tibesti. Les taurins occupent en tous lieux une place prédominante, suivis par les animaux de la grande faune sauvage. Vient ensuite un éventail de motifs figuratifs et abstraits d'étendue variable suivant les régions parmi lesquels figurent parfois quelques chèvres et moutons (DUPUY 1991, 1999).

La pratique de l'élevage des taurins, des chèvres et des moutons est attestée au Sahara central à partir du VI^e millénaire av. J.-C. On sait d'autre part,

grâce aux données des sciences de la terre, que l'aridité s'est intensifiée dans le Sahara libyco-égyptien à partir du VII^e millénaire av. J.-C. A l'aube du III^e millénaire av. J.-C., elle était, semble-t-il, à tel point marquée au nord du Tropique du Cancer que les hippopotames et les rhinocéros blancs que l'on retrouve gravés dans les Messaks libyens et la Tassili-n-Ajjer, ne pouvaient y survivre. Ces connaissances archéozoologiques et paléoclimatiques invitent ainsi à dater l'art à gravures naturalistes entre le VI^e et la fin du IV^e millénaire av. J.-C. sans que l'on puisse préciser sa durée exacte d'expression, ni ses lieux de naissance et de disparition.

Alors que l'aridité du Sahara du nord allait croissante, les bassins hydrographiques des fleuves Niger et Sénégal et du lac Tchad restaient couverts d'étendues d'eau pérennes grâce à des pluies de mousson plus abondantes qu'aujourd'hui. Cette humidité variable suivant la latitude a vraisemblablement encouragé les auteurs de l'art rupestre à gravures naturalistes à se déplacer au gré des saisons pour satisfaire les besoins en eau et en pâturage de leurs animaux. Certains d'entre eux atteignirent l'Adrar des Iforas où l'on dénombre une cinquantaine d'œuvres naturalistes. Si marginales soient-elles, ces gravures constituent les premiers indices d'une pratique de l'élevage au nord-est du Mali entre le VI^e et la fin du IV^e millénaire av. J.-C. C'est peut-être suite à une forte mobilité imposée par le biotope qu'éclatèrent les structures de cette société du néolithique ancien.

Les expressions moyennes

Désormais, quelques droites et courbes suffisent aux graveurs pour délimiter, le plus souvent par piquetage, les silhouettes d'animaux sans perspective, ni attitude caractéristique. Le bestiaire est dominé par les taurins, les autruches et les girafes. Du muflon de ces dernières est parfois dessiné un trait jusqu'à la main ou sur la tête de petits personnages. En l'absence d'humain, ce trait se referme sur leur cou ou est laissé flottant. Des signes curvilignes s'intègrent dans ce contexte au point parfois de s'enlacer avec les silhouettes d'animaux (DUPUY 1994). Les figures humaines sont partout faiblement représentées. Leur style est épuré et leur taille toujours inférieure à 30 cm. Leurs coiffures, parures ou vêtements ne sont pas détaillés. Leurs armes sont des arcs, de simples crosses ou des objets coudés de forme complexe qui apparaissent isolés ou groupés par paire ou par trois quand ils ne sont pas brandis à bout de bras par des humains minimisés. Les lames pourvues d'un crochet à leur base montrent des profils variés — foliacé, triangulaire, en croissant ou en demi-lune — suggérant l'emploi d'un métal (fig. 3). Il n'y a

que l'Adrar des Iforas qui ait livré à ce jour de telles figures. En effet, aucun objet métallique n'a été découvert jusqu'ici dans les expressions schématiques riches de taurins, d'autruches et de girafes de l'Aïr, de Termit et Dibella, des Tassilis algériennes, du Djado, de la Tadrart méridionale, de l'Ahnet et de l'Ahaggar. De fait, l'art rupestre de ces régions peut être daté du néolithique final et celui qui leur est apparenté dans l'Adrar des Iforas de l'âge ancien des métaux.

Deux parois ornées dans l'Adrar des Iforas conduisent à s'interroger sur l'époque à laquelle s'opère cette transition: l'une associe deux objets coudés à un char dételé, l'autre deux objets coudés à un bœuf à bosse (fig. 4). Ces figures n'ont pu être réalisées qu'après le ^{xvi}e siècle av. J.-C., époque où furent introduits dans la vallée du Nil les premiers chars et zébus en provenance du Proche-Orient (DUPUY 2005). Si la transmission s'est bien faite à partir de l'Égypte et si elle s'est faite rapidement, leurs figurations et celles des objets métalliques qui leur sont associées dans l'Adrar des Iforas pourraient dater du ⁱⁱe millénaire av. J.-C. Un petit ensemble de motifs marginaux dans l'Adrar des Iforas plaide en faveur de ces hypothèses: huit chars reliés par paire l'un devant l'autre, deux spirales développées en méandre et deux cruciformes (fig. 5). De tels motifs se retrouvent gravés et parfois peints à l'unité dans les massifs du Sahara central et sur le versant méridional de l'Atlas nord-africain (DUPUY 2006). Leur spécificité, leur rareté et leur vaste répartition géographique permettent d'y voir les manifestations d'interactions rapides et conjuguées sur de longues distances. Une autre gravure dans l'Adrar des Iforas conforte cette hypothèse: un ovale à double ponctuation imbriqué dans un U dont la branche montante gauche se termine en croissant (fig. 6). Cette excroissance évoque le profil des «haches peltes» gravées dans le Grand Atlas marocain et sur son piémont méridional, aux côtés de hallebardes, de poignards et de pointes à soie caractéristiques du Bronze ancien ibérique daté de la première moitié du ⁱⁱe millénaire av. J.-C. (CHENORKIAN 1988, RODRIGUE 1999). Si cette identification s'avérait correcte, l'ovale gravé dans l'Adrar des Iforas pourrait alors représenter un anthropomorphe armé: les deux ponctuations en partie haute rendraient compte de ses yeux, l'arceau en partie basse soulignerait sa bouche tandis que le U symboliserait ses deux bras dressés avec une hache pelte tenue dans la main droite. Des dizaines d'ovales à double ponctuation apparentés à ce motif dans l'Adrar des Iforas ainsi que ceux dessinés dans des régions plus septentrionales pourraient, eux aussi, représenter des anthropomorphes. Leur ressemblance avec les «idoles à tête de chouette» peintes, gravées et sculptées dans les pays européens de la Méditerranée occidentale au cours d'une période allant du néolithique final à l'âge du bronze (ABELANET 1986) mériterait qu'une étude comparative

approfondie leur soit consacrée. L'existence d'interactions à grande distance à travers le Sahara du II^e millénaire av. J.-C. est d'autant plus envisageable que les représentations de chars, de bœufs à bosse et de motifs complexes présentés plus haut plaident déjà en ce sens. Un autre motif de l'Adrar des Iforas composé de quatre appendices coudés dans le sens anti-horaire associés à neuf cupules s'alignant cinq par cinq suivant deux axes perpendiculaires renforce cette hypothèse: une cupule est au centre, quatre autres sont disposées à équidistance entre les appendices, les quatre restantes en marquent les extrémités (fig. 7). Ce dessin est identique à plusieurs dizaines de «roses camuniennes» réalisées dans le Valcamonica (Lombardie, Italie). Deux exemplaires de ce motif ont été aussi relevés à Askum Parish (Bohuslän, Suède), un autre l'a été près d'Ilkley (Northumberland, Angleterre), un dernier à Castro di Guifões (Matosinhos, Portugal). La présence de ces gravures ô combien particulières dans l'ancien monde occidental sous-tend des interactions culturelles à très grandes distances suivant divers cheminements terrestres et maritimes (DUPUY 2010). A l'échelle de l'Adrar des Iforas, la circulation des premiers objets en métal aux côtés de chars et de bœufs à bosse a dû attiser les convoitises, par le prestige à les posséder et, de fait, accentuer les inégalités sociales. Les données qui suivent rendent compte de cette évolution et, en retour, renforcent les hypothèses qui viennent d'être émises.

Certaines gravures de l'époque des objets coudés sont oblitérées par des personnages traités de face. L'ordre inverse de superposition ne s'observe jamais. Ces figures humaines, en moyenne trois fois plus grandes que les précédentes, se comptent par centaines et les deux tiers sont clairement de sexe masculin (DUPUY 1988, 1991). Les coiffures, coiffes, parures et vêtements étonnent par leur diversité. La lance à large pointe métallique, souvent renforcée d'une nervure centrale, constitue l'arme de prédilection. Le thème ignoré localement jusque-là de la domination des humains sur la grande faune sauvage participe de ce tournant: à divers endroits, des hommes fortement sexués appliquent la pointe de leur lance sur des éléphants, des rhinocéros ou des girafes minimisés. Quelques taurins sont aussi pareillement menacés. Cette même évolution s'observe dans l'Aïr.

Dans l'Adrar des Iforas comme dans l'Aïr, des chevaux, plus précisément des étalons, nouveaux dans le répertoire, sont représentés avec des porteurs de lance. Six d'entre eux sont attelés par paire à des chars (fig. 8). Cet animal a besoin de céréales pour fournir des efforts soutenus, ce qui nécessite pour le succès de son élevage d'importantes réserves de grains. Par ailleurs, le cheval est très vulnérable aux parasites et aux piqûres des mouches tsé-tsé. Pour limiter les risques d'épizooties, les Marbas, agriculteurs sédentaires du

sud du lac Tchad, enferment leurs chevaux dans des écuries intégrées à l'habitat durant les pluies de la mousson (SEIGNOBOS *et al.* 1987). Ces dispositions particulières montrent que cet animal ne peut s'accommoder d'une vie itinérante à longueur d'année en région tropicale. Ses premières représentations en Adrar des Iforas aux côtés d'espèces de la grande faune sauvage supposent donc un pastoralisme peu mobile, au moins durant les pluies de la mousson, de la part de personnages en position sociale dominante qui l'attelaient à des chars pour parfaire la stratégie de prestige de leur communauté.

Les résultats des fouilles de Jean-Pierre ROSET (2007) et François PARIS (1990) à Iwelen, au nord-est de l'Air, fixent le cadre chronologique de cette évolution. Trois pointes de lance en cuivre, découvertes dans une zone d'habitat fréquentée durant le 1^{er} millénaire av. J.-C., sont identiques à celles gravées alentour dans les mains de personnages représentés de face selon des conventions appliquées dans l'Air et dans l'Adrar des Iforas. Les multiples affinités entre l'art rupestre de ces deux massifs voisins du Sahara méridional, riches en figures de porteurs de lance, engagent à le dater du 1^{er} millénaire av. J.-C. Ce témoin d'une hiérarchisation de la société s'accorde plutôt avec ce que l'on sait aujourd'hui de l'organisation politique et des stratégies de défense en œuvre dans différentes régions ouest-africaines au cours de cette période. La remarquable statuette de terre cuite de la culture Nok du centre du Nigeria dénote pour lors un art savant, sinon déjà un art de cour, de la part de groupes établis sur des hauteurs parfois protégées de remparts de pierre (BOULLIER *et al.* 2002-2003, RUPP *et al.* 2005). A 500 km de là, au sud-ouest du lac Tchad, à partir du v^e siècle av. J.-C., de larges et profonds fossés peuvent être associés à de puissants murs de terre creusés autour d'habitations rassemblées sur des dizaines d'hectares, attestant du même souci de protection (MAGNAVITA *et al.* 2009). L'apparition d'éperons barrés et de villages ceints de murailles au sommet et sur les pentes des Dhars Tchitt et Oualata, longue falaise du sud mauritanien, remonte au II^e millénaire av. J.-C. (AMBLARD 2006). Dès le III^e siècle av. J.-C., à seulement 500 km de l'Adrar des Iforas, des agriculteurs s'installent sur les levées alluviales de la moyenne vallée du Niger naturellement protégées par les eaux de l'inondation pendant que d'autres construisent des dizaines de greniers en boudins de glaise superposés dans une grotte perchée de la falaise de Bandiagara (BEDAUX 1972, BEDAUX *et al.* 1978, MC INTOSH & MC INTOSH 1980). Ces données, si éparses soient-elles, encouragent à l'approfondissement des recherches sur la période des chars africains. Le scénario de migration-conquête de populations septentrionales souvent avancé, s'avérera peut-être trop réducteur et trop orienté, dès lors que l'on disposera de vestiges archéologiques en quantité suffisante pour des comparaisons interrégionales.

Les expressions finales

A l'art schématique des deux derniers millénaires av. J.-C. succède, sans transition thématique, un art au caractère narratif parfois marqué. Les animaux préférés sont désormais les chevaux et les dromadaires. Les compositions renvoient à des traditions prisées par les Touaregs : chasse à courre, port de javelots et d'habits bien couvrants, utilisation d'une écriture composée de signes très semblables aux *tifinagh* dont se servent ces pasteurs nomades pour transcrire quelques messages dans leur langue berbère. Ces thèmes et ces inscriptions se répartissent sur la majeure partie de leur domaine. Aussi est-il logique d'attribuer ces expressions à leurs ancêtres.

L'écriture, le port de javelots et la chasse à courre sont trois traditions apparues en Afrique du Nord au cours du 1^{er} millénaire av. J.-C. Des stèles découvertes dans des tumulus à chapelle de la région de Djorf Torba (piémont méridional de l'Atlas sud-oranais d'Algérie) montrent des hommes armés de plusieurs javelots dans des attitudes identiques à celles des guerriers de l'Adrar des Iforas et de l'Air. Les décors géométriques de certaines stèles et la figuration de croix latines ont conduit CAMPS (1995) à les considérer comme contemporaines des derniers siècles de l'occupation romaine, époque où le dressage du dromadaire comme méhari se généralisa dans le Sahara du nord. Ainsi, à partir des IV^e et V^e siècles apr. J.-C., des cavaliers et méharistes se sont rendus maîtres de territoires sahariens de plus en plus méridionaux dont ils ont gravé et parfois peint des éléments propres à leurs manières de vivre, aujourd'hui encore spécifiques aux Touaregs (fig. 9).

Cette mise en place des Touaregs, fortement suggérée par l'art rupestre, est documentée par les fouilles. Trois tombes étudiées dans l'Air et ses environs par François PARIS (1996) ont livré un matériel de facture manifestement berbère. La première est un tumulus à cratère édifié sur une plate-forme gravillonnée sous lequel était inhumée une femme parée d'un anneau en bronze à chaque cheville et d'un bracelet en corne à chaque bras, coiffée d'un voile de coton et vêtue d'une tunique en laine dont les motifs et la technique de tissage témoignent d'une influence, sinon d'une origine, septentrionale. Les datations donnent pour cette sépulture un âge moyen compris entre 780-945 apr. J.-C. La seconde est une bazina à alignement datée sur fragments osseux de 890-1025 apr. J.-C. Un petit bol en terre cuite à fond conique et à embase plate, pourvu d'une oreille en partie haute, était placé dans la chambre funéraire. Son décor d'incisions parallèles croisées en losanges évoque les motifs rectilinéaires de la poterie berbère de l'Afrique du Nord protohistorique et historique. La troisième tombe, de même architecture que la seconde, est sensiblement contemporaine des deux précédentes par le bol en terre

cuite, entièrement décoré de triangles incisés et muni de deux anses latérales raccordées à une embase creuse, retrouvé dans la chambre funéraire: par sa forme et son décor géométrique, ce vase s'apparente aux poteries retrouvées dans des tombeaux datés du IV^e siècle apr. J.-C. situés plus au nord, à Abalessa dans l'Ahaggar et à Germa au Fezzan méridional (CAMPS 1974). Des poteries peintes de motifs géométriques ont été exhumées sur différents sites de la moyenne vallée du Niger datés des V^e-IX^e siècles apr. J.-C. Le gisement archéologique de Djenne-Jeno a livré, en outre, deux perles en verre d'époque romaine (MC INTOSH 1994). Un peu plus au sud, à Kissi (nord-est du Burkina Faso), les fouilles de sépultures datées de cette même époque ont mis au jour des bijoux en laiton, des poignards, des épées, des tissus et des perles en verre témoignant aussi d'influences nord-africaines et d'échanges avec le monde berbère (MAGNAVITA 2009).

La transformation des mythes et des croyances antéislamiques, consécutive à l'adoption de la religion musulmane, a conduit les Touaregs à abandonner leur tradition d'art rupestre dans le courant du II^e millénaire apr. J.-C.

Conclusion

Les gravures rupestres de l'Adrar des Iforas présentent un intérêt majeur pour la connaissance de l'histoire du peuplement pastoral au Sahara du VI^e millénaire av. J.-C. à l'islamisation. Les expressions locales, comparées à celles connues des régions voisines, témoignent de plusieurs événements importants: de la mobilité de pasteurs au néolithique ancien, de la circulation d'idées et de biens de prestige à très grandes distances au début de l'âge des métaux, d'une accentuation des inégalités sociales durant le I^{er} millénaire av. J.-C., de la mise en place d'une société aristocratique d'éleveurs de chevaux et de dromadaires dans le sud du Sahara à partir des IV^e-V^e siècles apr. J.-C. A ces précieux éléments de connaissance, il faut ajouter une possible activité métallurgique dans l'Adrar des Iforas dès le II^e millénaire av. J.-C., comme donne à le penser le contexte iconographique de réalisation d'objets coudés en métal sans équivalence connue. Ces quelques points montrent combien les apports de l'art rupestre sont complémentaires de ceux fournis par les autres domaines de l'archéologie. Les recherches à venir ne pourront faire l'économie de fouilles au voisinage des stations d'art rupestre comme cela a été fait à Iwelen dans l'Aïr au début des années 1980. De telles recherches supposent des moyens humains et matériels et des financements très difficiles à obtenir aujourd'hui et, d'autre part, des missions archéologiques dans des secteurs où l'insécurité va grandissante... Voilà qui ne prête guère à l'optimisme en ce début du XXI^e siècle!

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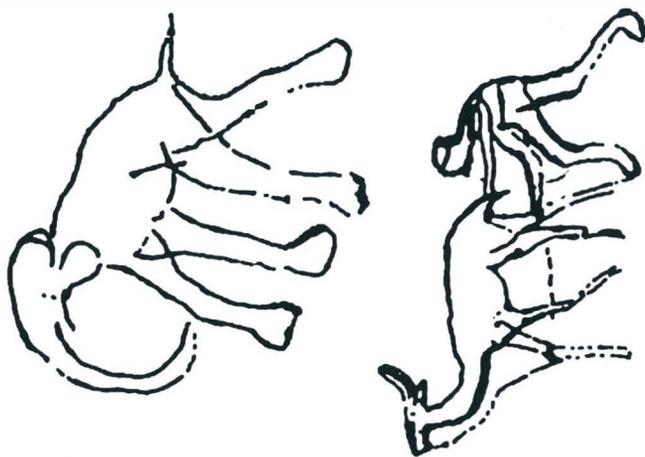


2a



2b





2c

Fig. 2a, b, c. — Exemples de gravures anciennes. Taurin à longues cornes inclinées vers l'arrière et à robe compartimentée, personnage masqué se déplaçant avec deux girafes à son contact, paroi ornée en deux registres: un éléphant est dessiné en marche dans la partie supérieure alors que dans la partie inférieure un personnage semble guider, à larges enjambées, un guib à l'aide d'une laisse; l'éléphant est sous-jacent à une figure schématique de taurin et à une de girafe.



3a



3b



3c

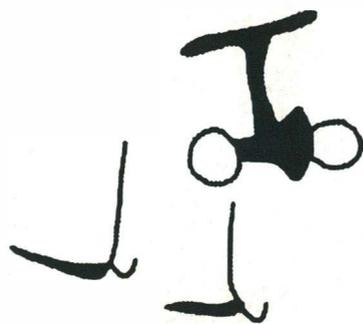


3d

Fig. 3a, b, c, d. — Exemples de gravures de l'époque des objets coudés. Ces derniers sont figurés soit isolés ou groupés par paire ou par trois, soit brandis à bout de bras par des humains minimisés de taille inférieure à 30 cm sans coiffure, ni parure ou vêtement détaillés. Les lames sont pourvues d'un crochet à leur base. Leurs profils variés suggèrent l'emploi d'un métal. Les silhouettes des deux girafes à lien et du taurin sont rendues sans perspective et leur attitude caractéristique n'est pas restituée.



4a





4b



Fig. 4a, b. — Char à timon unique figuré à côté de deux objets coudés (site de Tirist). Bœuf à bosse entouré d'un objet coudé traité isolément et d'un autre brandi à bout de bras par un personnage de petite taille (site d'In Tahaten). Il y a tout lieu de penser que les gravures réunies sur chacune de ces parois qui présentent la même patine et qui furent réalisées selon la même technique, sont contemporaines.



5a



5b



5c

Fig. 5a, b, c. — Cruciformes, spirale développée en méandres et files de chars: motifs particuliers gravés dans l'Adrar des Iforas dont on retrouve des exemplaires équivalents dans l'art rupestre des régions plus septentrionales.

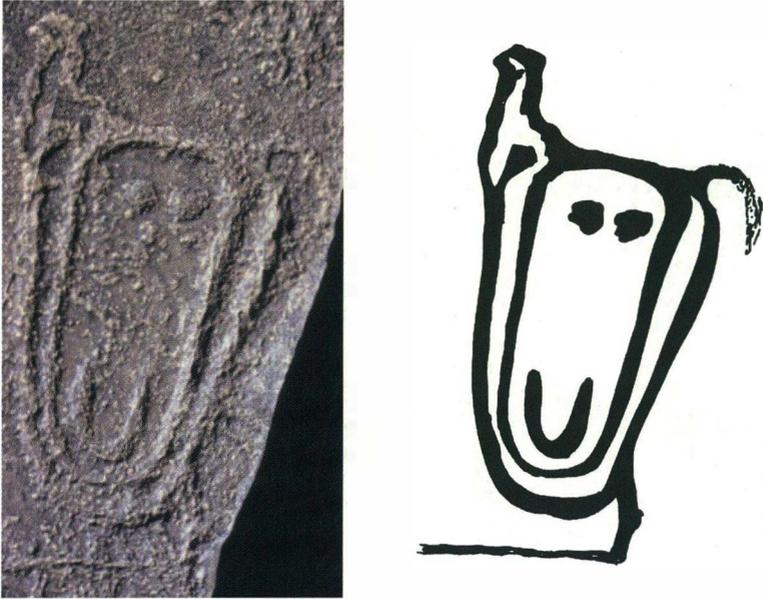


Fig. 6. — Ovale à double ponctuation (H = 30 cm).

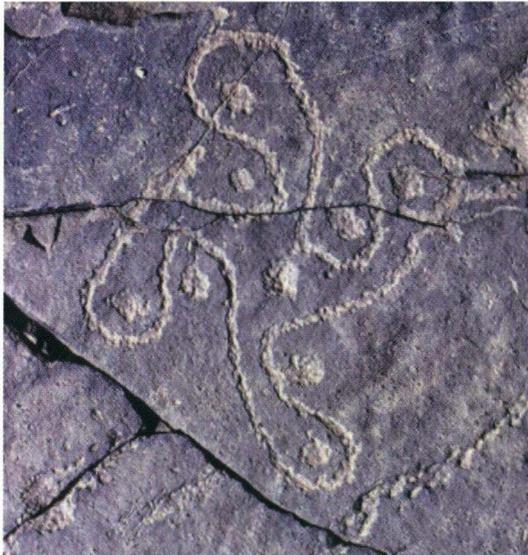


Fig. 7. — Gravure à quatre appendices et neuf cupules réalisée dans l'Adrar des Iforas. La longueur prise entre les extrémités des deux appendices opposés les plus longs vaut 25 cm.



Fig. 8. — Premières représentations gravées de chevaux dans l'Adrar des Iforas en contexte riche de figures de porteurs de lance (1 & 2: Issamadanen; 3: Asenkafa) et dans l'Aïr (4 & 7: Tagueï; 5: Emouroudou; 6: Iwelen).

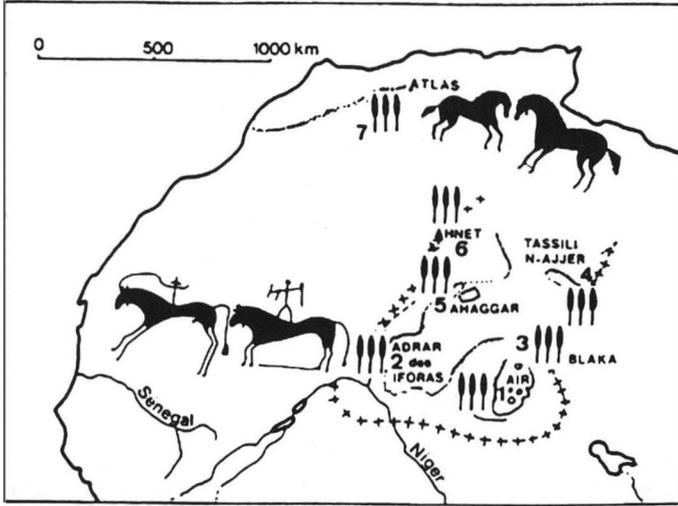


Fig. 9. — Répartition géographique des représentations de guerriers armés de plusieurs lances ou javelots recouvrant la majeure partie du domaine touareg (++++), laquelle est identique à celle des chevaux du style levretté (1: Téloues; 2: Déladjou; 7: stèles funéraires peintes de Djorf Torba).

Quelques résultats du projet de datation directe et indirecte de l'art rupestre saharien

par

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MOTS-CLES. — Pigments picturaux; Méthodes anciennes de relevé et liants; Occupation holocène et bovidienne; Question de l'holocène ancien et de la culture matérielle des auteurs des Têtes Rondes.

RESUME. — La caractérisation des pigments picturaux montre l'absence d'éléments organiques pouvant indiquer l'emploi de liants. Le rôle négatif des méthodes anciennes de relevé se confirme, et, même si des liants avaient été découverts et datés, les nombreuses sources de pollution auraient rendu les datations suspectes. Dorénavant, les microp prélèvements devront être effectués sur des peintures vierges de toute intervention humaine. Dans l'état des connaissances, les datations des dépôts archéologiques font remonter l'occupation holocène aux VI^e-VII^e millénaires CalBC. Le Bovidien est plus sûrement daté du V^e millénaire CalBC, mais ses caractéristiques sont celles des phases moyenne et récente de cette culture. Il se pose la question de l'absence d'un holocène ancien et de celle de la culture matérielle des auteurs des Têtes Rondes.

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1. Introduction

Cet article fait suite aux premiers résultats obtenus dans le cadre du projet algéro-français de datations directes et indirectes de l'art rupestre saharien (CNRPAH-CNRS) (HACHID *et al.* 2010). Il aborde quelques résultats relatifs à la caractérisation de pigments picturaux prélevés sur des peintures rupestres de la Tasili-n-Ajjer et à la datation indirecte par des dépôts archéologiques se trouvant en relation pertinente avec ces peintures.

Dès la création du projet, la datation indirecte de l'art rupestre saharien fut inscrite à notre programme de recherche, car nous ne pouvions garantir la datation directe des peintures. En effet, un colloque international (Collectif 1978) et un programme de conservation conduit par les conservateurs de la grotte de Lascaux (Laboratoire de Recherches sur les Monuments historiques (LRMH), France) avaient établi que les peintures avaient été altérées et contaminées par les éléments naturels et surtout les campagnes de relevés d'Henri Lhote et ses équipes de copistes (BRUNET *et al.* 1984, 1987, 1988-89).

2. La question du liant

Dans le massif voisin de la Tadrart Akukas (Libye), des analyses réalisées en 1962 à l'Institut central de la Restauration, à l'initiative de Fabrizio Mori, avaient mis en évidence de la matière organique «*e più precisamente proteica, del tipo della caseina del latte*» (PERSIA 1992, p. 105; MORI 1965). Plus récemment, cinq prélèvements effectués sur quatre sites rupestres par l'équipe de recherche italienne de l'Université La Sapienza, sous la direction de Savino Di Lernia, ont livré des résultats préliminaires d'interprétation délicate (PERSIA 1992, PONTI 1996, PONTI *et al.* 2005, SINIBALDI *et al.* 1996). Ces chercheurs supposent, sans pouvoir le prouver, que le composant à base protéinique qui a fait l'objet de datations pourrait résulter d'un liant. Le nombre de prélèvements et de datations est cependant insuffisant pour que l'on puisse tirer des conclusions. Dans la Tasili-n-Ajjer, de la matière organique avait également été isolée dans les années 1980 dans une écaille prélevée sur une peinture de boviné, à l'abri dit «aux Troupeaux», à Timenzouzine; elle fut identifiée comme étant du noir animal, mais, comme dans la Tadrart Akukas, on ignore son origine précise (BRUNET *et al.* 1984, 1987, 1988-89).

Parmi les travaux effectués à l'automne 2008, puis 2009, des microprélèvements ont été effectués sur les représentations dans plusieurs abris tassi-liens à Tamghit, et surtout Ta-n-Zumaitak, Ti-n-Tazarift et Séfar, tandis que des écailles furent récoltées au pied des parois (fig. 1). Ils ont fait l'objet

d'analyses physicochimiques au Centre de Recherche et de Restauration des Musées de France (C2RMF) et au Laboratoire des Sciences du Climat et de l'Environnement (LSCE).

La technique picturale employée par les peintres préhistoriques n'a guère fait l'objet de recherches; pour les spécialistes, la complexité des structures et l'altération de la roche rendent difficile l'étude des peintures. En effet, la quantité de pigment est souvent faible en comparaison des produits d'altération (gypse et composés associés) et des dépôts secondaires (de type éolien). Pour s'affranchir de ces contraintes et apporter de nouveaux éléments sur les matières premières et les procédés employés, des analyses sur microprélèvements et sur coupes stratigraphiques ont été réalisées au C2RMF à l'aide de méthodes non destructives complémentaires. L'identification des phases minérales par microdiffraction des rayons X (μ -DRX) montre que les pigments rouges employés sont à base d'alumino-silicates et d'oxydes de fer de type hématite. Le pigment noir est constitué d'un mélange d'oxyde de manganèse et d'oxyde de fer. L'étude de la stratigraphie des couches picturales et du substrat par la microscopie électronique à balayage, couplée à un spectromètre de rayons X dispersif en énergie (MEB-EDX), a permis de préciser la constitution des couches et la granulométrie des pigments. Les observations ont mis en évidence des différences techniques entre les périodes ou écoles du bovidien et des têtes rondes (par la suite: TR) (LAHLIL *et al.*, à paraître). L'exploration de la présence de liants organiques a été effectuée par microscopie infrarouge à transformée de Fourier (μ -FTIR). L'analyse des éléments majeurs et traces par faisceau d'ions (PIXE et RBS) sur l'accélérateur de particules AGLAE met en évidence la corrélation entre le fer et des éléments traces, tels que le titane ou le phosphore (PICHON *et al.* 2010). Ces éléments pourraient constituer des marqueurs des lieux d'approvisionnement en matière colorante. Dans la Tadrart Akukas, des analyses de pigments ont été effectuées sur diverses peintures, montrant qu'ils étaient à base d'ocre constituée «da silicie e silicoalluminati, colorati in giallo o rosso da ossidi di ferro idrati, il cui colora varia a seconda del grado di idratazione» (PERSIA 1992, p. 105). D'autres, réalisées sur trois pigments de couleur blanche, jaune et rouge, ont permis d'identifier les éléments suivants: «... calcio e ferro in quantitativi maggiore e titanio, manganese, stronzio, zirconio e bario in quantitativi minori»; l'analyse des couleurs blanche, d'une part, jaune et rouge, d'autre part, a montré des différences de composition (MOIOLI & SECCARONI 1992, pp. 109-110).

Si, dans la Tadrart Akukas, les datations faites sur le carbone organique restent insuffisantes, dans la Tasili-n-Ajjer (au sud du plateau du Maddak), aucun résultat probant n'a été obtenu jusqu'à présent en ce qui concerne les

possibilités de datation directe (HACHID *et al.* 2010, p. 30). En effet, le carbone détecté était associé à des phases minérales (carbonate et oxalate de calcium) résultant de l'altération des parois et, donc, sans relation chronologique avec les tracés pariétaux. Cette évolution taphonomique fréquente dans les sites ornés de plein air a certainement été amplifiée par les interventions intempestives de l'équipe d'Henri Lhote, lors des relevés des parois ornées à partir des années 1960 (voir ci-après).

Bien que la recherche débute à peine dans le domaine de la datation directe de l'art rupestre saharien, on est amené à se demander :

- Si les peintres du plateau de la Tasili-n-Ajjer n'ont pas utilisé de liant, comment un pigment uniquement minéral pourrait-il adhérer à la roche durant des millénaires?
- Au contraire, si la peinture a contenu un liant, pourquoi n'y a-t-il plus aucune trace de celui-ci dans les échantillons analysés?
- Enfin, bien que, dans la Tadrart Akukas, des relevés de peintures aient parfois été effectués avec des méthodes similaires à celles pratiquées par Henri Lhote, mais dans une mesure et une intensité moindres, pourquoi de la matière organique fut-elle découverte dans des prélèvements effectués sur quatre sites rupestres, alors que la première série d'une vingtaine d'échantillons provenant des peintures de la Tasili-n-Ajjer en est complètement dépourvue?

Dans le domaine de l'art rupestre, même si les uns et les autres se sont essayés à cet exercice, l'absence d'expérimentations précises (un vide à combler) fait qu'on ignore tout des techniques des peintres préhistoriques. Henri Lhote avait recueilli des fragments de parois tombés à terre et portant des traces de peintures appartenant à différentes périodes; ils firent l'objet d'examen micro-analytiques et chromatographiques qui ne mirent pas en évidence «de liant à base de protides détectables», et cet auteur ajoutait que ce résultat était «... important du fait qu'il avait été question de lait à propos des peintures du Fezzan, et de sang de bœuf pour celles de l'Afrique du Sud» (LHOTE 1976a, p. 70). Faute de recherches et d'expérimentations, on ignore tout autant si les propriétés de «liaison» du liant interviennent dans la conservation de la peinture. Henri Lhote, qui souligne que, de son temps, pour «les matières colorantes», «il n'y avait qu'à se baisser pour les ramasser» (LHOTE 1976b, t. II, p. 821), a noté que les tentatives de peinture réalisées avec des «ocres ramassées sur place, réduites en poudre et simplement délayées dans de l'eau ont montré qu'il était très facile de peindre sur les parois gréseuses [...] car le grès absorbe presque instantanément l'humidité...» (LHOTE 1976a,

p. 70); en d'autres termes, une bonne partie de la couche de peinture de nature minérale est absorbée par la roche.

Au cours du séminaire international sur la conservation des peintures de la Tasili-n-Ajjer organisé par l'Office du Parc national du Tassili et l'Unesco en 1978, sous l'impulsion de Jean-Michel Zomeno et François Soleihavoup, un spécialiste des peintures murales de la période médiévale (peintures extérieures des églises, notamment), Vasile Dragut, expliqua que pour ces dernières, le liant jouait un rôle de fixateur ayant la capacité de faire adhérer la matière colorante au support encaissant, et qu'il y avait de fortes chances, techniquement, qu'il en soit de même pour les peintures rupestres exécutées directement sur la roche (Collectif 1978). Sans spéculer sur la nature de la matière organique découverte dans les prélèvements effectués dans la Tadrart Akukas et le noir d'origine animale isolé à Timenzouzine (Tasili-n-Ajjer) (liant ou pas), on peut s'attendre à ce que les communautés qui ont exécuté des peintures du style ou de la période des TR, comme celles qui ont peint les figures du style ou de la période du Bovidien (Pastoral dans la Tadrart Akukas) dans la Tasili-n-Ajjer comme dans la Tadrart Akukas, étaient au moins apparentées et qu'elles faisaient usage de savoirs comparables dans le domaine de la technique picturale.



Fig. 1. — Localisation géographique des sites rupestres où furent effectués les prélèvements de pigments picturaux ainsi que les sondages et fouilles (zone comprise entre le Maddak et l'Edjerit, Tasili-n-Ajjer) (M. Hachid).

3. La question de l'absence du liant

On sait que les pigments picturaux ont beaucoup souffert des effets subis par les peintures rupestres lors des relevés des campagnes d'Henri Lhote et ses équipes; la question qui nous intéresse plus précisément est de savoir si les interventions sur la paroi ont contribué à faire disparaître les liants. Si nous avons choisi trois sites du plateau qui domine l'oasis de Djanet (Ta-n-Zumaitak, Ti-n-Tazarift et Séfar), c'était à la fois parce qu'ils abritaient des peintures emblématiques têtes rondes et bovidiennes, mais aussi pour des raisons pratiques et logistiques, une équipe pluridisciplinaire et un matériel de 400 kg monté au plateau à dos d'âne ne permettant pas de travailler sur des lieux très éloignés. Nos microprélèvements ont forcément été effectués sur des peintures qui, toutes, avaient fait l'objet de relevés par Henri Lhote au cours des campagnes de 1956-57, 1959, 1962 et 1970.

Les actes du séminaire international sur la conservation des peintures de la Tasili-n-Ajjer, auquel ont participé des chercheurs de diverses disciplines, ont conclu que de tous les agents naturels, l'eau était la plus importante source de dégradation, d'où l'interdiction de mouiller les peintures qui, dès lors, fut prise par le Ministère algérien de la Culture (Collectif 1978). Ces spécialistes ont souligné que les frottements et le cycle répété humectation/dessiccation dans un climat aride avaient forcément affecté les pigments. Pour effectuer leurs relevés, Henri Lhote et ses équipes ont mouillé et frotté les parois pour faire apparaître les images plus ou moins masquées par une sorte de voile dont la genèse est encore insuffisamment connue mais qui aurait pu jouer un rôle protecteur. Dans les années 1980, les analyses des prélèvements picturaux effectués dans le cadre d'un programme de conservation mené en collaboration avec le Laboratoire de Champs-sur-Marne, comprenant des conservateurs de la grotte de Lascaux, ont confirmé le rôle majeur que l'eau et ses apports polluants avaient pu jouer, sachant que même l'eau distillée réactive des bactéries dormantes à l'intérieur de la roche (BRUNET *et al.* 1984, 1987, 1988-89). Dans son premier ouvrage sur les peintures de la Tasili-n-Ajjer, Henri Lhote publie la photo d'un copiste mouillant les peintures d'un abri (LHOTE 1973, fig. 5). Des photographies de Jean-Dominique Lajoux, dont certaines, inconnues à ce jour, ont été récemment publiées par Jean-Loïc Le Quellec (LE QUELLEC 2010a, pp. 214-217) [1]*; elles constituent de précieux documents d'archives

* Les chiffres entre crochets [] renvoient aux notes, pp. 92-93.

et illustrent combien ces interventions ont été intempestives. L'une d'elles montre un copiste en train de décaper à l'eau des peintures dans l'abri dit « ethnique » à Séfar (LE QUELLEC 2010a, p. 217) (fig. 2). Au moment de leur découverte, de nombreuses parois peintes pouvaient être entièrement masquées par ce voile blanchâtre qui a été éliminé par mouillage et frottement de la paroi avec des brosses et des éponges imbibées d'eau. En frottant énergiquement la paroi peinte, les copistes ont parfois laissé des stries sur les peintures, comme c'est le cas à Timenzouline où « ... les interventions antérieures pour faire des relevés ont dû être rudes à l'aide de brosses et en humidifiant la paroi » (BRUNET *et al.* 1984, 24.1 et photo n° 1, 24.2). L'eau utilisée pour raviver les peintures était puisée dans les guelta-s environnantes et elle était saturée de bactéries comme ce Saharien le souligne parfois (LHOTE 1976a, pp. 53, 64, etc.); elle a donc certainement contribué à aggraver ou créer des altérations, dépôts et encroûtements de calcins et de sulfins évoluant en étroite combinaison avec des proliférations microbiologiques susceptibles de s'attaquer tant à la matière minérale qu'à l'organique (SOLEIHAVOUP 1978a, b; BRUNET *et al.* 1984, 1987, 1988-89). Pour mouiller les peintures, l'eau était utilisée non pas par tamponnement, mais par des mouvements de va-et-vient qui brouillaient les traits comme les à-plats picturaux ainsi qu'on peut encore le voir quand le pigment a bavé: c'est le cas pour la célèbre paroi d'Iheren figurant une superbe scène de vie au campement pour laquelle, sans le relevé conservé au Musée de l'Homme à Paris, il serait impossible de retrouver certaines figures, cette paroi faisant penser, toutes proportions gardées, au résultat du mouvement d'un essuie-glace sur un pare-brise poussiéreux et mouillé (HACHID 2000, pp. 44-45, fig. 22).

Les lames minces faites à la demande d'Henri Lhote ont indiqué, pour les peintures têtes rondes et bovidiennes, une pénétration du pigment dans la roche pouvant « ... atteindre un millimètre » (LHOTE 1976a, p. 70). La caractérisation des pigments picturaux que nous avons prélevés montre que l'épaisseur des couches de peinture est de l'ordre de 0,1 mm: il s'agit là d'un état de conservation actuel du pigment pictural après des millénaires d'exposition aux éléments, auquel s'est ajouté l'impact des interventions intempestives d'Henri Lhote et de ses copistes; il est probable qu'initialement, le pigment était plus épais. La forte altération des parois a donc rendu difficile la caractérisation physicochimique des pigments par le C2RMF et le LSCE, pigments dont il fallait, de plus, ne prélever qu'une faible quantité (HACHID *et al.* 2010, p. 33).



Fig. 2. — Un copiste de l'équipe d'Henri Lhote mouillant et frottant des peintures dans l'abri dit «ethnique» à Séfar (LE QUELLEC 2010).

4. Des pigments altérés et pollués

Un autre problème doit être posé: en supposant que des liants se soient éventuellement conservés malgré l'action des éléments naturels et des traitements anthropiques, leur contamination par du carbone moderne, source d'erreur importante pour la datation radiocarbone, était inévitable. Les sources de pollution ont été nombreuses et diverses: l'eau polluée des guelta-s, la manipulation des éponges et brosses d'une peinture et d'une paroi à une autre, le contact des feuilles de calque qui ont auparavant traîné sur le sol, la fumée de la pipe du copiste Claude Guichard alors qu'il est en train d'effectuer un relevé, la cigarette d'Henri Lhote reprenant le contour des peintures au crayon à mine de plomb après les avoir mouillées avec l'eau de sa gargoulette, etc. (LHOTE 1973; LE QUELLEC 2010a, pp. 214, 217-218) (fig. 3a, b) [2]. Dans de telles conditions, même si des molécules organiques avaient été identifiées dans les pigments, il aurait été difficile d'établir leur origine: molécules associées aux pigments préparés par l'homme ou contaminations en carbone dues aux interventions des copistes sur les peintures?

Les dégradations subies par les images rupestres, qui ont fait l'objet de relevés lors des campagnes d'Henri Lhote, interdisent donc leur datation directe: les risques de contamination en carbone moderne sont tels que la fiabilité des résultats resterait, de toute façon, sujette à caution puisque la

principale source d'erreur des datations ^{14}C est la contamination des échantillons à dater par du carbone étranger. Certes, dans un art de plein air exposé aux éléments depuis des millénaires, les pigments minéraux et les liants possibles ont subi des dégradations, mais il est évident que des causes d'origine anthropique se sont combinées aux facteurs naturels pour accentuer leur disparition; si celles-ci furent plus courtes dans le temps, elles furent aussi plus agressives. Notre appréhension de ne pas trouver de l'organique dans les peintures ayant fait l'objet de relevés par les copistes d'Henri Lhote s'est donc trouvée confirmée. Le pigment minéral a déjà grandement souffert et si des liants, que l'on suppose plus fragiles, ont été utilisés, alors, on comprend que ces relevés aient pu les altérer et les faire disparaître. A l'avenir, il a donc été décidé d'adopter une autre stratégie dans le choix des peintures devant faire l'objet de microprélèvements en sélectionnant celles qui ont échappé aux campagnes de relevés d'Henri Lhote et à toute autre forme d'intervention humaine, hormis la photographie.

Il est heureux que toutes les peintures rupestres de la Tasili-n-Ajjer n'aient pas fait l'objet de relevés et que sur ce plateau, comme au niveau de son piémont, ainsi qu'en d'autres lieux du Sahara algérien, d'autres régions et d'autres sites rupestres, à l'instar de la Tadrart méridionale et de l'Ahaggar par exemple, puissent se prêter à des analyses mieux à même d'infirmer ou de confirmer la présence de liant et, dans ce cas, d'identifier sa nature et son origine.



a



b

Fig. 3a, b. — Pollution des pigments par le plomb du crayon et la fumée de tabac (LE QUELLEC 2010).

5. Les datations anciennes et récentes des dépôts archéologiques

5.1. LES DATATIONS DES ABRIS FOUILLES PAR HENRI LHOTE

A partir de 1960, grâce au développement de la méthode du carbone 14, une première série de datations a été obtenue pour des foyers situés dans des niveaux archéologiques au pied de parois ornées d'abris de la Tasili-n-Ajjer fouillés par Henri Lhote (DELIBRIAS 1962, ALIMEN *et al.* 1968, CAMPS *et al.* 1968). Henri Lhote a fouillé douze abris sur le plateau dominant l'oasis de Djanet à l'est (entre Maddak et Edjerit), un treizième sur le plateau de l'Oued Tadjelahine (dominant l'oasis d'Eherir à l'ouest), ainsi que deux autres dans l'Oued Djerat; sur la base de ses observations de terrain, l'un de nous pense qu'Henri Lhote a dû en fouiller d'autres, notamment ceux dont le dépôt très peu épais était rapide à dégager. Il arrive parfois que les déblais des fouilles soient encore très riches en matériel archéologique (HACHID 1998, p. 119, figs 168-169). Seules deux fouilles ont été publiées, I-n-Itinen 2 (abri dit «de l'hippopotame») et Ekaham wa-n-Tartaït (ALIMEN *et al.* 1968) et toutes n'ont pas fait l'objet de datations, comme celles, par exemple, des deux abris de Tasigmat dans l'Oued Djerat (LHOTE 1976b, t. II, p. 797). La quinzaine de datations que nous possédons correspondent à I-n-Itinen 1, 2 et 8 (la photo des rejets de fouille de l'un de ces abris a été publiée, mais on ignore lequel des trois il s'agit; HACHID 1998, p. 119, figs 168-169), Ekaham wa-n-Tartaït, Jabbaren 1 ou abri dit «de l'oryctérope», un autre abri dans le même site, avec deux datations pour le même charbon, mais sans numérotation ou appellation, Titeghast-n-Elias 3, 5 et 6, Tissoukaï, avec deux abris sans numérotation ou appellation, Ti-n-Tazarift, le grand abri d'Iheren dont il a été question ci-dessus, et, enfin, une datation à Séfar pour laquelle l'abri n'est pas précisé (tab. 1). Ces datations ont été réalisées sur des charbons de bois, à l'exception de deux d'entre elles qui l'ont été sur des matériaux organiques non identifiés. La plupart des résultats sont compris entre 5000 et 2000 ans CalBC et sur quinze datations, onze sont plus précisément comprises entre 3000 et 5000 ans CalBC (tab. 1).

A I-n-Itinen 8 (datation n° 1), Henri Lhote et ses coéquipiers ont constaté que des peintures étaient «recouvertes par un épais enduit blanchâtre qui les masquait en grande partie»; évoquant une résine, cet enduit a été daté de 804 CalBC – 130 CalAD (DELIBRIAS 1962, p. 2; 1966, p. 87). Henri Lhote écrit que ces peintures très anciennes et «pré-bovidiennes» sont à rapporter aux TR (LHOTE 1976a, p. 102), mais la localisation de cet abri n'est pas précisée. Il en est de même pour un abri de Séfar (datation n° 12) dont la datation a été faite sur un matériau non identifié, prélevé dans un niveau cendré en

Tableau 1
Dates ¹⁴C des dépôts archéologiques de la Tasili-n-Ajjjer fouillés par Henri Lhote (calibrations d'après CALIB, STUIVER & REIMER 1993)

N°	Site	Matériau	Dates BP	Dates Cal BC	Réf. Mesure	Publications
1	I-n-Itinen 8	«Whitish paint of animal origin covering wall-pictures»	2250 ± 200	804 BC-130 AD	Gif-289	DELIBRIAS 1966
2	I-n-Itinen 2 (abri dit «de l'hippopotame»), couche	Charbon du foyer 2 circonscrit par un cercle de pierres	4630 ± 250	3958-2848	Gif-287	DELIBRIAS 1966 ALIMEN <i>et al.</i> 1968
3	I-n-Itinen 1 (abri dit «de l'hippopotame»), couche 2	Charbon du foyer 1, en base de la paroi ornée	4860 ± 250	4180-3011	Gif-286	DELIBRIAS 1966 ALIMEN <i>et al.</i> 1968
4	Jabbaren 1 (abri dit «de l'oryctérope»)	Charbon	4270 ± 300	3641-2128	Sa-65	DELIBRIAS 1964
5	Jabbaren	Charbon	5460 ± 300	4965-3646	Mc-14 (= Sa-66)	THOMMERET & RAPAIRE 1964
6	Jabbaren	Charbon	5470 ± 300	4987-3651	Sa-66 (= Mc-14)	DELIBRIAS 1964
7	Titeghast-n-Elias 6	Charbon d'un foyer du niveau supérieur	2500 ± 200	1114 BC-146 AD	Gif-291	DELIBRIAS 1966
8	Titeghast-n-Elias 3	Charbon du foyer circonscrit par un cercle de pierres	4560 ± 250	3803-2579	Gif-288	DELIBRIAS 1966
9	Titeghast-n-Elias 5	Charbon d'un foyer circonscrit par un cercle de pierres	7400 ± 300	6859-5715	Gif-290	DELIBRIAS 1966
10	Iheren	Charbon	4850 ± 110	3812-3484	Gif-2222	DELIBRIAS 1974
11	Ekaham wa-n-Tartaït	Charbon de la couche archéologique n° 2	4470 ± 250	3713-2474	Gif-292	DELIBRIAS 1966 ALIMEN <i>et al.</i> 1968
12	Séfar	Organique	5030 ± 300	4459-3085	Sa-62	DELIBRIAS 1964
13	Tissoukai	Charbon	3650 ± 130	2351-1730	Gif-840	DELIBRIAS 1971
14	Tissoukai	Charbon	4500 ± 300	3951-2457	ALG	CAMPS <i>et al.</i> 1968
15	Ti-n-Tazarift	Charbon	4690 ± 120	3705-3092	Hv-5611	GABRIEL 1984 VERNET & AUMASSIP 1998

surface d'un dépôt archéologique sur lequel nous reviendrons ci-dessous (DELIBRIAS 1964, p. 241). Les datations n^{os} 5 et 6 portent sur un même fragment de charbon prélevé dans un abri de Jabbaren et divisé en deux pour être confié aux laboratoires de datation de Monaco et de Saclay, respectivement. Les dates obtenues quasi identiques, 4965-3646 CalBC et 4987-3651 CalBC, attestent la pertinence des protocoles (préparation et mesure) utilisés dans les deux laboratoires (THOMMERET 1964, p. 196; DELIBRIAS 1964, p. 241). Henri Lhote a écrit que la datation de Titeghast-n-Elias (ligne 9, tab. 1) était la plus ancienne obtenue dans la Tasili-n-Ajjer: 7400 ± 300 ans, soit 6859-5715 CalBC (LHOTE 1976a, p. 103); elle le reste aujourd'hui, avec celle de l'abri dit «du Dieu au bâton» à Séfar (7015 ± 35 BP, soit 5989-5810 CalBC, cf. tab. 4) [3]. Cet auteur ajoute que cette datation a été obtenue dans un abri où se discernent des «vestiges de peintures de la période des têtes rondes», qu'il est possible que ceux-ci puissent être associés «à cette date», mais qu'il «est nécessaire d'attendre d'autres datations pour en avoir confirmation» (LHOTE 1976a, p. 103).

Bien qu'il s'agisse d'un travail ancien, on sait que les abris fouillés par Henri Lhote étaient des «gisements néolithiques» quasiment tous «bovidiens» (ALIMEN *et al.* 1968; LHOTE 1976a, pp. 67-68, 84-85, 100, 245). Dans l'article consacré aux sites d'I-n-Itinen et d'Ekaham wa-n-Tartaït (ALIMEN *et al.* 1968), mais également dans l'ouvrage consacré à «d'autres Tassili» (LHOTE 1976a), il souligne que la plupart du matériel archéologique mis au jour au cours de ses fouilles était caractérisé, notamment, par les décors de la poterie, les plaquettes à bords retouchés, le matériel de broyage, parfois aussi des palettes, godets et petits broyeurs ayant conservé de l'ocre ou de la matière noire (notamment à I-n-Itinen). Il note que «... le matériel des gisements de Séfar et de Jabbaren n'a jamais été publié et seules leurs datations sont connues» (LHOTE 1976b, t. II, p. 819), mais on sait aussi que le dépôt du premier abri contenait des fragments d'os de bovinés et une «industrie néolithique», au pied d'une paroi ornée de peintures de bovinés (DELIBRIAS 1964, p. 241). A Ekaham wa-n-Tartaït, peu de matériel archéologique fut exhumé, mais la fouille livra des fragments d'ossements humains, dont l'un appartenait à un crâne. Sur le plan typologique, rares étaient les vrais sites d'habitat comme I-n-Itinen, et la plupart des abris correspondaient à des haltes où les bovidiens avaient laissé en place des foyers et charbons, un riche matériel archéologique de surface dont d'épais détritiques constitués de nombreux ossements anciens de bovinés et ovicaprinés, comme à Jabbaren et Tissoukaï, dans des abris qu'il qualifiait de véritables «poubelles» (ALIMEN *et al.* 1968; LHOTE 1976a, p. 100). Ces dépôts archéologiques étaient traversés de lentilles blanchâtres de cendre déposées de manière anarchique sans

que l'on puisse en suivre les strates (ALIMEN *et al.* 1968, p. 422). Dans ces abris, les hommes préhistoriques avaient donc parqué leurs bêtes dont les excréments et le fumier gardaient encore une odeur nauséabonde au moment des fouilles.

Du fait de leurs caractéristiques industrielles et stratigraphiques similaires, Henri Lhote a rattaché ces dépôts archéologiques à une culture matérielle de pasteurs, le «Bovidien». Ce terme doit être précisé car il désigne à la fois une culture matérielle et une école ou période de l'art rupestre saharien. Henri Lhote n'a pas la paternité du terme quand celui-ci indique la culture matérielle précisément, mais c'est effectivement lui qui le premier mit cette culture en rapport avec les peintures bovidiennes; ainsi le terme «Bovidien» désigne-t-il, à la fois, la culture matérielle et une école ou période de l'art rupestre saharien [4]. Faute d'en savoir plus sur la diversité des styles picturaux «bovidiens», dont on sait que certains se sont succédé quand d'autres étaient contemporains, du moins partiellement, l'un de l'autre, celle-ci fut rapportée de manière confondue à une seule école ou période rupestre, le «Bovidien». Dans la Tadrart Akukas, les équivalents du terme «Bovidien» sont «Période pastorale» ou «Pastoral»; comme pour la Tasili-n-Ajjer, les chercheurs italiens en font usage pour désigner la culture matérielle des hommes préhistoriques pratiquant l'élevage ainsi que les peintures rupestres qui reflètent cette activité.

5.2. LES DATATIONS DE L'ABRI DE TA-N-ZUMAITAK C, DE L'ABRI DIT DU «GRAND DIEU» A SEFAR ET AUTRES VESTIGES ORGANIQUES

Les sondages de l'abri de Ta-n-Zumaitak C et de l'abri dit du «Grand Dieu» à Séfar ont été présentés dans un précédent article (HACHID *et al.* 2010, pp. 47-50). En 2009, la fouille a été élargie à l'ensemble du dépôt archéologique du second abri (où un témoin a été réservé). Quatre charbons de bois (LSCE-TAS-4, 5, 18, 19) et un fragment de bois (LSCE-TAS-20) ont été prélevés en 2008 parmi des vestiges de combustion, dont l'un se trouvait vingt centimètres plus bas que l'autre. Les âges C-14 sont compris entre 5690 ± 35 BP ans (4652-4452 ans CalBC) et 5975 ± 40 BP ans BP (4982-4744 ans CalBC). Contrairement à ce que l'on pouvait attendre, l'âge le plus récent (5690 ± 35 ans C-14 BP) a été obtenu sur le charbon le plus profond (à - 35 cm). Les préhistoriens ont pourtant trouvé un dépôt en place, nonobstant une zone bien circonscrite et directement située au pied des peintures du Grand Dieu et de la parturiente, zone qui visiblement avait fait l'objet d'une fouille dont on ignore l'auteur (bien qu'il soit très probable qu'il s'agisse d'Henri Lhote car celui-ci n'aurait pas manqué d'effectuer une excavation dans cet abri

d'importance). On est sûr que l'autre abri de Séfar, daté à Saclay dans les années 1960 (DELIBRIAS 1964, tab. 1), ne correspond pas à l'abri du Grand Dieu car la description de ses peintures par cet auteur est différente (LHOTE 1976b, t. II, p. 819). Outre que le dépôt de l'abri du Grand Dieu est en place, la profondeur limitée de celui-ci et les datations, toutes situées au ^ve millénaire CalBC, montrent une parfaite cohérence. Le fragment de bois récolté à 34 cm de profondeur correspond à une grande racine en très bon état de conservation qui s'est infiltrée dans le dépôt archéologique (espèce végétale en cours d'identification). Elle est datée de 4810 ± 35 ans C-14 BP (3656-3521 CalBC), soit un millénaire plus tard que les charbons de bois. Les résultats sur charbons de bois attestent une occupation de l'abri du Grand Dieu entre 4500 et 5000 CalBC (tab. 2) (STUIVER & REIMER 1993, REIMER *et al.* 2009).

Tableau 2

Résultats des datations sur les échantillons prélevés dans le dépôt archéologique de l'abri du «Grand Dieu» à Séfar

Réf. Echantillon LSCE	Nature (Profondeur)	Réf. Mesure	Age C-14 BP	Age calibré BC (2 sigma)
TAS-4	Charbon (- 15 cm)	GifA 09175/SacA 13848	5975 ± 40	4982-4730
TAS-5	Charbon (- 17 cm)	GifA 09176 /SacA 13849	5950 ± 35	4933-4728
TAS-18	Charbon (- 15 cm)	GifA 09177/SacA 13850	5865 ± 35	4830-4618
TAS-19	Charbon (- 35 cm)	GifA 09178/SacA 13851	5690 ± 35	4666-4451
TAS-20	Bois (- 34 cm)	GifA 09179/SacA 13852	4810 ± 35	3655-3521

A l'abri de Ta-n-Zumaitak C, un charbon a été prélevé en surface (C0) et trois autres dans le niveau inférieur (C4), à une quinzaine de centimètres de profondeur (LSCE-TAS-26, 34, 35 et 36). Les âges de ces trois échantillons sont compris entre 4000 et 4600 CalBC et celui du charbon prélevé en surface est plus jeune d'un millier d'années (3600-3800 CalBC) (tab. 3).

Tableau 3

Résultats des datations sur les échantillons prélevés dans le sondage de l'abri de Ta-n-Zumaitak C

Réf. Echantillon (LSCE)	Couche	Réf. Mesure	Age C-14 BP	Age calibré BC (2 sigma)
TAS-26	Co, 5 cm	GifA 09180/SacA 13853	4895 ± 35	3761-3637
TAS-36	C1	GifA 09183/SacA 13856	5300 ± 40	4252-3995
TAS-34	C2	GifA 09181/SacA 13854	5690 ± 35	4666-4451
TAS-35	C4	GifA 09182/Sac A13855	5380 ± 35	4333-4067

Les datations C-14 obtenues sur ces deux sites sont cohérentes (tabx 2 & 3 et fig. 4) mais, pour établir une chronostratigraphie détaillée de cette zone du plateau riche en abris à peintures, d'autres investigations sont indispensables. Elles suggèrent néanmoins que ces deux sites ont connu des occupations humaines vers 4500 CalBC, mais que l'abri du Grand Dieu a été occupé dès 5000 CalBC, vers la fin du VI^e millénaire BC.

Dans les abris de cette zone du plateau (*cf.* fig. 1), comme Henri Lhote l'avait déjà fait remarquer, les niveaux archéologiques affleurent souvent au niveau du sol actuel et sont parfois à peine masqués par un fin voile sablonneux (ALIMEN *et al.* 1968; LHOPE 1976a, p. 100). C'est le cas pour les sondages et fouilles dans les abris du Grand Dieu de Séfar et de Ta-n-Zumaitak C. Ces niveaux qui apparaissent grisâtres, aussitôt que la mince pellicule de sable récente qui les couvre est ôtée, sont très riches en vestiges de combustion et en charbon de bois et nous nous sommes attachés, au cours de la mission de l'automne 2009, à prélever des fragments de charbon dans ceux qui semblaient les plus anthropisés pour les dater. Cette démarche a concerné plusieurs sites: à Séfar, l'abri du «Dieu au bâton» et le «couloir des Mouflons» et à Ti-n-Tazarift, l'abri dit de «la Roche effondrée». Sept datations ont ainsi été réalisées (tab. 4); celles de l'abri de la Roche effondrée montrent que ce lieu a été visité au cours de deux périodes successives, vers 4000 CalBC (deux datations), puis plus de deux mille ans plus tard, vers 1400 CalBC (deux datations). L'abri du Dieu au bâton et le couloir des Mouflons (deux datations) ont connu des occupations humaines plus anciennes, entre 5000 et 6000 CalBC.

La figure 4 regroupe l'ensemble des résultats C-14 calibrés. Ceux obtenus dans les années 1960 (au bas de la figure) ont une erreur statistique de deux cents ans environ et l'intervalle calendaire couvre un millénaire ou plus. L'erreur d'environ trente ans sur les datations C-14 en spectrométrie de masse par accélérateur (SMA) permet d'obtenir une bien meilleure résolution, avec un intervalle calendaire de quelques centaines d'années. Malgré ces différences dues au progrès des techniques de la datation par carbone 14, on constate que ces séries de mesure s'inscrivent, pour la plupart, dans un même intervalle de temps, entre 3000 et 5000 CalBC. Dans plusieurs de ces sites, on constate que les abris ont connu des occupations successives qui, parfois, sont séparées par des millénaires. C'est le cas, entre autres lieux, à Titeghast-n-Elias 5 (6859-5715 CalBC), Titeghast-n-Elias 3 (3803-2579 CalBC) et Titeghast-n-Elias 6 (1114 CalBC-146 CalAD). Des dates espacées d'un millénaire ou plus ont aussi été obtenues pour les sites de Tissoukaï et Jabbaren. Henri Lhote avait déjà fait remarquer la présence de lentilles de cendre dans les dépôts archéologiques, suggérant des occupations et

retours successifs sur les mêmes lieux, une alternance qui peut s'expliquer par la saisonnalité et le semi-nomadisme, un mode de vie somme toute logique chez des éleveurs et que l'on retrouve dans la Tadrart Akukas. Ces résultats qui attestent l'existence de plusieurs périodes d'occupation des abris durant la période bovidienne/ pastorale rendent l'étude chronologique des styles de peinture bovidiens assez délicate et, pour l'instant, les spécialistes continuent de les aborder par le biais des superpositions et de la chronologie relative. Comme dans la Tadrart Akukas, certains sites ont aussi connu des occupations humaines relativement récentes, il y a environ mille ans CalBC (I-n-Itinen 8, Titeghast-n-Elias 6), qui correspondent, logiquement, à la période du cheval, du char et des métaux, alors que d'autres, qu'il faudra confirmer à l'avenir par de nouvelles mesures, fournissent des datations plutôt anciennes qui font remonter l'occupation holocène sur le plateau aux VI^e-VII^e millénaires CalBC (Titeghast-n-Elias 5, abri du Dieu au bâton et couloir des Mouflons à Séfar); rappelons que celui-ci a été fréquenté dès le paléolithique comme le montre le matériel archéologique de surface.

Tableau 4

Résultats des datations sur les échantillons prélevés aux abris de la Roche effondrée (Ti-n-Tazarift), du Dieu au bâton et dans le couloir des Mouflons (Séfar)

Réf. Echantillon (LSCE)	Réf. Mesure	Site	Abri	Nature	Age C-14 BP	Age calibré BC (2 sigma)
TAS-113	GifA 10071/SacA 19450	Ti-n-Tazarift	Abri de la Roche effondrée	Charbon	2995 ± 35	1379-1123
TAS-115	GifA 10072/SacA 19451	"	"	Paille	5315 ± 30	4238-4046
TAS-118	GifA 10073/SacA 19452	"	"	Crotte	3050 ± 30	1408-1218
TAS-121	GifA 10074/SacA 19453	"	"	Charbon	5300 ± 35	4238-4001
TAS-145	GifA 10077/SacA 19456	Séfar	Abri du Dieu au bâton	"	7015 ± 35	5989-5810
TAS-140	GifA 10079/SacA 19458	"	Couloir des Mouflons	"	6105 ± 35	5207-4938
TAS-141	GifA 10080/SacA 19459	"	"	"	6365 ± 35	5469-5231

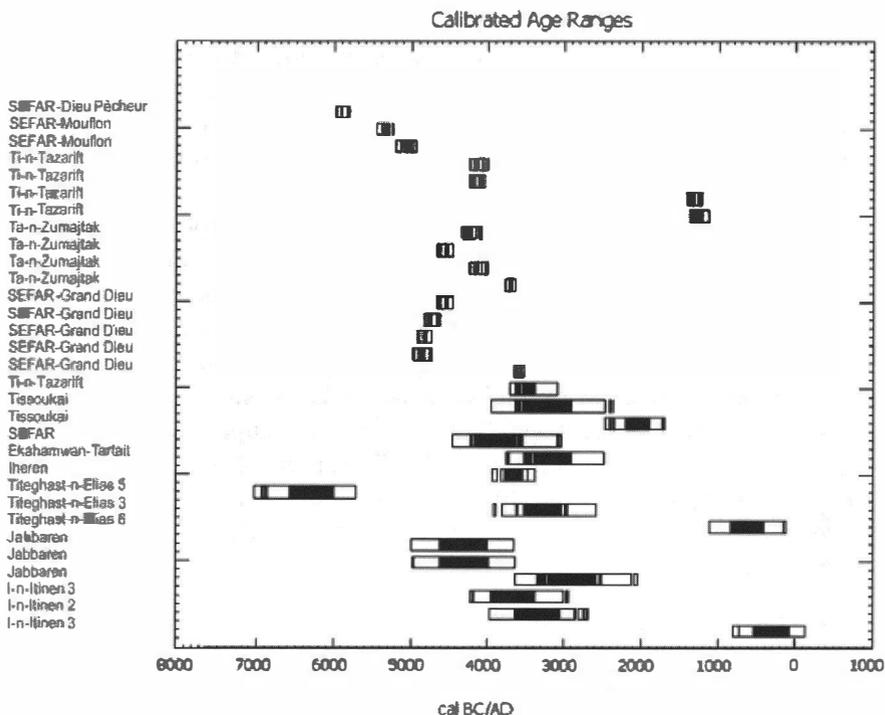


Fig. 4. — Calibration des âges C-14: confrontation de nos résultats avec les données établies dans les années 1960 par Henri Lhote. Le segment noir représente l'intervalle calibré à un sigma et le segment incolore l'intervalle calibré à deux sigma.

Avant de chercher à établir quelques relations entre les données chronologiques des niveaux archéologiques et les peintures rupestres, quelques constats peuvent être faits:

- Le matériel archéologique de l'abri du Grand Dieu à Séfar et de Ta-n-Zumaitak C est en cours d'étude, mais on peut d'ores et déjà constater qu'il se rattache au Bovidien et plutôt à la phase moyenne de cette culture (fig. 5); des poils d'ovicapridés découverts dans le premier site et des dents de boviné dans les deux (très probablement *Bos primigenius f. taurus*) sont parmi les éléments les plus intéressants.
- L'abri du Grand Dieu a livré un dépôt bovidien daté du 5^e millénaire CalBC, vers la fin du 6^e millénaire BC. Dans l'état actuel des connaissances, on constate que les datations anciennes (Henri Lhote) et récentes

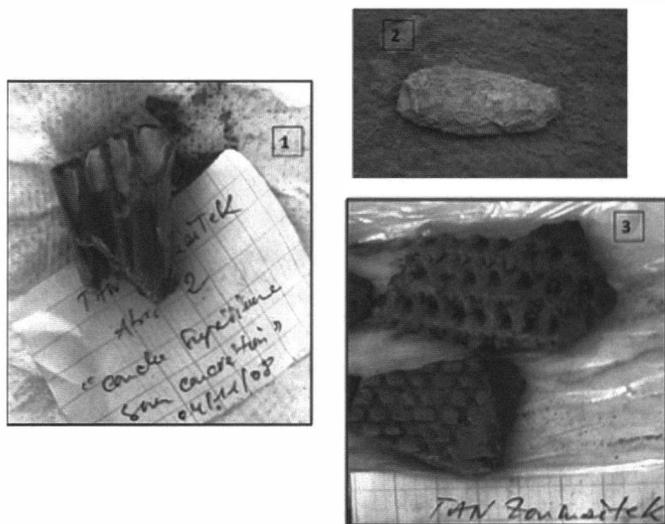


Fig. 5. — Abri du Grand Dieu (Séfar): fragments de poterie décorés (3). Ta-n-Zoumaïtak C: plaquette à bords retouchés (2) et dent de boviné (1) (*Bos primigenius f. taurus*; identification, Souhila Merzoug), un matériel archéologique typique du Bovidien de la Tasili-n-Ajjer (photos: M. Hachid & D. Vigears).

(le projet) des sites bovidiens sont cohérentes et s'inscrivent, pour la plupart, dans un même intervalle de temps, entre 3000 et 5000 CalBC, mais, à la différence de la Tadrart Akukas, la recherche archéologique sur le plateau de la Tasili-n-Ajjer, comme au niveau de son piémont, enregistre un grand retard et on ignore à quel moment précis le Bovidien y est apparu puisque, jusqu'ici, c'est un Bovidien moyen et récent qui a été le plus souvent mis au jour.

- On sait donc que l'occupation holocène du plateau fut plus ancienne, remontant au début du VI^e millénaire CalBC, mais on ignore à quelle(s) culture(s) on peut rapporter les datations obtenues à l'abri du Dieu au bâton (5989-5810 CalBC) et au couloir des Mouflons (5207-4938 et 5469-5231 CalBC) à Séfar. Titeghast-n-Elias 5 est daté de 7400 ± 300 ans BP (6859-5715 CalBC), mais cette datation ancienne, avec son important intervalle calendaire, est actuellement la seule et nécessite d'être confirmée. Henri Lhote n'écrit pas expressément que cet abri est bovidien, mais puisqu'il a plusieurs fois souligné que tous les abris qu'il avait fouillés appartenaient à cette culture, on peut admettre que si Titeghast-n-Elias 5 avait présenté un autre faciès industriel, il n'aurait pas manqué de le souligner. Par ailleurs, si lui-même s'est posé la question de savoir

où se trouvaient les dépôts abandonnés par les peintres de la période ou de l'école de TR, c'est parce que tous les abris qu'il avait fouillés n'avaient rien livré d'autre que du Bovidien (LHOTE 1976b, t. II, pp. 820-821) (voir ci-après).

6. Discussion

Les problèmes posés par la domestication et le Bovidien/Pastoral dans la Tasili-n-Ajjer et la Tadrart Akukas, étroitement liés à l'hypothèse de la chronologie courte de l'art rupestre saharien, nécessitent un débat approfondi et ne peuvent être abordés en détail dans les limites du présent article. Cependant, d'après M. Hachid, la région de la Tadrart Akukas est une bonne base de comparaison pour la Tasili-n-Ajjer, d'autant plus importante que c'est aussi la seule. En effet, depuis 1990, d'importants progrès ont été réalisés dans la connaissance de l'occupation humaine du sud du Fezzan depuis le paléolithique et notamment l'holocène. Les chercheurs italiens de l'Université La Sapienza ont fouillé de nombreux abris dans la Tadrart Akukas et prospecté de vastes régions voisines; ces travaux nous permettent aujourd'hui de disposer d'un contexte paléoclimatique et archéologique très approfondi accompagné de séries de datations (CREMASCHI & DI LERNIA 1998b). Selon M. Hachid, la proximité géographique et la similarité des cultures préhistoriques des deux plateaux voisins de la Tasili-n-Ajjer et de la Tadrart Akukas — sans compter que des populations identiques devaient circuler de l'un à l'autre — induisent, en toute logique, que leur peuplement a connu la même évolution dans le même temps. Sachant que dans la Tadrart Akukas, le plus grand nombre de datations relatives à la domestication remonte, d'après les travaux des chercheurs italiens, au VI^e millénaire CalBC (CORRIDI 1998, pp. 90-91, tab. 1, p. 93, tab. 3; DI LERNIA & MANZI 1998, p. 220, tab. 1, p. 221, fig. 3, p. 223, fig. 5; DUNNE *et al.* 2012), M. Hachid estime qu'il serait étonnant qu'il en soit autrement dans la Tasili-n-Ajjer, d'autant plus que la phase ancienne du Bovidien n'a pas encore été repérée avec précision. Toutefois, d'autres fouilles s'avèrent nécessaires dans le but d'affiner la chronostratigraphie du Bovidien, comme cela a été fait pour le Pastoral dans le plateau voisin, et de vérifier qu'il ait pu être plus ancien que les datations récemment obtenues. J.-L. Le Quellec a précédemment fait part de ces arguments quant à la datation de la domestication dans la Tadrart Akukas, estimant qu'elle ne pouvait être plus haute que la fin du VI^e et/ou le début du V^e millénaire CalBC (LE QUELLEC 2006; 2010b, p. 228, carte 4, p. 229, carte 5, p. 239, annexes).

Depuis l'exceptionnelle redécouverte et la publication du site rupestre de Qurta (haute Egypte) par Dirk Huyge, on sait maintenant que dans la vallée du Nil, l'art rupestre remonte aux derniers millénaires du pléistocène. Les datations par OSL du dépôt qui recouvrait quelques-unes des images de ce site, estimées entre 19 000 et 17 000 années calendaires, ont fait l'objet de plusieurs publications; à la plus récente (HUYGE *et al.* 2011, p. 1190) s'ajoute celle du présent volume (Huyge *et al.*, «Premiers témoignages d'un art rupestre pléistocène en Afrique du Nord: confirmation de l'âge des pétroglyphes de Qurta (Egypte) par datation OSL de leur couverture sédimentaire»). Pour J.-L. Le Quellec, ce site atteste l'existence d'un art de chasseurs dans la vallée du Nil. Pour M. Hachid, ces gravures prouvent qu'il a existé un art de chasseurs d'âge pléistocène antérieur à la domestication, un «paradigme» précédemment remis en question pour le Sahara central (LE QUELLEC 2008). Par ailleurs, le site de Qurta n'est pas isolé, d'autres sites offrant des gravures similaires sont connus dans le même secteur, en haute Egypte, une région qui entre dans le domaine du Sahara oriental. Même si la vallée du Nil et le Sahara central ont connu des civilisations préhistoriques différentes, et, dans la mesure où la paléoclimatologie ne s'y oppose pas, ces gravures viennent conforter la possibilité qu'ailleurs au Sahara et dès l'holocène ancien, sinon un peu avant comme le montre le peuplement de la Tadrart Akukas, des chasseurs ont pu s'adonner à l'art rupestre.

Un autre questionnement est celui de la culture matérielle des TR. Henri Lhote fit remarquer que: «C'est un fait à peu près constant que les abris qui contiennent exclusivement des peintures de la phase des "têtes rondes" sont vierges d'industrie, à une exception près, Jabbaren» (ALIMEN *et al.* 1968, p. 428). Il ajouta que «l'industrie» des TR n'avait pas été mise en évidence «... faute d'avoir trouvé en place un gisement qui leur soit attribuable»; dans les abris ornés uniquement de peintures TR, il écrit avoir recueilli en surface, notamment à Jabbaren, «de fortes haches au corps épais, taillées à gros éclats...». Mais ces objets ayant également été retrouvés dans des dépôts bovidiens, il ajoutait qu'il ignorait s'il s'agissait de remplois et concluait que «leur attribution chronologique reste incertaine» (LHOTE 1976b, t. II, pp. 820-821). Enfin, il fit remarquer que Titeghas-n-Elias 5, qui a livré la date la plus ancienne, n'offrait que «des vestiges de peintures de la période des têtes rondes» (LHOTE 1976a, p. 103). Ces remarques posaient déjà la question de la culture matérielle des auteurs des TR.

Débutant nos propres recherches, nous ne pouvons pour l'instant répondre à cette question, d'autant plus que c'est toute la chronostratigraphie de cette zone du plateau qui pose problème (HACHID *et al.* 2010). En effet, comme le fit remarquer Henri Lhote (ALIMEN *et al.* 1968) et comme nous l'avons

nous-mêmes constaté à l'abri du Grand Dieu, les niveaux bovidiens succèdent à un niveau sablonneux stérile, lui-même reposant directement sur le substratum, au point qu'on peut se demander si tous les niveaux antérieurs aux Bovidiens n'ont pas été lessivés (mais comment et pourquoi?). Fouilles et contrôles s'avèrent nécessaires puisque les datations récemment obtenues à l'abri du Dieu au bâton et au couloir des Mouflons (Séfar) montrent qu'il existe des dépôts anthropiques holocènes antérieurs au ^ve millénaire CalBC, sans compter que les sites de la Tadrart Akukas (CREMASCHI & DI LERNIA 1998a), comme celui de Ti-n-Hanakaten au pied du plateau de la Tasili-n-Ajjer, ont livré des niveaux remontant à l'holocène ancien et parfois même à l'Atérien (AUMASSIP & DELIBRIAS 1982-83). Que les TR aient constitué une école contemporaine de celle des plus anciens Bovidiens ou une période antérieure à ces pasteurs, la question est de savoir où se trouvent leurs traces. La région qui nous concerne (*cf.* fig. 1) rassemble la plus forte concentration de peintures remontant à la période ou école des TR. Cet art constitué de grandes figures et de compositions qui s'étalent parfois sur plusieurs mètres a nécessairement requis du temps pour sa réalisation; même s'ils n'habitaient pas les abris qu'ils peignaient, les auteurs des images TR devaient nécessairement séjourner un certain temps à proximité relative des lieux et des parois choisis pour leur exercice pictural et spirituel. On connaît des «voiles industriels» du Bovidien, nombreux au pied des abris, mais rien de comparable pour une culture matérielle qui pourrait être rapportée aux TR. M. Hachid fait aussi remarquer que si les auteurs des TR furent contemporains des Bovidiens, il faut se demander comment à l'abri du Grand Dieu (Séfar), les premiers ont pu peindre un des mythes les plus impressionnants de l'humanité préhistorique, quand dans le même temps des pasteurs s'y arrêtaient pour y allumer des foyers et y dessiner quelques-unes de leurs images.

Enfin, qu'en est-il de la relation entre les pasteurs (des groupes nécessairement divers qui se sont succédé et côtoyés durant quelques millénaires sur ces espaces tassiliens) et les auteurs des peintures bovidiennes (dont les divers styles correspondent à cette variété du peuplement)? Pour J.-L. Le Quellec, rien ne prouve qu'il existe une relation entre les peintures d'un abri et son dépôt archéologique, et celle-ci n'est pas établie entre les auteurs de la culture matérielle des Bovidiens et les images dites bovidiennes. A fortiori, les têtes rondes dont on ne connaît pas encore la culture matérielle dans la Tasili-n-Ajjer. M. Hachid fait remarquer que la douzaine d'abris bovidiens ayant fait l'objet d'une fouille se trouvent concentrés dans un espace géographique très restreint où quelques kilomètres à peine séparent les sites en question (*cf.* fig. 1) (Henri Lhote a sondé beaucoup de ceux qui lui ont paru intéressants, mais quelques-uns lui ont échappé). Si donc, dans cet espace

réduit, ceux qui sont les auteurs de la culture matérielle bovidienne ne sont pas aussi ceux qui ont réalisé les peintures bovidiennes, alors quels en seraient les auteurs et où se trouveraient leurs traces matérielles? Sachant que le Pastoral de la Tadrart Akukas est daté du VI^e millénaire CalBC et ayant constaté que les peintures de la période ou de l'école des TR sont toujours, et à ce jour, sous-jacentes aux peintures bovidiennes/pastorales, M. Hachid estime que les peintures des TR sont apparues avant celles des Bovidiens.

7. Conclusion

En ce qui concerne la Tasili-n-Ajjer, les travaux à venir s'attacheront à :

- Prélever et analyser des pigments picturaux sur des peintures ayant été épargnées par l'intervention de l'homme.
- Etudier et approfondir l'analyse des dépôts sablonneux et des bandes blanches et noires dont nous avons repéré une relation de pertinence avec les peintures. Nous attendons beaucoup de la datation indirecte de ces dépôts car, grâce à ces indices chronostratigraphiques, le calage chronologique des peintures rupestres par leur rattachement à des phases de sédimentation paraît possible [5].

NOTES

- [1] Jean-Loïc Le Quellec et les auteurs remercient vivement Jean-Dominique Lajoux de leur avoir communiqué ces documents.
- [2] M. Hachid note qu'après l'indépendance de l'Algérie, quand Henri Lhote revint dans la Tasili-n-Ajjer en 1969 pour y faire d'autres relevés, avec l'aide du ministre algérien des Travaux Publics et du ministre de la Culture, il écrit «... je constate avec tristesse [...] que plusieurs sujets ont été contournés au crayon...» (!) (LHOTE 1976a, pp. 118, 156).
- [3] Henri Lhote avait nommé cette paroi peinte «Le dieu pêcheur». Si nous avons conservé l'ancien nom de certaines peintures par commodité, d'autres ont été changées par l'OPNT en raison de leur connotation (la Dame noire pour «la Négresse» à Séfar, en regard de la «Dame blanche» à I-n-Warenhat, par exemple) ou de leur interprétation erronée; c'est le cas pour le dieu «pêcheur» qui ne tient pas un poisson à la main gauche, mais un sac de couleur blanche, tel qu'on peut le voir chez nombre de danseurs des peintures TR, et celui-ci se confond avec les cornes d'une antilope de même couleur située sous son bras.
- [4] De son propre aveu, ce n'est pas Henri Lhote qui a donné le nom de «Bovidien» à cette culture matérielle dite «Bovidien» (LHOTE 1976b, p. 820, note 4).

- [5] Les datations de ces dépôts sablonneux en relation de pertinence avec les peintures rupestres sont aujourd'hui connues, mais elles font l'objet d'un litige scientifique et juridique, leur publication et interprétation ayant été faites par un chercheur à l'insu des autres membres de l'équipe.

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Holocene Rock Art in Morocco: Hard Facts, Hesitant Hypotheses and Hopeful Headway

by

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KEYWORDS. — Morocco; Holocene; Rock Art.

SUMMARY. — The difficulties met with in Morocco to determine the chronology and environment of its rock art are outlined. Three dated cases are described, although they are only marginally helpful for dating the art. The absence of archaeological research in the rich rock art zone of southern Morocco has forced researchers to fall back on systems for producing a relative chronology, following that established for northern Africa and the Sahara, fitting it as best possible to the general Moroccan climatic sequence. A chronology for rock art manifestations in Morocco is tentatively proposed, based on climate change and cultural “pegs”. Hopeful work in hand on patination and environmental studies is described.

Hard Facts

Rock art research in Morocco suffers from two handicaps when addressing chronological and environmental issues: the first is the difficulty of dating engravings (which make up the greater part of Morocco’s rock art heritage) and hence the difficulty in establishing a reliable chronology; the second is the lack of excavation to provide an environmental background to this art.

Pluridisciplinary excavations in north-west Morocco, north of the High Atlas mountains (fig. 1), have produced reliable dates for the prehistory of this area, from the Lower Palaeolithic through to the Copper/Bronze Age (RAYNAL *et al.* 1995, DAUGAS *et al.* 1989), but rock art is extremely rare here and in no way connected to archaeological sites. South of the Atlas, where most of the over three hundred rock art sites are to be found, excavation has been almost non-existent.

A long way from the Sahara, but so far the only date available for Moroccan rock art, a Neolithic deposit in the Amzri rock shelter (Touline, High



Fig. 1. — Map of Morocco (*shows site of patination studies) (supplied by Dr M. El Graoui, CNPR, Marrakech).

Atlas foothills, south of Marrakech) containing an ochre-bearing palette was dated by thermoluminescence to 2020-2420 BC (OUSMOI 1989). The palette can reasonably be associated with the red-ochre dots, curves, finger tracings, zigzags and combs painted on a narrow ledge overhanging the rock shelter. Only a small part of the total faunal remains recovered was published (BAYLE DES HERMENS *et al.* 1984), but the authors noted that the wild animals, all warm climate species, belonged to two different biotopes: on the one hand grassy plains and on the other a semi-desert mountain region, such as the High Atlas. Unfortunately, the paintings add little or nothing to our knowledge of the population responsible for the rock art. A particular stone arrowhead invented by the shelter's inhabitants has been called the Toulkinian point and has been found on the nearby Oukaimeden plateau (RODRIGUE 1996).

Over nine hundred engravings have been recorded on this plateau (RODRIGUE 1999). The site is best known for its engraved weapons, but domesticated cattle are also present. Engraved halberds and daggers here have been shown to have their prototypes in the Early Bronze Age of the Iberian peninsula (CHENORKIAN 1988) (fig. 2). They are the most striking witnesses to the use

of metal in Morocco, although no real weapons of these types have yet been found. Originally thought to have flourished between 1700-1000 BC, calibration has pushed these dates back to 2250 BC (LULL *et al.* 2005).

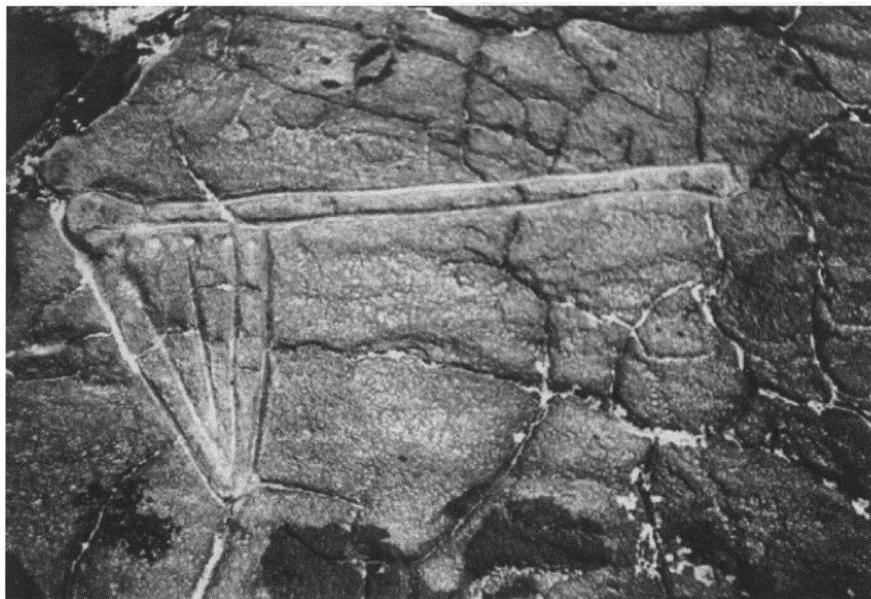


Fig. 2. — Halberd engraved in the High Atlas.

In the hope of finding information on the makers of these engravings, research in the framework of the European Commission's Desert Patina programme, involving digging seven trial trenches on the plateau in July 2006, brought to light two hearths. One lay 75-85 cm directly under an engraved frieze depicting six animals, two "imploring figures" and two vertical inscriptions in the old Libyan alphabet (fig. 3). Analysis on charcoal from the hearths was carried out by the Dating Laboratory of Helsinki University. The hearth under the frieze produced a date of 2680 ± 35 BP, cal 900-750 BC (EL GRAOUI *et al.* 2008). This date cannot be directly associated with the engravings about 1 m higher up but merely indicates that people camped on the site during the 1st millennium BC. It corresponds to the second phase in the engravings of metal weapons on the plateau. But while the Helsinki calibrated date also corresponds well to a generally accepted date for the Libyan inscriptions, thought to have appeared around 600 BC, nothing proves that the Oukaimeden engravers were responsible for the hearth directly below.

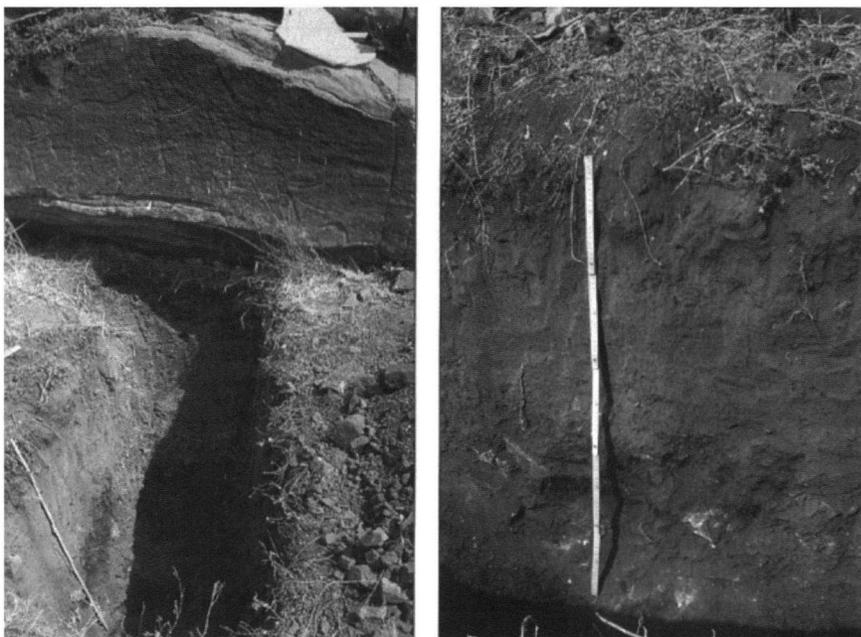


Fig. 3. — Trench with hearth below rock art art frieze (on left); close up of hearth (right) (Oukaimeden) (supplied by Dr M. El Graoui, CNPR, Marrakech).

The hard facts related to the dating of the High Atlas rock art are thus limited to one clear example, of rather uncharacteristic paintings.

Turning to the environment when people were up hunting, herding and engraving on the Oukaimeden plateau, few studies have been done. Old pollen analyses carried out by REILLE (1976) showed a decrease in arboreal pollen shortly after 750 BC (but the site was thought not to be a very clear palaeoclimatic marker). A drop in *Quercus faginea* noted in the Atlas around 400 BC was also interpreted as showing an increasingly dry climate (REILLE 1976). It would seem that the makers of the hearth and those responsible for the nearby engravings lived in an increasingly arid climate but at an altitude of 2,500 m this would not have been a problem.

Looking at the vast area south of the High Atlas mountains, a recent excavation by a Morocco-Spanish team of a tumulus at Adrar n'Zerzem, in close proximity to a published rock art site, produced a 14 C date of 1430 ± 35 BP, cal 600-660 AD on a female skeleton, carried out by the Dating Laboratory of Helsinki University within the framework of the "Desert Patina" programme (EL GRAOUI *et al.* 2010). Once again, while it is useful

to have what is the first scientific dating of population presence in southern Morocco, it sheds no light on the engravers and the environment in which they lived [1]*.

The facts are few and not very helpful in indicating either when the artists lived, or the milieu in which they evolved. To sum up, we know that people lived in the foothills of the High Atlas mountains around 2000 BC, that they painted images that to us are obscure, that they hunted in the High Atlas and left stone tools there, and that the climate was warm. In these mountain sites, people engraved weapons, the prototypes of which were thought to have originated no earlier than 2250 BC (cal), that they built a hearth somewhere between 900 and 750 BC (cal) and that from around 400 BC the climate was getting noticeably drier, even at 2,500 m. South of the Atlas, an excavated tumulus showed that people were living (and dying) in the area in the 1st century AD, but the archaeological remains, while interesting, could in no way be related to the nearby engravings.

Hesitant Hypotheses

The general theme/style-based chronological sequence established for northern Africa and the Sahara is retained in Moroccan rock art studies: Naturalistic Bubaline (though it is doubtful that this exists in Morocco), Bovidian (but the term is not appropriate to describe Moroccan engravings of cattle), Cabellin and Cameline. In other words: domestic cattle, then horses, then dromedaries (more frequently called 'camels'). But while it is possible to place sites in this order, using a combination of the animal species represented, superimposition where it occurs and patination, the result is only a relative chronology. Researchers have thus been obliged to use selected 'pegs' on which to hang the rock art sites in an attempt to give them some sort of date: the absence or presence of certain climate-related animal species, such as hippos and camels, the appearance of a novelty such as metal weapons, chariots, horses with riders, Libyan alphabetic inscriptions, camels and so on. Unfortunately, the dates of these possible chronological indicators are not always securely established and often controversial. In addition, many sites had a long life and may contain images of obviously very different ages.

Turning towards environmental considerations, a general climatic cycle has indeed been established for Morocco (BALLOUCHE *et al.* 1990). It showed

* The number in brackets [] refers to the note, p. 107.

an arid period in the early Holocene up to about 6500 BC, followed by an increase in rainfall and inland temperatures cooler than today around 6500-6000 BC, leading to underground water resources and increasing lake coverage. This humid period was followed around 5000 BC by a very arid phase — as elsewhere in North Africa and the Sahara — which gave way in 4500 BC to the wet and relatively warm conditions of the Middle Holocene, very favourable to man and beast. But as elsewhere, increasing aridity was noted from about 2500 BC, broken by a humid pulsation on the Atlantic coast at the end of the 1st millennium BC/beginning of 1st millennium AD. For VERNET (1995), humid remissions, sometimes strong, occurred throughout the 1st millennium BC, in the Sahara and North Africa, with cattle raising still possible in northern Mauritania, but he underlined the strong regional differences with topological and morphological conditions becoming increasingly important. It can be seen that the Moroccan schema presents the same sequence of arid and humid periods as for northern Africa as a whole. But it is evident that this general view is an oversimplification, with local conditions influencing animal and human reactions. The 2,500 m high Atlas mountains and the River Draa in the south, for instance, would certainly have provided refuge zones for species unable to survive in increasing aridity.

Although this framework is too loose to be a really reliable tool for dating Moroccan rock art sites, it provides a useful basis from which to attempt a chronology — though the argument tends to become circular (we see engravings of hippos, so this means we are in a wet period; we know the climate is wet, so this is the period in which we can place our hippo engravings).

Despite these caveats, a tentative hypothesis can be proposed for Moroccan rock art and its environmental setting pending scientific direct dating. Engravings of herds of antelopes and cattle suggest a climate sufficiently humid to support herds of wild and domestic animals, any time in the humid period from about 4500 BC. As it is unlikely that domestic cattle in Morocco predate cattle elsewhere, this fits in with current archaeozoological knowledge.

From around 2500 BC, hunters were up on the High Atlas plateau of Oukaimeden, leaving characteristic arrowheads known at Amzri in the foothills to the north, and artists painted dots, curves and zigzags on the cliff face above the shelter. But it was probably not until at least five hundred years later that bronze weapons — and cattle — were being engraved on the plateau. Animal remains from Amzri and pollen analyses show the environment becoming more arid, though at 2,500 m the plateau could always supply pasturages for the herds of cattle in the summer.

Later, indigenous weapon types were recognized in the High Atlas engravings that owed nothing to Iberian prototypes (CHENORKIAN 1988). No date was proposed but RODRIGUE (1999) suggested that this phase could have begun around 1200 BC and lasted to 600 BC. It cannot be too emphasized that these dates, while probably approximately correct, are only hypotheses. Horses appeared some time now, though proposed dates for their introduction into Morocco vary. Ridden by men armed with a small round shield and metal-headed lances, they are engraved on several sites and form the so-called Libyco-Berber group and placed by CHENORKIAN (1988) somewhere in this millennium. Well-studied sites are Tizi n'Tighist in the Jbel Rat and Foug Ech Chenna in the south. Chariots also began to be engraved, both in the High Atlas and in south Morocco at this time, and Libyan inscriptions appeared in the last half of the millennium. This period undoubtedly saw increasing aridity, known both from the general climatic framework quoted above and from the animals and human activities engraved. Hunting scenes — the leopard in the High Atlas (fig. 4), the Barbary sheep or the ostrich in the south — take the place of engravings of domestic cattle.

At the end of the prehistoric and protohistoric cycle, engravings of camels appeared on some Moroccan sites. Bones of domestic camels were found in southern Egypt around 520 BC (ROWLEY-CONWY 1988), but, although the earliest mention of camels in the Maghreb is not until 46 BC, MUZZOLINI (1995) felt that it could have been introduced into the Maghreb in the 5th century BC. This date ties in conveniently with the increasing aridity noted from 2500 BC onwards. The main site featuring camels is that of Foug Ech Chenna, in the Draa valley just north of Zagora (fig. 5), and it can be suggested that this site is one of the latest in Morocco's rock art cycle, although its exact beginning and certainly its end is not known for certain.

Hopeful Headway

Research aiming to refine the chronological and environmental framework of Moroccan rock art has recently made big progress. One programme is based on patination analysis on engravings, the other on an overall study of a rare site with painted images.

The first hopeful line of research was that carried out in the context of the European Commission's Desert Patina programme on the formation of patina on engravings of Tazina style on the site of Oum Laleg, south of the Anti-Atlas mountains (fig. 6). Laboratory and field examination of the patina of the engravings showed that they had been made during a Holocene humid



Fig. 4. — Hunting scene in the High Atlas (attacked feline animal at bottom).



Fig. 5. — Camels and horses from Foug Ech Chenna site, indicating arid conditions.

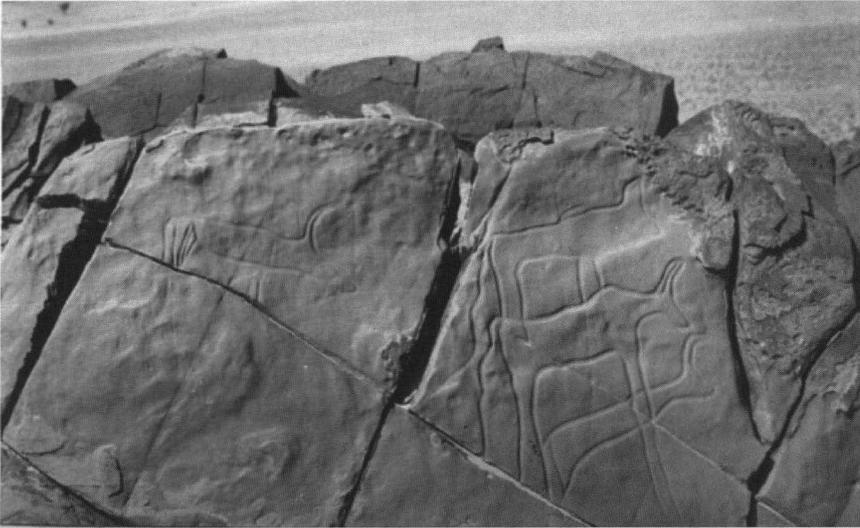


Fig. 6. — Engravings from Oum Laleg.

period. Although the site figured overwhelmingly wild animals, domestic cattle formed part of several compositions. It seems most likely therefore that the site was mainly occupied during the Neolithic Humid, after around 4500 BC, although an occupation during a later humid period (say around 1000 BC) cannot be totally excluded. However, this second possibility seems unlikely in view of the low representation of cattle and the absence of 1st millennium items such as chariots, horses and Libyan inscriptions. It is hoped that further research will refine this rather large timescale.

Another approach for dating the rock art and its environment is being undertaken in south-west Morocco. In 2008, on the initiative of Dr M. El Graoui, at the time director of the Rock Art Heritage Centre in Marrakech, a cooperation programme relative to the rock art sites in the region of M'Seid (Tan-Tan, south-west Morocco) (fig. 7) was signed between the Cultural Heritage Division of the Moroccan Ministry of Culture and the Laboratory TRACES in Toulouse. The programme aims to undertake a complete inventory, 3D-reproduction and study of the paintings, and to date them by means of microsampling. The programme also envisages field research in the immediate surroundings of the painted rock shelters to estimate their archaeological value. The first painted shelter was initially indicated to us in November 2001 (SEARIGHT & MARTINET 2001-2002) but the current research, which started in 2008, is already providing new data on the paintings of this region,

several other painted shelters having been discovered since the first one was published. Sites with paintings are relatively rare in Morocco: twelve were recorded by HECKENDORF & SALIH (1999) and the M'Seid shelters contain themes, such as archers, not as yet seen elsewhere in Morocco (fig. 8).

It looks therefore as though current research in Morocco is on the way to supplying vital concrete evidence concerning the age and environment of the country's rich and varied rock art.



Fig. 7. — One of the shelters containing red-ochre paintings, M'Seid.



Fig. 8. — Archers from the above shelter.

NOTE

- [1] Information supplied in October 2010 indicated three C14 analyses done by laboratories in America, from the same material, which produced dates several centuries earlier (personal communication).

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**Rock Art and Archaeology in Ifran-n-Taska
(Eastern Jebel Bani, Morocco):
First Results of the Moroccan-Italian Research Project**

by

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KEYWORDS. — Rock Art; Paintings; Archaeology; Morocco; ¹⁴C Dating.

SUMMARY. — The paintings of Ifran-n-Taska (south-west of Zagora) are one of the rare testimonies of this kind of non-engraved rock art in Morocco. The site is of high relevance for a comprehensive approach of the archaeology of the pre-Saharan fringes of Morocco. A Moroccan-Italian research programme has been set up to study these paintings in their whole ethno-archaeological context. The first fieldwork was undertaken in 2009 by a multidisciplinary team (four prehistorians, one anthropologist and one geologist). The drawings found in five shelters at the edge of a dry river, are in red, white, black and yellow. The fieldworkers also carried out an extensive survey of the plateau of Tafraout-n-Taska and held interviews with two nomadic families. The research programme aims both at understanding the environmental and cultural context of the paintings and at analysing the components of the painting material and, if possible, at achieving dating analyses.

Introduction

The research project *Archéologie et art rupestre du Bani Oriental* is included in a bilateral convention between the National Institute of Archaeological

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Sciences and Heritage (INSAP, Morocco) and the Antiquities Department of the Sapienza University of Rome (Italy). The aims of the project are:

- The study of rock art and of archaeological evidences (GPS surveys, test excavations, extensive excavations);
- An ethno-archaeological investigation on the local nomadic families;
- The collection and dating of archaeological and rock art samples.

The rock art site of Ifran-n-Taska is located on the Tafraout-n-Taska plateau (Eastern Jebel Bani), west of the Zagora village.

The first mission (2009) was devoted to the extensive geo-archaeological survey of the plateau and of the rock art sites, and to the sampling of the rock paintings in Ifran-n-Taska.

Archaeological Survey

THE SITES

In this region, an astonishing series of evidences attest to the continuity of human presence from the prehistoric times to the XXIst century. The settlements, the chipped stone, the funerary structures, the rock art (petroglyphs and paintings), the quarries like the one located in Lhayyara (northern side Jebel l Lemsemmer – southern Bani), where copper and malachite were mined, form a heritage worth being preserved for their importance in the reconstruction of the history of this region (fig. 1)*.

As to the rock art in this area, the Taghrtart-n-Lguettara site, including both petroglyphs and tumuli, was already known (SIMONEAU 1977). This site is located close to the lower part of the track climbing on the Tafraout plateau, which rises above the Feija.

This kind of association between petroglyphs and tumuli is well known in various Moroccan regions (Dra, Oukaïmeden, Yagour, etc.) and also in the central Saharan massifs (Algerian Atlas and Tassili, Libyan Messak). These funerary monuments constitute an important clue for the reconstruction of the past pastoral societies and for the interpretation of their symbolic sphere.

Another important rock art context, very rich in petroglyphs, was discovered on the Tafraout plateau in 1995 at the same time as the painted shelters of Ifran-n-Taska. The Lemjilej site (fig. 2) is composed of a concentration of

* Cf. figures at the end of the text (pp. 123-136).

thirty-three quartzite decorated slabs. The petroglyphs, characterized by different stylistic traits, were executed in different periods (as attested by the patina) and with different engraving techniques. The vast majority of the subjects are represented by geometric motifs, but there are also zoomorphic subjects (antelopes, ostriches, dromedaries, oxen), anthropomorphic subjects (hunters, horsemen), sandals, Libyco-Berber inscriptions. The modern petroglyphs, with a very light patina, include a man riding a donkey, some Arabic inscriptions, a driver on his car and a hunting scene with a rifle. Four out of the zoomorphic subjects are in Tazina style (figs. 3, 4) and could go back to the Middle-Final Neolithic, spanning from 4,000 to 2,000 BC (PICHLER & RODRIGUE 2003). Most of the drawings can be assigned to the so-called Libyco-Berber style *lato sensu* or to recent times.

A number of Islamic cemeteries are often associated with the tumuli (fig. 5). One of the most interesting contexts was found at the foot of the Afrou mountain, facing the shelters of Ifran-n-Taska. Here there are two small cemeteries, one possibly older than the other because of the worse state of preservation. Close to the older cemetery, a stone ring encloses a pit of approximately 40 cm deep. Lahcen Oukhayyi, the householder of the family inhabiting the plateau, explained us that this structure was a tumulus which represented the burial of Sidi Abderrahman, a saint whose burial was raped in 2003. This burial represents, like in other North-African countries, evidence of the integration of the old beliefs and the Islamic religion. It is interesting to notice the continuity of utilization of the funerary spaces for a very long period in history. The reduced size of the majority of the burials in these cemeteries shows that the nomadic families are characterized by a high infant mortality.

THE SURFACE FINDINGS

To try to find general clues about the past peopling of the plateau and about the cultural context of the paintings in Ifran-n-Taska shelters, a random collection of the surface findings, consisting of potsherds, chipped stones, slag, ostrich eggshell fragments and beads, was carried out. The stone assemblage, consisting of un-retouched flakes in some cases bearing worn traces or notches, blades, bladelets (fig. 6), cores of different typologies and waste products besides grinding stones and querns (fig. 7), includes also one Mousterian point on a pseudo-Levallois flake and one arrowhead of Neolithic typology. The raw material procurement is very easy because on the plateau there is a remarkable abundance and variety of pebbles and nodules in flint, chalcedony, quartz, quartzite and radiolarite. It is difficult to define

the exact chronology of these pieces also because the archaeological investigations in this region have been mainly devoted to rock art and, moreover, the uncontrolled collection of archaeological artefacts has altered the general picture of the chipped stone complexes (especially as concerns the points). Anyway, this area is likely to have been settled since Paleolithic times through the Neolithic as proved by the previous well-documented research demonstrating the existence of open-air sites (ANTOINE 1933, RUHLMANN 1939, GLORY & ALLAIN 1952, CAMPS & RISER 1978, RODRIGUE 1986). The investigated sites are scattered and rather far from Ifran-n-Taska. However, they belong to the hydrographic basin of the Drâa and could reflect the peopling of the Moroccan pre-Sahara during prehistoric times. In this perspective the research on the prehistoric archaeology of the area under study is certainly promising.

Pastoral Life on the Plateau

Besides the archaeological survey, an ethnographic investigation on the ways of life of the nomadic herders living on the plateau has been accomplished. The investigation aimed at a better understanding of the cultural context and of the landscape of Ifran-n-Taska. There are two householders. One of them, Lahcen Ou Youssef Oukhayyi, is an Aït Atta and belongs to the Aït Isfoul tribe; the other one is a half-Aït Atta half-Oulad Yahya and belongs to the nomadic Arabic groups settled south of Zagora. This melting pot is reflected in the bilingual (Berber and Arabic) toponymy. The linguistic duality is not recorded in the common topographic maps because the topographical data have been collected in Arabic. As to the settlements, they are composed of a dry-stone wall surrounding the tent and the dry-stone pen of the flock. Two kinds of spatial arrangements occur: (i) the tent and the pen of the flock nearby (fig. 8a) and (ii) the tent far away from the pen of the flock. The water supply is provided by a series of wells; one of them is Hassi Nsara, close to the painted shelters (fig. 8b). A *guelta* is also present on the plateau. Our main informer, Lahcen Ou Youssef Oukhayyi, told us that up to the eighties of the last century there were fifty to sixty tents on the Tafraout plateau, representing the tribes of Aït Isfoul, Aït Alouane, Aït Khebbach, Imessoufa (Aït Atta confederation), Aït Oussa of the Sahara and also Aït Merghad coming from the Errachidia district. During our research period we were invited to attend a baptism ceremony of Lahcen's grandchild, which represents an occasion to aggregate other nomadic families coming from other places. The women, including the mother with the new born, were

hosted in a tent far from the tent of the men. The food consisted of bread and stew of goat prepared in the tent of the women. The drinks were fresh milk and tea offered by our guest Lahcen in the tent of the men.

The data collected permit to know the story of the region and to understand the social context of the cultural elements so far recorded: above all, the nomads' encampments, the water reservoirs, the flora and the endemic fauna. The data concern also rock art. Lahcen Oukhayyi remembers that the barbary sheep, depicted in a lateral frieze of the Ifran-n-Taska V shelter, was hunted up to the end of the seventies in this area.

Study of the Painted Shelters

The five adjacent shelters (fig. 9), located close to a well dug in the wadi Taska bed, are north-east oriented. They open along a cliff (quartzite of the Lower Ordovician -1th Bani). The Bani jebel forms the southern edge of the Anti-Atlas Hercynian chain.

The geological survey has recorded the presence of some ochre deposits in the area. On the two sides of one of the tributaries of the El-Guettara wadi crops out the lower Ordovician oolitic iron layer, likely exploited to prepare the colours red, yellow and orange utilized for the paintings. A series of stone enclosures in the shelters attest the use of these places as seasonal pens for the sheep and goat flocks of nomadic herders.

DESCRIPTION

A database including general information on the Ifran-n-Taska shelters, the details of the walls and of the painted subjects (style, technique, spatial organization, state of preservation) has been elaborated by our team to register the features of the sites.

Shelter I (w: 11.40 m – h: 3.40 m – d: 4.20 m): its position is rather elevated above the wadi bottom. A stone enclosure is visible inside. Likely, the archaeological deposit is preserved inside the shelter. A series of chipped stones and ostrich eggshell beads have been collected along the talus (see previous paragraph). The faded paintings, in red, are concentrated on the left part of the rear wall.

Shelter II (w: 8.90 m – h: 2.90 m – d: 2 m): here also a stone enclosure is visible inside. The paintings are very deteriorated, mainly because of the rainwater flowing down the walls. The paintings, in red and yellow, still

visible, are concentrated on the right wall between 1 and 1.30 m above the floor. The subjects cluster in four assemblages and represent fingerprints, linear strokes, some indefinite spots and a very faded anthropomorph.

Shelter III (w: 9.50 m – h: 4 m – d: 3.20 m): here the polychrome paintings are less degraded also because they are concentrated on the higher portion of the rear wall. The paintings occupy the whole surface; their density increases in the middle of the wall. The following subjects are still readable: an aardvark in dark red (fig. 10), a stylized anthropomorph associated with some Libyco-Berber letters in red (SKOUNTI *et al.* 2004), two tame oxen superimposed, an antelope, a giraffe, several concentrations of fingerprints, several geometric silhouettes or indefinite spots and so on (fig. 11).

Shelter IV: this is the largest one, composed of a shelter on the right (w: 23.60 m – h: 3 m – d: 4 m) and a niche (*IV bis*) on the left (w: 10.50 m – h: 1.65 m – d: 2 m). The shelter contains a well-preserved large enclosure, some fireplaces and traces of soot on the walls (fig. 12). It is suitable as a temporary shelter for the herders and their flocks. The concrete well, recently built close to the shelter, makes this site very propitious to herding activities. The paintings of the niche are very interesting because, besides some indefinite spots, there are at least three horizontal rows of miniature anthropomorphs in dark red (max. h: 10 cm), maybe representing dancing people (fig. 13). Other groups of fingerprints and indefinite spots and a quadruped are added to the figurative repertory of the niche. In the main shelter (*IV*) there are several subjects in red, white, black and yellow representing oxen, giraffes (fig. 14), anthropomorphic subjects (warriors, etc.), fingerprints and geometric figures.

Shelter V: this is composed of three boulders which form a kind of cavity with three open sides (north-eastern side: w: 8 m – h: 2.20 m – d: 9 m; south-western side: w: 7.60 m – h: 1.90 m – d: 9 m; eastern side: w: 6 m – h: 1.40 m – d: 1.55 m). Its plan is very irregular; most of the preserved paintings are arranged inside a kind of narrow corridor with the roof very close to the ground, so that it is very difficult to observe the painted panels and to take pictures (fig. 15a). Other groups of paintings are scattered on the outer sheltered walls of the eastern and southern boulders. The subjects represented are: armed horsemen, various faunal species (oxen, antelopes, barbary sheep, giraffes and other quadrupeds) and several anthropomorphic figures in different attitudes. The latter are involved in hunting scenes or battles with spears and shields (fig. 15b, c). A Libyco-Berber inscription, painted in red, has already been published (SKOUNTI *et al.* 2003, SKOUNTI & NAMI 2000). The paintings of this site are fairly well preserved as it is not very easy to enter.

In front of the painted shelters, on the opposite side of the wadi Taska, two shelters likely still keep the archaeological deposit more or less intact. Together with shelter I, they could give the opportunity to study the prehistory of the plateau.

THE VANISHED PAINTINGS IN SHELTER IV

The paintings of the five Ifran-n-Taska shelters (figs. 1, 8) and the petroglyphs of Lemjilej were discovered in 1995 by A. Bravin and M. Conenna. Later, a team of the *Centre national du Patrimoine rupestre* made a survey of the plateau, appreciating the importance and scientific relevance of the paintings (SALIH 1995). The next year, a paper on the paintings was presented at the Valcamonica Symposium (BRAVIN 1996). Another site with paintings in this region (surroundings of the village of Zaouïa – Sidi Abd en-Nebi – southern side of the Jebel Bani) was signalled in the publication by SIMONEAU (1977).

In 1995, on the occasion of the discovery of the paintings, a series of slides were realized. The slides contain the record of the most important paintings of the five Ifran-n-Taska shelters: zoomorphic subjects, miniature subjects, superimposed subjects.

The comparison between the 1995 slides and the 2009 photos shows the bad state of preservation of the paintings, especially in shelter IV. Here, a calcite layer hides the drawing of a red ox (fig 16a, b), while three red-and-white antelopes are so faded that they are no longer readable (fig. 17a, b). The walls of shelter IV have been damaged both by water percolation and human activities performed inside (fig. 12). Several paintings suffered from weathering. The restoration of the paintings hidden by the calcite layer is one of the targets of our mission. Our team has debated the possibility and the methods to restore the paintings covered by calcite layers and soot, without damaging the painted panels.

Laboratory Analyses

The laboratory analyses aimed first at reconstructing the composition of pigments and secondly at dating the paintings.

THE COMPOSITION OF PIGMENTS (tab. 1)

The analyses of the five samples by the technique of X-Ray fluorescence (SECCARONI & MOIOLI 2002) reveal the presence of iron, calcium and

manganese. These elements are associated with some minerals occurring in large amounts in the region.

Table 1

Samples (Sn) collected for the analysis of the composition of pigments in Ifran-n-Taska: shelter II (Sn 02 and Sn 03), shelter III (Sn 05), shelter IV bis (Sn 06 and Sn 08)

Sn	Description	Ca	Mn	Fe
01	Red 06	29		266
02	Red 06	35		211
03	Black 05	23		36
04	Black 05	29	1.7	39
05	Yellow 02 (1)	38		126
06	Yellow 02 (2)	44		36
07	Yellow and Red 03	42		352
08	Yellow and Red 03	44		260
09	White 08	16	3.5	58
10	White 08	11	7.2	52

(1) powder

(2) crust

A larger amount of iron was registered in samples 06 and 03 and in sample 02 (powder), while in the more compact fraction of sample 02 there was a larger amount of calcium. In samples 05 and 08 there was a scarce quantity of manganese likely associated with iron ores, which form the rock substratum of the pigment.

DIRECT DATING

As we know, the research on the direct dating of rock art is so recent that we can consider it as still experimental (HYMAN *et al.* 1990). The main problem is represented by the contamination of the organic matter in the pigments, caused both by natural and/or anthropogenic factors; moreover, the samples usually also include fragments of the rock substratum. The rock substratum itself undergoes chemical alterations caused by water, which produce the formation of other minerals containing carbon. The rock surface is also subject to biological alterations caused by necrotic microorganisms or other materials rich in carbon (BRUNET *et al.* 1988; BEDNARIK 1996a, b *et al.* 2006; HACHID *et al.* 2010).

The Sampling Method

The method to extract the organic matter in the pigments of the Ifran-n-Taska paintings has already been used to date the paintings of the Tadrart Akakus (Libyan Fezzan, see also ZERBONI 2012). The results are sometimes controversial because the dates do not correspond to the results of the studies on the style, the content and the technique of rock art (PONTI & SINIBALDI 2005, ZAMPETTI 2008, HACHID *et al.* 2010).

The Samples

The pigment samples have been collected in three out of the five shelters (I, III, IV bis). The detection of the paintings suitable for the sampling was rather difficult because of the small size of the paintings.

Shelter I

The walls of this shelter are very deteriorated and the colour traces are almost illegible; nevertheless, as there are traces of the archaeological deposit at the foot of the walls and a test excavation is planned in the near future, we decided to try to date a spot of red colour (fig. 18a, b).

Shelter III

Here the paintings, in red, dark red, black, white and yellow, are visible enough. The subjects are drawn with the technique of the outline or with the outline and filling. The pigment sample has been taken in the middle of the painted wall, where some small zoomorphic subjects in red, executed with the technique of the outline and filling, are still present (fig. 19a, b).

Shelter IV

The sample has been collected in niche IV bis, in the eastern part of the shelter, to prevent contamination with the soot present in shelter IV (fig. 20a). The painted scene represents a group of anthropomorphic subjects, in profile, walking in a single line. The sample of red colour has been taken on the back of one of the subjects (fig. 20b).

Dating

The protocol applied has been elaborated by the laboratories of the National Research Council (CNR) and of the Chemistry Department of the Sapienza University of Rome (MORI *et al.* 2006). The samples have been pretreated with a number of washes to remove the impurities. The powder obtained was filtered and then heated at 80 °C. A sample of the treated powder has been used for the HPLC (High Performance Liquid Chromatography) analysis to identify the organic matter (this analysis is on its way). The ¹⁴C dates have been obtained by the AMS (Accelerator Mass Spectrometry) in the laboratories of the Centre for Isotopic Research on Cultural and Environmental Heritage (CIRCE) of Naples University. The results are: shelter I (TZK I): age ¹⁴C 3794 +/- 37 BP; shelter III (TZK III): age ¹⁴C 4100 +/- 59 BP; shelter IV (TZK IV): age ¹⁴C 7062 +/- 37 BP.

The Results of Dating

The finds reported have been treated according to the protocols used in the CIRCE laboratory and the ultrasensitive accelerator measurement of ¹⁴C/¹²C isotopic ratios has been performed. The conventional radiocarbon ages obtained are reported, together with the calibrations applied using the code CALIB5. For each sample the calibrated age intervals at the confidence level of 68 (1σ) and 95 % (2σ) are given. Several calibrated age intervals, with different relative probabilities, may correspond to each radiocarbon age, due to the presence of relative maxima in the calibration curve.

Sample: DSH1832 (user code: TZK I) – Shelter I

Radiocarbon Age 3794±37 a bp

δ¹³C: -10±2 ‰

One Sigma Ranges: [start:end] relative area

[2287 BC:2196 BC] 0.83

[2169 BC:2147 BC] 0.17

Two Sigma Ranges: [start:end] relative area

[2401 BC:2382 BC] 0.02

[2347 BC:2131 BC] 0.96

[2085 BC:2057 BC] 0.02

Sample: DSH1833 (user code: TZK III) – Shelter III

Radiocarbon Age 4100 ± 59 a bp

$\delta^{13}\text{C}$: -14 ± 2 ‰

One Sigma Ranges: [start:end] relative area

[2858 BC:2810 BC] 0.24

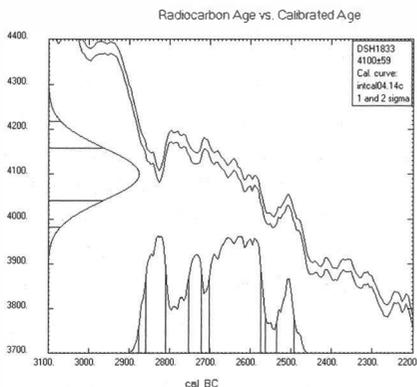
[2751 BC:2722 BC] 0.13

[2701 BC:2574 BC] 0.63

Two Sigma Ranges: [start:end] relative area

[2875 BC:2562 BC] 0.92

[2535 BC:2492 BC] 0.08



Sample: DSH1834 (user code: S1 TZK IV) – Shelter IV

Radiocarbon Age 7062 ± 37 a bp

$\delta^{13}\text{C}$: -7 ± 3 ‰

One Sigma Ranges: [start:end] relative area

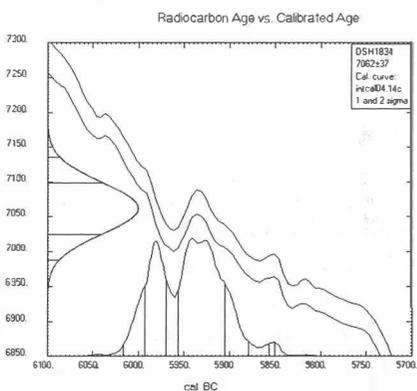
[5993 BC:5968 BC] 0.31

[5955 BC:5905 BC] 0.69

Two Sigma Ranges: [start:end] relative area

[6016 BC:5878 BC] 0.99

[5855 BC:5850 BC] 0.01



Preliminary Observations on the Chronology of the Ifran-n-Taska Paintings

The archaeological sequence is still lacking in this area, so the style of the paintings represents a marker important enough to be compared with the dates so far obtained. Besides the subjects in Libyco-Berber style (warriors with shields, horsemen and inscriptions), which go back to the last millennia of prehistory, there are paintings in outline or in full colour. The latter underlie the subjects in Libyco-Berber style (shelters III and IV). In the IV bis niche, the paintings in dark red (see the row of small anthropomorphic figures, fig. 13) underlie other, indecipherable subjects. The most recent painting layer is represented by the series of fingerprints or dots which are not attributable to a specific style. In a recent paper on the painted shelters of the Zemmur region (SOLER SUBILS *et al.* 2006) a designation and a relative chronology were proposed for the different styles which characterize the

painted panels. The row of small figures in the IV bis niche and the small animals (aardvark, quadrupeds, etc.) in shelter III of Ifran-n-Taska seem to be fairly similar to the “Dark Figures’ Style”, while the subjects in outline are analogous to the “Shaped Style Figures” or “Stroked Style” of the Zemmur. The period suggested is between 3,200 and 2,400 BP (SOLER SUBILS *et al.* 2006, fig. 35). The Tazina school petroglyphs, also present in the Zemmur region, would be earlier so that they could represent till now one of the most typical expressions of the advanced-final Neolithic.

In general, the ages obtained for the paintings of Ifran-n-Taska, even if they are only a preliminary test, seem to be consistent with the sketch by SOLER SUBILS *et al.* (2006), except for the age of the sample from the IV bis niche, which is much older. We clearly need more numerous data coming also from other kinds of investigations to begin to elaborate an explanation and a model of sequence for this area.

Conclusions

The data on the prehistoric peopling of the eastern Jebel Bani plateau go back to the Holocene period (middle-final Neolithic and Protohistory), if not to the Pleistocene as the artefacts of more archaic typology seem to suggest. These data are very important and meaningful because they attest to the intensive exploitation of mountains during the first millennia of the Holocene and in historical times. Mountains constitute an integrated ecological system, which made the survival of the human groups and of the fauna after the onset of the so-called post-Neolithic dry period possible. The raw materials like quartz, quartzite, malachite, less metals (copper and “oolithic iron”), the water, the wild fauna, the pastures and plants were highly valued resources. Now this heritage, composed of prehistoric and historical settlements and a very fragile ecosystem, is seriously menaced because the circulation of knowledge on the past of this area is inadequate. One of the overriding aims of the mission is to encourage contact between our mission and the local exponents of the economic and cultural life to make them aware of the problems of the cultural heritage. The preservation of this site is a critical point because of the rarity of rock paintings in Morocco, the present condition of deterioration of the site and the perspective of development it contains for this region.

ACKNOWLEDGEMENTS

We are grateful to our Belgian colleagues for the invitation to the meeting and for their incomparable hospitality. We also want to thank M. Conenna and the Moroccan

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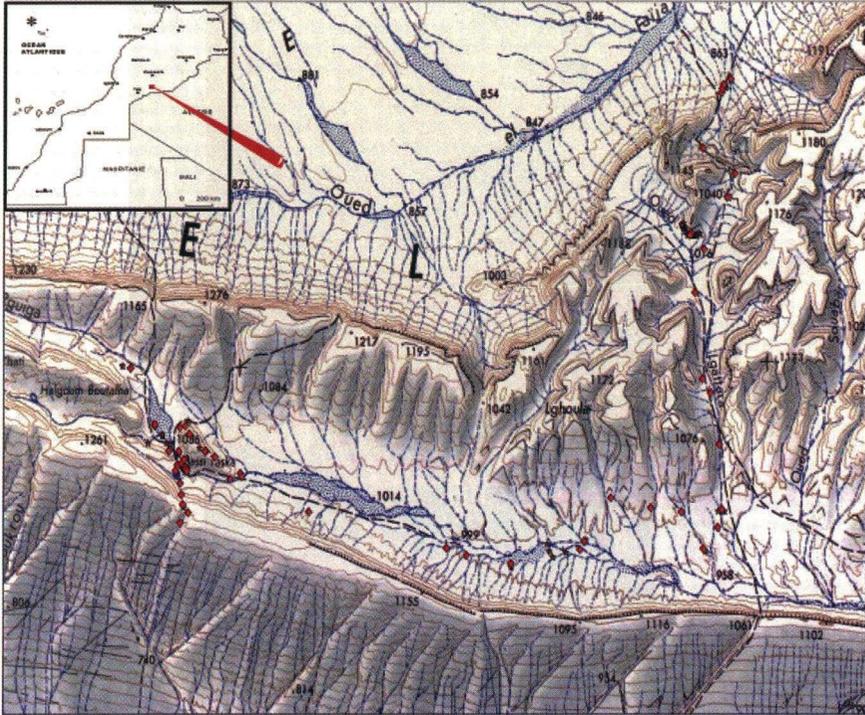


Fig. 1. — Map of the 2009 surveyed sites in Taфраout-n-Taska (elaborated by K. Tajeddine & M. Nami).

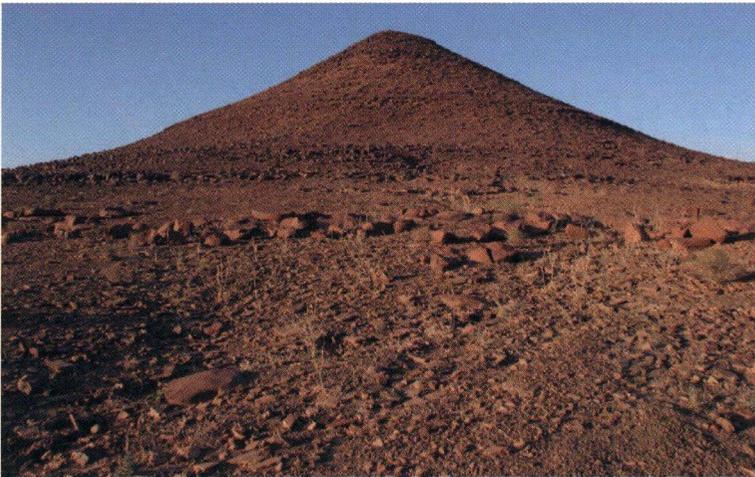


Fig. 2. — The Lemjilej site.

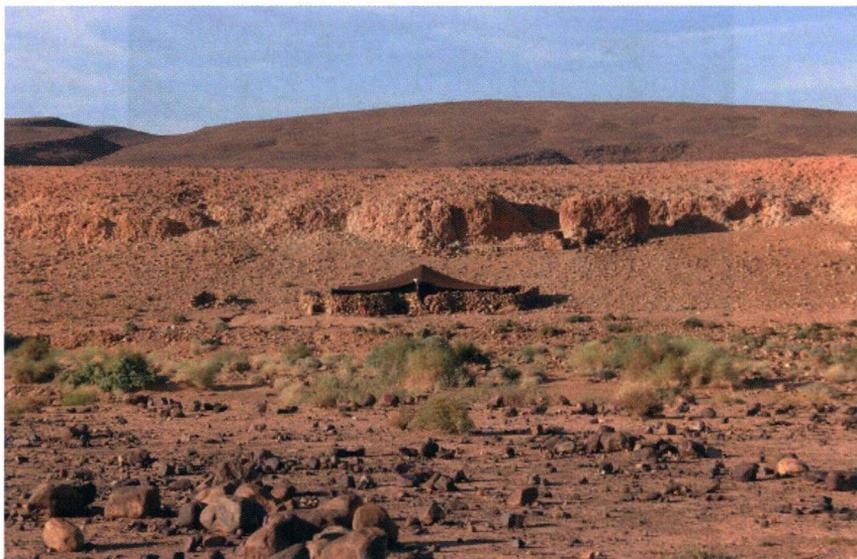


Fig. 8a. — The nomads' settlement (photo: A. Bravin).



Fig. 8b. — The well of Hassi Nsara (photo: A. Bravin).



Fig. 9. — The painted shelters of Ifran-n-Taska (photo: D. Zampetti).

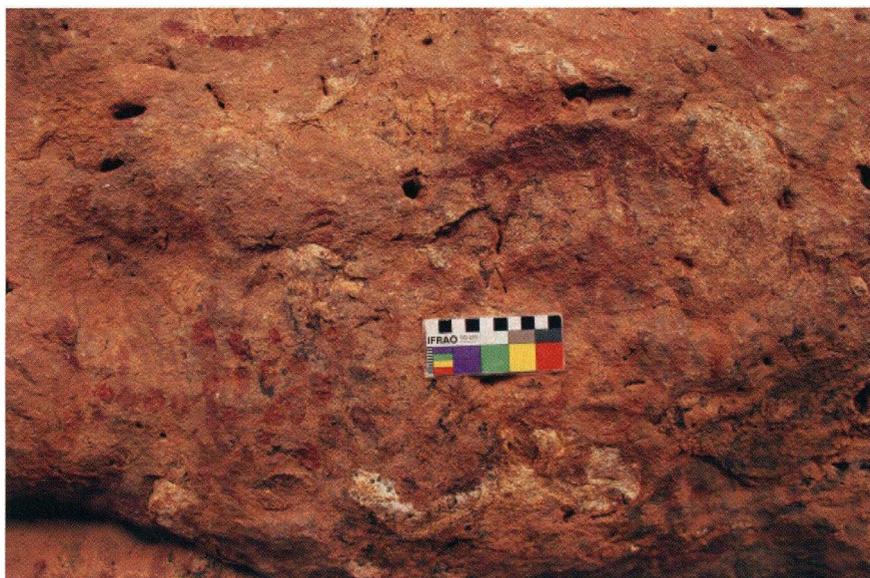


Fig. 10. — Shelter III: the dark red aardvark and the red fingerprints (photo: A. Bravin).

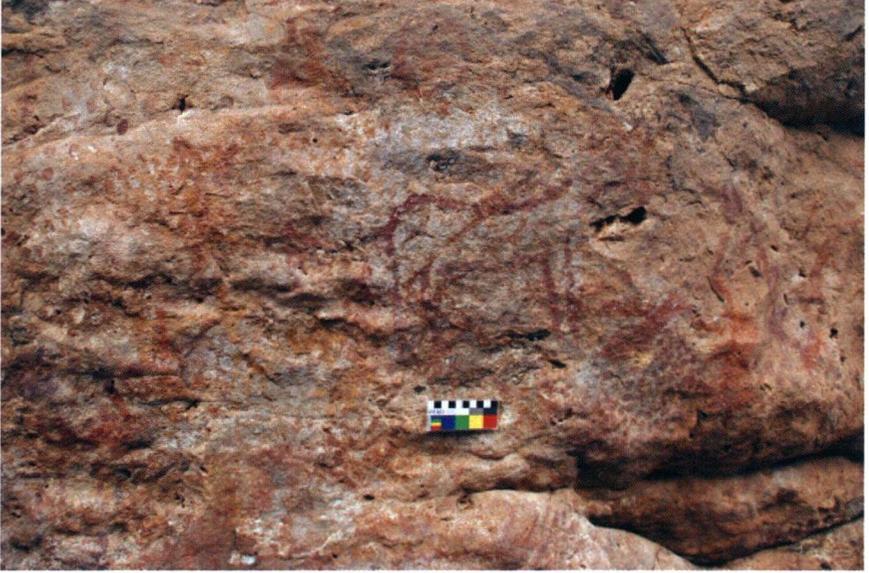


Fig. 11. — Shelter III: quadruped in red outline, Libyco-Berber inscription and fingerprints in full red (photo: A. Bravin).



Fig. 12. — Shelter IV: the walls (photo: A. Bravin).



Fig. 13. — Shelter IV bis: the miniaturized subjects in dark red (photo: A. Bravin).



Fig. 14. — Shelter IV: the white giraffes and strokes of dots superimposed (photo: A. Bravin).

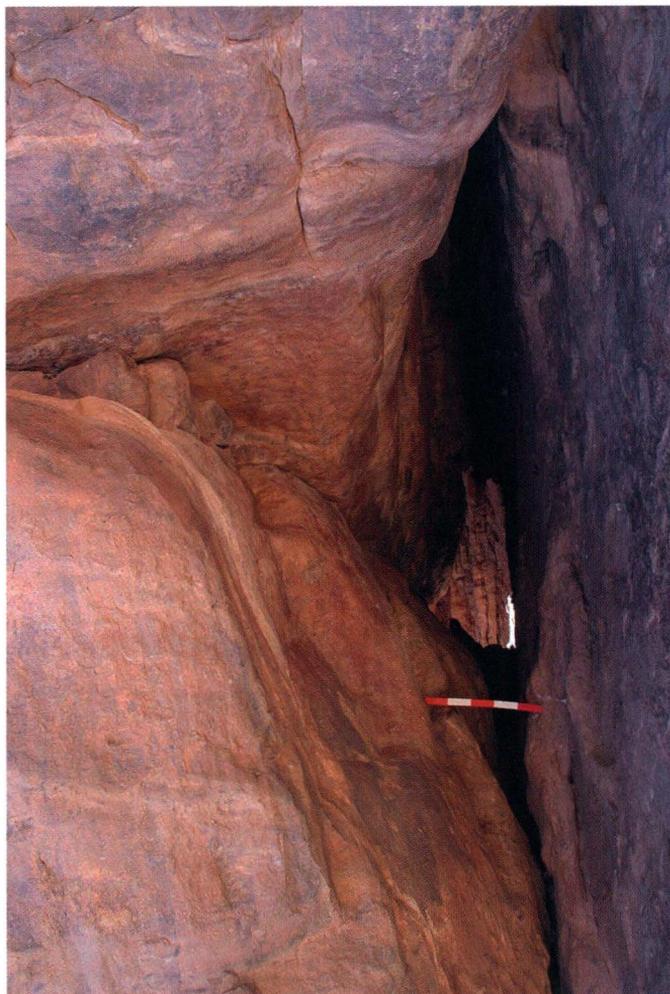


Fig. 15a. — Shelter V: the entrance (photo: A. Bravin).



Fig. 15c. — Shelter V: series of riders in red (photo: A. Bravin).



Fig. 15b. — Shelter V: red warrior with spear and shield (photo: A. Bravin).

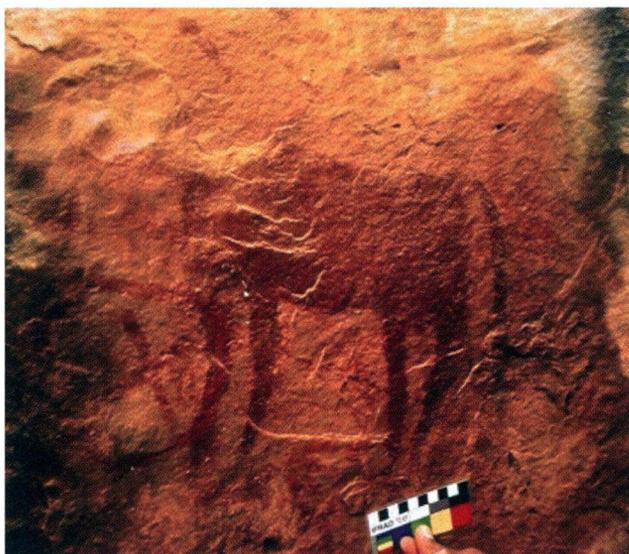


Fig. 16a. — Shelter IV: the red ox in 1995 (photo: A. Bravin).



Fig. 16b. — Shelter IV: the red ox in 2009 (photo: A. Bravin).



Fig. 17a. — Shelter IV: the white and red antelopes in 1995
(photo: A. Bravin).



Fig. 17b. — Shelter IV: the red and white antelopes in 2009
(photo: A. Bravin).

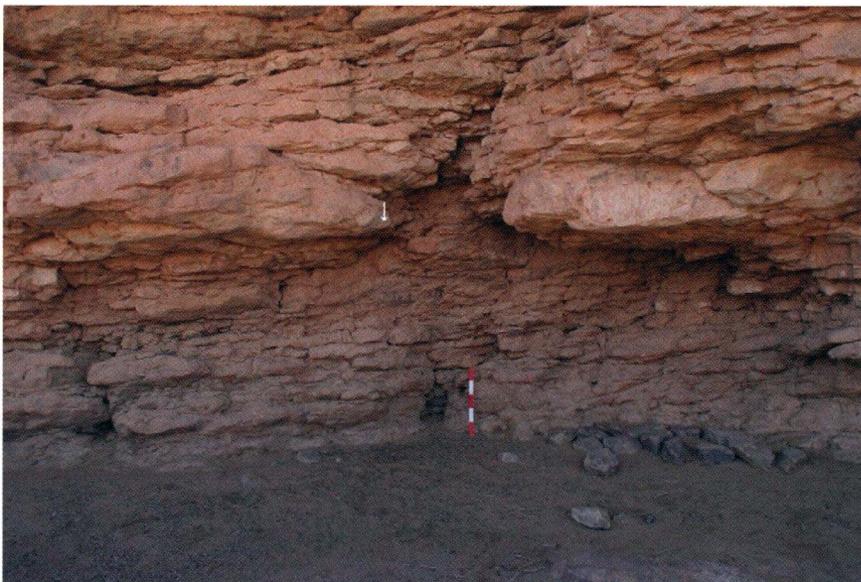


Fig. 18a. — Shelter I (photo: A. Bravin).



Fig. 18b. — Shelter I: the sample of red painting (photo: A. Bravin).



Fig. 19a. — Shelter III (photo: A. Bravin).



Fig. 19b. — Shelter III: the sample of red painting (photo: A. Bravin).

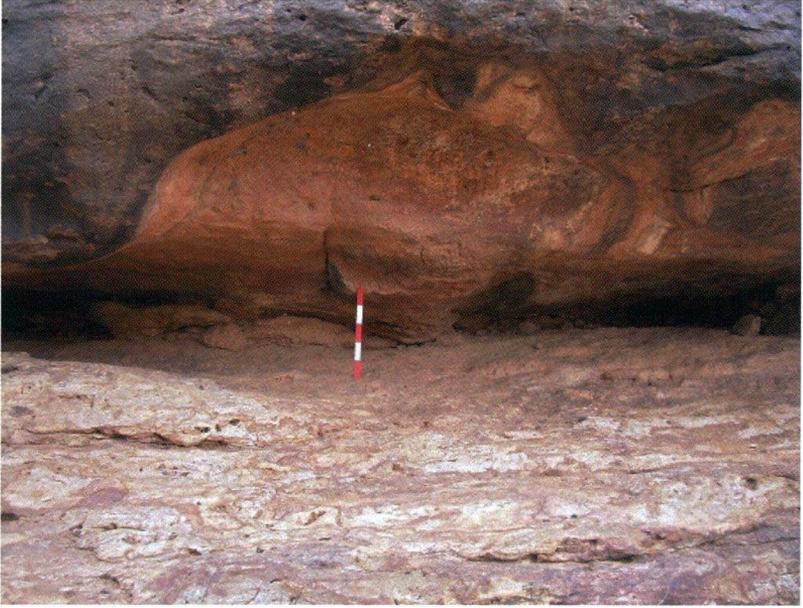


Fig. 20a. — Shelter IV bis: the painted wall (photo: A. Bravin).

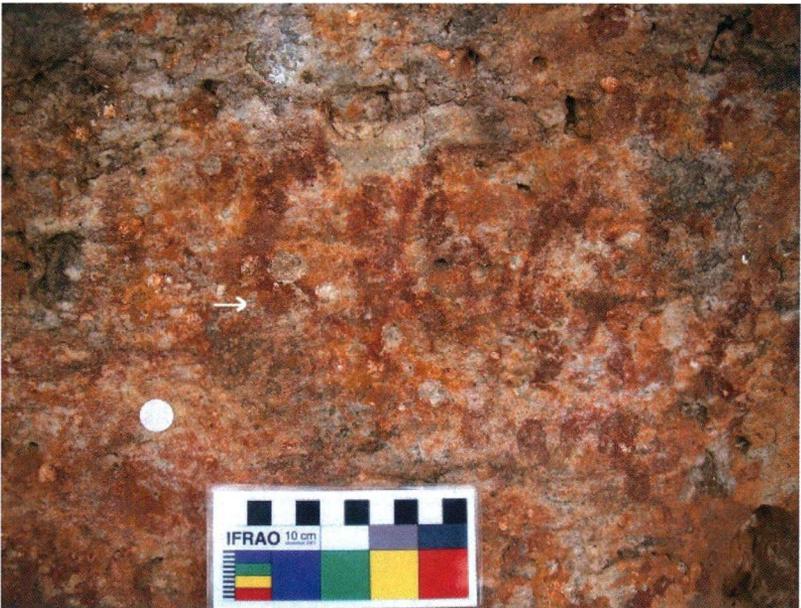


Fig. 20b. — Shelter IV bis: the sample of red painting (photo: A. Bravin).

A Decorated Stele from the Ténéré

by

Jan RAYMAEKERS* & Francis VAN NOTEN**

KEYWORDS. — Ténéré; Chirfa; Archaeology; Neolithic; Stele; Grindstone.

SUMMARY. — In the collections of the Royal Museum for Central Africa in Tervuren is a decorated stele coming from the Ténéré. This remarkable object seemed to be unique. The authors discovered a comparable stele in a private collection. They present for the first time both stelae and link them to a third object belonging to the same cultural complex.

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* *
*

In 1977, one of us acquired for the Royal Museum for Central Africa in Tervuren a plate in sandstone with decoration in champlévé from a Belgian tourist. The man came back from a trip in Niger with an object that at first sight appeared to be a decorated grindstone. A large number of scientists took a look at it but apart from some decorated grindstones, no other references could be found. The stele itself is definitely not a grindstone and remained a unique piece for more than thirty years.

The Find

The stele inscribed with the number PO.0.0.86510 in the collections of the Royal Museum for Central Africa in Tervuren was discovered on the north-west border of the Ténéré of Tafassasset in the region between 11° to

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12° east and 20° to 21° north (fig. 1). On their way from Chirfa to Adrar Siret the finder and his companions saw archaeological material scattered along the track and left their original path. On the undulating but easily accessible terrain they discovered among pottery and lithic artefacts a stele that was partially sticking out of the sand. No other artefacts from the neighbourhood were collected, recorded or photographed. We will refer to the object as the Chirfa stele.

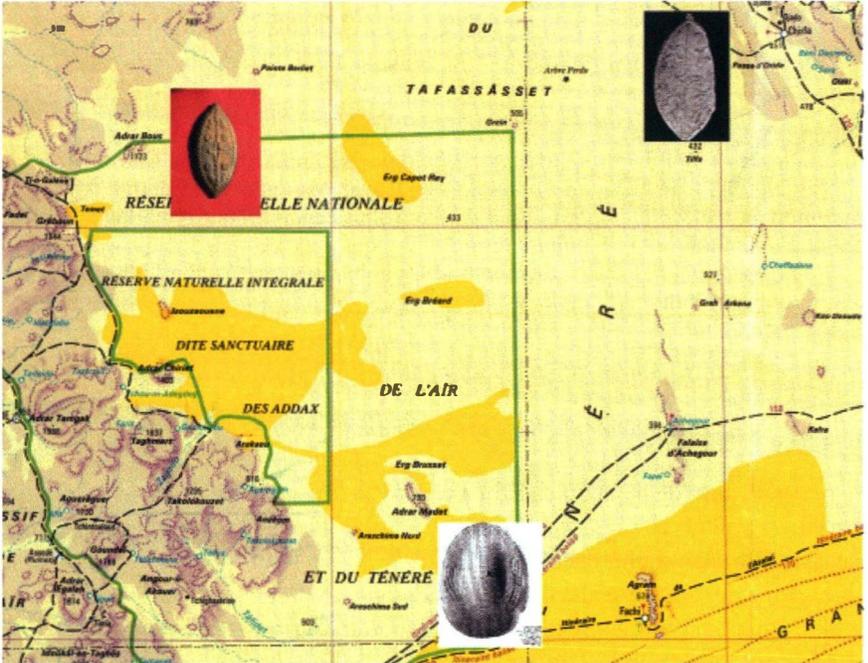


Fig. 1. — Map of the Ténéré of Tafassasset.

The Chirfa Stele

The stone plate is between 14 and 27 mm thick, with a maximum length of 605 mm and a maximum width of 227 mm. Its weight is 5.1 kg. One side is slightly concave (A-side), the other one is slightly convex to the midst (B-side). The whole thing has the shape of an ellipse with a knob at one end. The opposite end shows a fracture where probably a similar knob was situated. Especially B-side, which stood out on the sand, has suffered from eolic forces but in general the stone's decoration is well preserved. The stone bears

a dark and unidentified organic deposit of unknown origin. The plate shows curvilinear and circular patterns at both sides. Both the entire plate and the decoration were hammered into the rough stone. Hammering traces on the rim and the top of the decoration suggest that the plate has been designed first as an undecorated oval flat stone. Afterwards, the space between the decoration was chiselled. There are no polishing traces. The stele of Chirfa does not present any apparent evidence of utilitarian use (fig. 2).

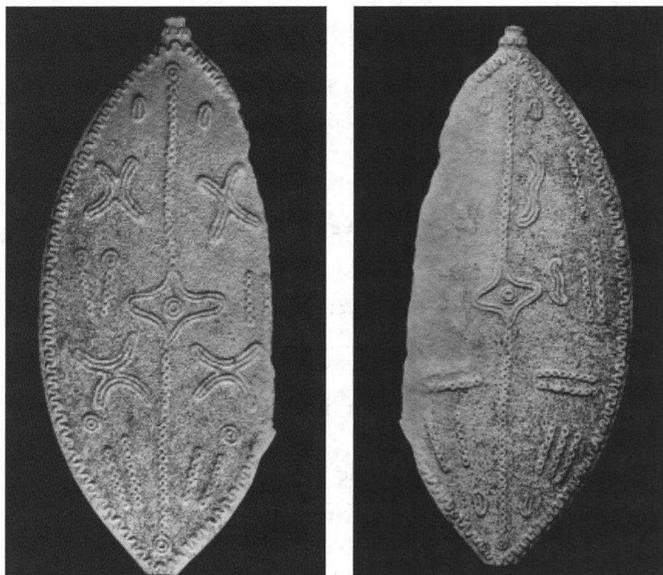


Fig. 2. — Stele of Chirfa (A- and B-side) (© Royal Museum for Central Africa, Tervuren).

The Decoration

The plate is on both sides decorated with curvilinear and circular patterns around a central figure. Both sides are bordered with an undulating line. A chain of pierced “pearls” in the midst of each side divides the plate in two halves. In the middle stands at both sides a “star” with four branches. In the space between the central chain and the undulating border we find smaller chains of “pearls”, concentric circles, curves, crosses and *cauris*. The decoration is not completely symmetrical on both halves although there are limited differences. A-side and B-side are not identical: the motives’ configuration is different at each side; moreover, one can find motives at A-side that are not present at B-side and vice versa (fig. 3).

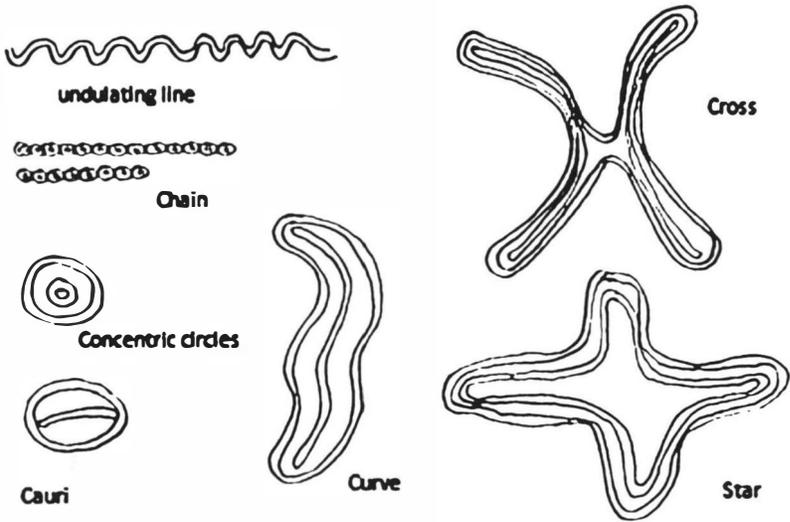


Fig. 3. — Decoration of the Chirfa stele.

A Comparable Object: The Stele of Adrar Bous

In order to present the Chirfa stele at the present symposium on African rock art, we started a new search for comparable artefacts. We found a second, hitherto also unpublished, piece, which is definitely similar to the stele of Chirfa, in the collection of Max Itzikovitz and Klaus-Jochen Krüger. We are very grateful to them for giving us the opportunity to reproduce their stele and for the valuable discussion we had. This stele has also been found on the borders of the Ténéré in the region of Adrar Bous. There is, however, no further information about the archaeological context of the find. The Adrar Bous stele is also elliptical with knobs at both ends (fig. 4). With a length of 43 cm and a maximum width of 20 cm it is smaller than the Chirfa stele but the Adrar Bous piece is up to 3.5 cm thick and its decoration is less sophisticated. Its weight is 3.3 kg. The Adrar Bous stele has also a black organic deposit of unknown origin and one side is slightly eroded. As for the Chirfa stele, the stele of Adrar Bous shows no trace of utilitarian use. Both the Chirfa and the Adrar Bous stelae show a very comparable decoration: undulating lines, crosses, curves, “stars” and *cauris*. There are fewer patterns on the Adrar Bous stele. Although not identical, the decoration arrangement with the lined borders, the central star and the transversal division of surfaces is very similar.

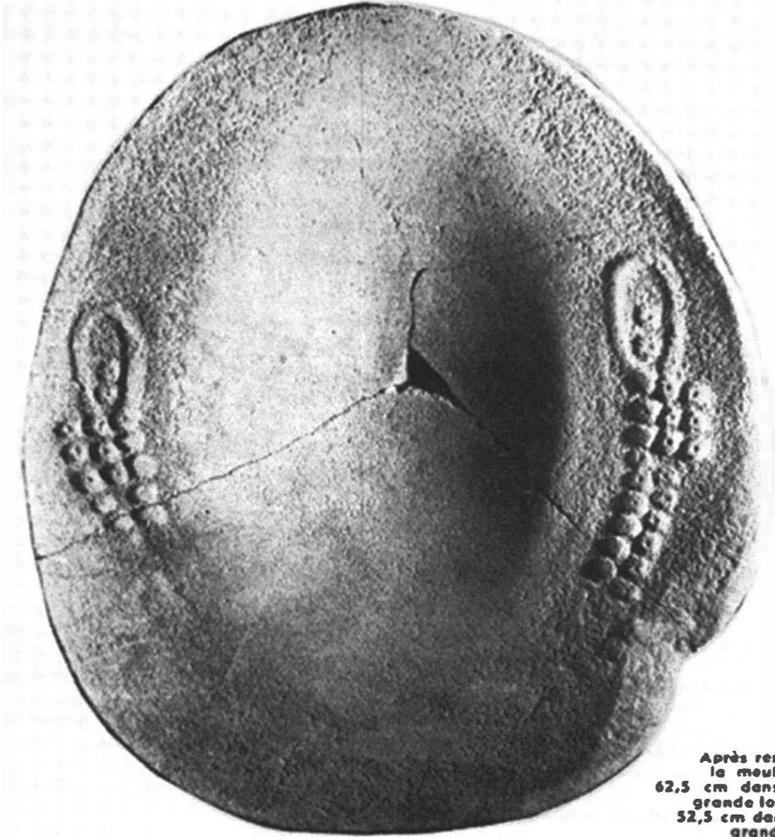


Fig. 4. — Stele of Adrar Bous.

The Grindstone of Areshima

In the literature about the archaeology of the Ténéré region, one object is found to be undoubtedly related to the stele of Chirfa. J.-P. Roset described in his article, “Une meule néolithique ornée du Ténéré (Sahara nigérien)” (*Archéologia*, 58 (1973): 66-68), a grindstone found near Areshima (18.17 N, 10.09 E) on the borders of the Ténéré and now in the museum of Niamey. Roset attributed the grindstone of Areshima definitely to the Saharan Neolithic (*Ténéréen*). He stated that the stone broken into three parts but complete was found *in situ* and associated the grindstone with a C14 date of a hearth in the neighbourhood. The hearth delivered a (not calibrated) C14 date of 4470 +/- 115 BP. The sandstone plate measuring 52.5 by 62.5 cm is hammered in champlévé. Besides the location of the find and this hammering technique, the decoration of the grindstone of Areshima is linked to the stele of Chirfa. As a matter of fact, one can find the same “pearls” on both stones. Only one side is decorated. Another and important difference with the Chirfa stele is the fact that the Areshima stone is definitely a utilitarian object. The polished interior of the Areshima stone is the result of grinding. Other decorated grindstones have been recorded in North Africa but none of them so clearly related to the two stelae as the grindstone of Areschima (fig. 5) [1]*.

* The number in brackets [] refers to the note, p. 143.



Après restauration
le meule mesure
62,5 cm dans sa plus
grande longueur et
52,5 cm dans sa plus
grande largeur
perpendiculaire à la
précédente. Elle est
photographiée ici
au 1/15.

Fig. 5. — The grindstone of Areshima.

Conclusion

The three undoubtedly related objects were found on the borders of the Ténéré in a region 250 km across. They are all hammered in champlévé and decorated with very comparable motives. Two of them have the same morphology — the shape of a stele — and show no evidence of utilitarian use. Although these carefully hammered objects must have had a purpose, their real function is not clear. The third one was used as a grindstone. They are all likely to belong to the same cultural complex. Due to the absence of archaeological context and reliable associated dates, this cultural context remains “vague”. The stelae of the Ténéré are not unique but keep intriguing.

NOTE

- [1] See among others the grindstone of Tassili n'Ajjer, in L. Balout, *Algérie préhistorique*, Paris, 1958 (p. 152) and in H. Camps-Fabrer, *Matériau et mobilier dans la préhistoire nord-africaine et saharienne*, Paris, Mémoires du C.R.A.P.E., t. V, 1966 (pp. 285-287); the grindstone of Tinigaline, in J.-P. Savary, "Note sur une meule néolithique ornementée provenant de Tinigaline (Sahara oriental)", *Bull. S.P.F.*, LX (5-6 - 1963): 316-319; the grindstone of central Téfedest, in J.-P. Maitre, *Contribution à la préhistoire de l'Ahaggar. I. Téfedest Centrale*, Paris, Mémoires du C.R.A.P.E., t. XVII, A.M.G., 1971 (pp. 160-164); the grindstone of Taforalt, in A. Ruhlman, "Le Ténéréen", *Bull. Soc. Préh. du Maroc*, X (1936): 3-15.

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We would like to thank Dr Els Cornelissen, head of the Prehistory and Archaeology Section of the Royal Museum for Central Africa (Tervuren) for giving us the opportunity to reproduce the Chirfa stele.

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Chronological and Palaeoenvironmental Issues
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From Savanna to Desert: Rock Art and the Environment in the Wadi al-Hayat (Libya)

by

Maria GUAGNIN*

KEYWORDS. — Palaeoenvironment; Fezzan; Chronology; Landscape; Climate.

SUMMARY. — The rock art of the Wadi al-Hayat, in the Fezzan area of south-western Libya is used as a case study to explore the relationship between the engravings and the Holocene environment. Rock art research in the Sahara has traditionally focused on typological or interpretative approaches. However, the depicted animals and their habitats also reflect the environments the engravers lived in. This case study will discuss the potential uses of available palaeoenvironmental and geomorphological data to establish an environmental and archaeological context for the engravings and provide an alternative chronological framework.

Introduction

The Wadi al-Hayat is a valley-like oasis between the steep northern escarpment of the Messak plateau and the southern edge of the Ubari sand sea in south-western Libya (fig. 1). During the Holocene wet phase, a large palaeolake formed in the wadi, and groundwater still remains relatively close to the surface and supports the vegetation of the oasis.

Rock carvings are typically found on large boulders or stone slabs along the bottom of the escarpment or on cliffs along the mid to lower slope. During the Fezzan Rock Art Project (2004-2009, directed by Tertia Barnett), over two thousand rock art panels were recorded in the wadi (BARNETT 2005, 2006, 2009). The engravings predominantly depict a wide range of animal

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species. While rock art research in the central Sahara has so far concentrated on the stylistic traits, the content of the engravings and the depicted animal species also offer important environmental and cultural information. Cultural and artistic ‘filters’ determined the subjects depicted, and some animals will have played a more important role than others, depending on their specific meaning to the ‘artist’ and audience. In addition, animal habitats and environmental conditions, as experienced by the engraver, will be reflected in the depicted species, assuming that the engravers could render anatomically-correct depictions only of animals they were familiar with.

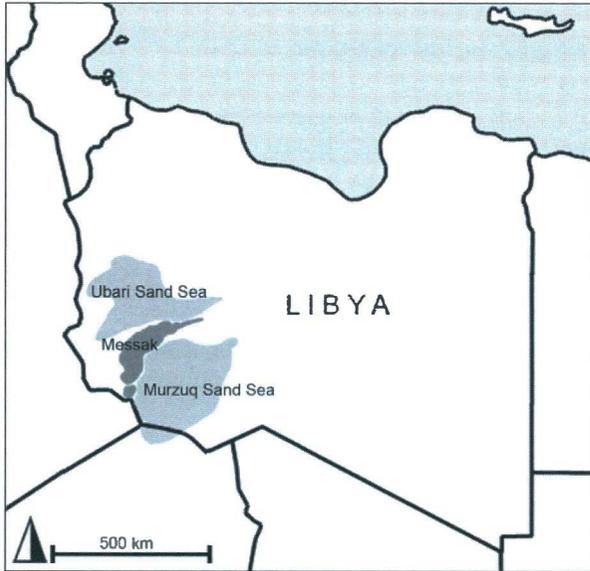


Fig. 1. — Map of Libya indicating the Messak plateau (dark grey) and surrounding sand seas (light grey).

The identification of animal species from rock art depictions can be problematic, particularly where the images are highly stylized. The analyses were therefore based on images that were securely identifiable. This applies to about half the animal engravings, around one thousand two hundred individual animal depictions, and represents a statistically-relevant sample (GUAGNIN 2010).

The palaeoenvironmental and geomorphological data currently available for the region all address different aspects of the relationship between engraving and environment. The Holocene climatic record relates to animal habitats

and consequently to the species that were depicted in the engravings, while the changing Holocene landscapes shaped the experiences of the engravers. However, the link between rock art and environment is not limited to the content of the depictions but also extends to physical characteristics of the engravings. Recent research on rock surfaces of the Messak (CREMASCHI 1996, ZERBONI 2008) showed that the formation of each type of patina was dependent on climatic conditions. Both content and rock varnish of an engraving are therefore connected with the local environment. In addition, the palaeoenvironmental record also identifies elements of the local landscape and specific environmental features. In particular the palaeolake had a spatial relationship with the location chosen for the creation of engravings because its size had an impact on the availability and location of routes, pastures and areas suitable for settlement.

Climatic data, rock varnish and the location of the engravings in relation to environmental features provide different types of links between the rock art and the Holocene environment. Using the Wadi al-Hayat as a case study this paper will explore how the environmental background can add to our understanding of the rock carvings and the landscapes experienced by the engravers.

Palaeoenvironment

The archaeological and palaeoenvironmental record of the area has been researched intensively over the last decade, both in the Wadi al-Hayat itself (ARMITAGE *et al.* 2007; BROOKS *et al.* 2003; DRAKE *et al.* 2006, 2008, 2009; MATTINGLY *et al.* 2003; PARKER *et al.* 2008) and in the surrounding regions of the Acacus, the southern Messak and the Murzuq sand sea (CREMASCHI 1998, 2001; CREMASCHI & DI LERNIA 1999; MERCURI 2008; TREVISAN GRANDI *et al.* 1998).

Following the hyper-arid environments of the Last Glacial Maximum, changes in solar insolation caused a northward shift of the monsoon during the early Holocene. The associated increase in precipitation led to the establishment of savanna vegetation as far north as the central Sahara, and lakes began to form in the wadis and the interdune corridors of the sand seas (CREMASCHI 1998, CREMASCHI & DI LERNIA 1999, MERCURI *et al.* 1998, SCHULZ 1991). In the Wadi al-Hayat, rainfall and a rise in the groundwater table led to the establishment of a large palaeolake, which reached the escarpment and the sand dunes on either side of the wadi (ARMITAGE *et al.* 2007; BROOKS *et al.* 2003; DRAKE *et al.* 2006, 2008). Sediment records in the

Acacus indicate that around 6200 cal BC this wet phase was interrupted by a dry spell (CREMASCHI 2001). Although humid conditions returned, the climate of the middle Holocene is characterized by a gradual increase in aridity until the abrupt onset of arid conditions around 3800 cal BC (ARMITAGE *et al.* 2007; CREMASCHI 1998, 2001; MERCURI 2008; TREVISAN GRANDI *et al.* 1998). This decline in precipitation is also visible in a gradual reduction of the al-Hayat palaeolake; dated shorelines show a progressively smaller lake, and after 4000 cal BC only a small playa remained (ARMITAGE *et al.* 2007; DRAKE *et al.* 2006, 2009). However, groundwater remained close to the surface, and a number of springs continued to be active along the bottom of the escarpment until around 1000 cal BC (BROOKS *et al.* 2003, DRAKE *et al.* 2006). Pollen records show that after 2000 cal BC desert vegetation was established in the area (MERCURI 2008, MERCURI *et al.* 1998, TREVISAN GRANDI *et al.* 1998).

The environmental record of the area also influenced the lifestyles of the engravers and their contemporaries, as local populations had to adapt to their changing environment. The hyper-arid environments of the Last Glacial Maximum led to a hiatus in human occupation, and the area was consequently re-populated by hunter-gatherer groups at the beginning of the Holocene around 9000 cal BC. Around 6000 cal BC domestic cattle were introduced into the area, and mobile pastoralism became the predominant mode of subsistence (CREMASCHI & DI LERNIA 1999). During the Pastoral Periods, the climate in the Sahara gradually became more arid, and the population began to concentrate in the Wadi al-Hayat, where the palaeolake provided freshwater and groundwater continued to support vegetation and springs after the palaeolake dried up around 4000 cal BC. During the Garamantian period, between 1000 cal BC and AD 700, agriculture was established with the help of extensive irrigation systems and supported a large urban civilization in the area (MATTINGLY 2006, MATTINGLY *et al.* 2003). The establishment of savanna biomes in the central Sahara, the gradual aridification and finally the onset of desert conditions form an important background to the engravings and shaped the experiences and lifestyles of the engravers and their contemporaries. The abundance or absence of animals should therefore be reflected in the pictorial record. In addition, a comparison between the habitats of the engraved animals and the palaeoclimatic record of the region may provide a link between the depictions and distinct Holocene climatic phases.

However, the correlation between climate and engraving content has limitations. In the absence of an independent chronology, it is difficult to distinguish long-term trends from short-term climatic fluctuations. Engravings

may relate to annual wet and dry seasons or reflect the marginal environment of the Wadi al-Hayat, with savanna to the south and arid biomes to the north. It is therefore important to also take the relationship between the environment and the patina of the engravings into account.

Patina

Geomorphological analyses in the Messak showed that each type of patina formed under specific environmental conditions (CREMASCHI 1996, ZERBONI 2008). Although precise dating of rock varnish remains controversial (DRAGOVICH 2000, WATCHMAN 2000), the environmental conditions necessary for the formation of the patina can provide an additional link between the rock art and the palaeoenvironmental record of the region.

The presence of dark manganese-rich patina represents the earliest type of visible patina. The lines of the oldest engravings are completely sealed by this black varnish and were created before the onset of its deposition. This Mn-rich varnish can only form in the moderately wet conditions that are associated with dry savanna environments. Radiocarbon dates related to patinated archaeological monuments place the formation of this patina at the end of the Holocene wet phase (CREMASCHI 1996, ZERBONI 2008). The accumulation of Mn-rich varnish took a considerable amount of time. Engravings created during the formation of this patina are therefore covered in a thinner layer of varnish and have a lighter colour (CREMASCHI 1996, GUAGNIN 2010). The next patina layer consists of a red, iron-rich lamination that is typical for dry environments and includes wind-blown lake deposits. This implies that deposition occurred after the lakes had dried up and the remaining deposits were exposed to wind erosion (CREMASCHI 1996, ZERBONI 2008). The formation of this patina consequently appears to postdate the onset of aridification in the area and coincides with the drying-up of the lakes in the area. After the onset of full desert conditions the formation of patina ceased completely.

While patina cannot provide precise dates for individual engravings, it places the depictions within broader climatic phases. However, although the rock of the Messak plateau is very uniform, aspect and moisture conditions may vary locally. If the patina is to be used as a chronological indicator for the engravings, its chronological relevance in relation to the engravings of the Wadi al-Hayat has to be tested. If the patina relates to the Holocene climatic sequence, then the habitats of the depicted animals should follow the general trend from savanna to desert that is visible in palaeoenvironmental records.

Habitats

Figures 2 and 3 show the overall frequency of the animal engravings against the species that are common in the early and late patina groups respectively. The increase between the animals in the Mn and Light Mn patina groups in figure 2 reflects a rise in the overall numbers of animal engravings. The engraving frequency during the red patina group, on the other hand, is similar to that of the preceding period. The drastic decrease seen in the depicted species therefore coincides with a dramatic change in the content of the depictions. Because the animals in the Mn-rich patina groups were depicted before or during the formation of Mn-rich patina, their habitats should relate to savanna conditions. This is confirmed by the identified species. In particular hartebeest, reedbuck and rhinoceros require savanna habitats, although desert-adapted species such as oryx are also common.

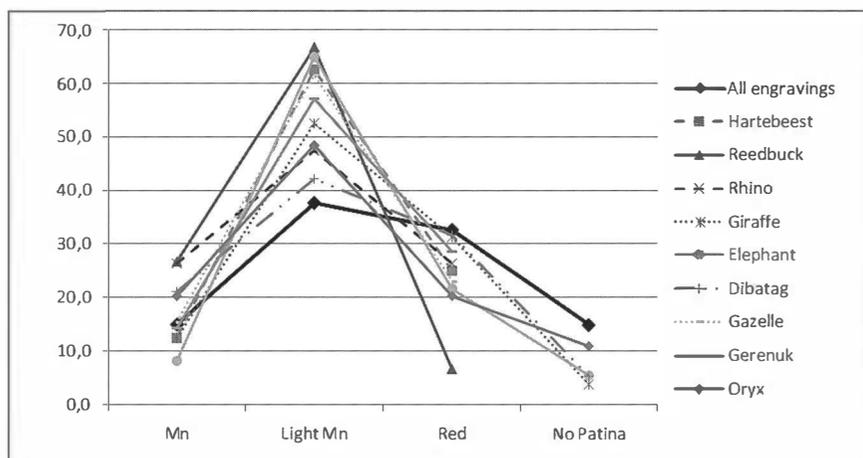


Fig. 2. — Percentage of identified animal species with high frequencies in the Mn patina groups.

Among the animal engravings with red patina the most commonly depicted species are ostrich and Barbary sheep, which are both adapted to arid conditions (fig. 3). Engravings without patina are dominated by depictions of horse and camel, which were introduced into the area after the onset of desertification. The identified species therefore reflect the climatic conditions associated with the formation of the patina, and the depictions appear to correspond with the Holocene climatic sequence: Mn and Light Mn engravings relate to savanna environments, the change in content between the Light Mn and red patina groups mirrors the abrupt onset of arid

conditions, and the end of the patina formation is matched by the depiction of species associated with desert conditions.

However, the presence of desert-adapted animals such as oryx among the early patina groups requires further investigation. In terms of the habitats of the depicted wild species (fig. 4), the data indicate a continuous presence of animals tolerant of Sahel conditions. This suggests that the environment of the Wadi al-Hayat provided an adequate refuge for these animals and supported their presence throughout the engraving periods.

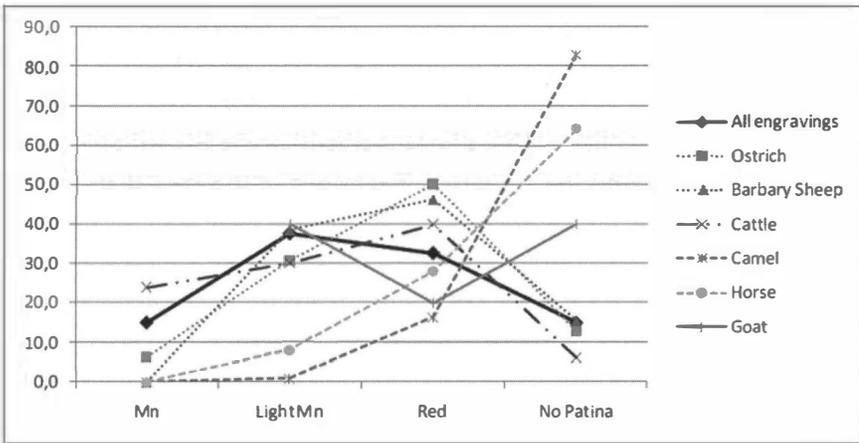


Fig. 3. — Percentage of identified animal species with high frequencies in the Red or No Patina group.

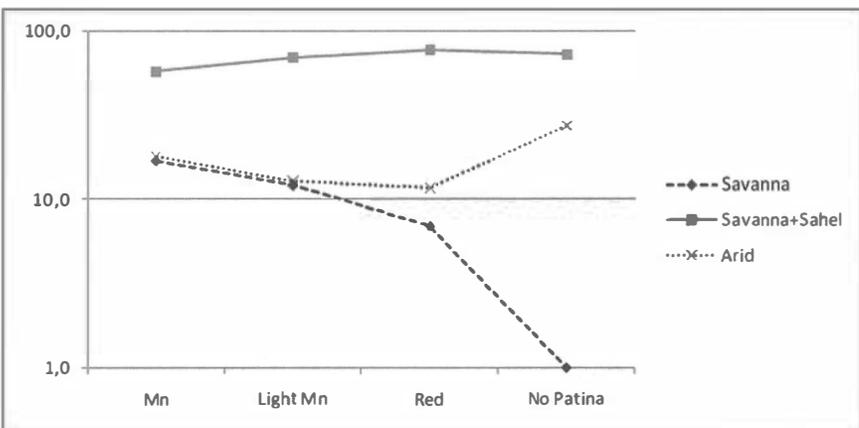


Fig. 4. — Percentage of the habitat types of wild animal species across the patina categories (logarithmic scale).

Savanna and desert species co-occur in similar frequencies during the earlier patina phases. It is possible that this is the result of the wadi being quite a marginal environment, with savanna to the south and desert to the north. However, pollen records from the southern Messak and the Acacus indicate that the middle Holocene environment was characterized by the appearance of a distinct dry season (LEZINE 1989, MERCURI *et al.* 1998). The presence of arid and savanna species may therefore relate to annual cycles of wet and dry seasons. After the onset of aridification, a clear upward trend in the desert species and a reduction in savanna species are visible in the animal depictions with red patina and without patina.

The depicted animals therefore not only mirror the Holocene climate and support the chronological sequence of the patina, their habitats also highlight local environmental conditions and identify elements of the engraver's perception of the environment. In addition, the location of engravings with different types of patina can be tested against Holocene environmental features in the area.

Location

The palaeoenvironmental record of the region allows a comparison between the distribution of the engravings and specific environmental features. This places the engravings within the landscape they were created. Moreover, the dated shorelines of the palaeolake can provide an additional chronological reference for the engravings. During the high lake stands of the early Holocene, the lake extended to the foot of the escarpment along the Wadi al-Hayat. After 6000 cal BC increasing aridity led to a gradual reduction of the lake levels. Following the onset of arid conditions, around 4000 cal BC, the lake was reduced to a small playa with salty or brackish water until finally only the salt flats of the sabkha remained (ARMITAGE *et al.* 2007; BROOKS *et al.* 2003; DRAKE *et al.* 2006, 2008, 2009). The changing shorelines of the palaeolake therefore offer a chronological sequence that can be related to the location of the rock art. If the patina of the engravings corresponds to the Holocene climatic sequence, then the location of the engravings with different types of patina should match the extent of the palaeolake.

The map in figure 5 shows the density distribution of the animal engravings with total Mn-rich patina, which predominantly date to the Early Pastoral period (GUAGNIN 2010). During this period the lake shore would have reached the escarpment along most of the Wadi. The shoreline on the satellite image is modelled for a height of 490 m asl; the grey dotted line follows the

477 m asl contour and shows a possible shoreline of the receding lake. The circled areas show that high rock art densities coincide with embayments and promontories where smaller wadis open up gaps in the escarpment. Due to the local topography, a reduction of the lake to the 477 m level would have increased the distance between these rock art locations and the lake by over 2 km.

Where the palaeolake reached the steep rocky slopes of the escarpment, space was restricted and access to these areas was difficult. In addition, vegetation may have been scarce along the slopes. Where the lake had receded this opened up space along the bottom of the wadi. The terrain was more even, and because groundwater was close to the surface, these areas were probably densely vegetated. Although it remains unknown what activities relate to the creation of the images, the distribution of the engravings suggests that open, vegetated spaces were favoured by the engravers (see GUAGNIN 2010 for a more detailed discussion).

During the Late Pastoral period, which dates to after the onset of aridification around 3800 cal BC, the lake in the wadi was reduced to a small playa (fig. 6). While Early and Middle Pastoral settlements were located along the northern shore of the palaeolake (fig. 5), Late Pastoral and Early Garamantian settlements were found south of the remaining playa (fig. 6). As the lake began to shrink rapidly the water probably became brackish or salty and was no longer suitable for drinking. Groundwater was closest to the surface near the escarpment, and this may have attracted Late Pastoral and Early Garamantian settlements. The distribution of the red patina appears to relate to this change in the lake level and the resulting change in the settlement pattern. The shrinking lake opened up more areas of the wadi and high densities of engravings were recorded along the entire escarpment (fig. 6, circled areas). Particularly in the central region of the survey area, where the wadi floor is relatively low, rock art densities are much higher compared to the Early Pastoral period (fig. 5). The distribution of the engravings relative to the dated shorelines of the palaeolake therefore supports the chronological sequence of the patina: engravings with Mn-rich patina relate to the high lake levels of the Holocene wet phase, while red patina is associated with aridification.

Conclusion

The chronological sequence of the Holocene climate and the patina place the engravings within the context of the Pastoral and Garamantian periods. The habitats of the depicted animals follow the Holocene climatic sequence,

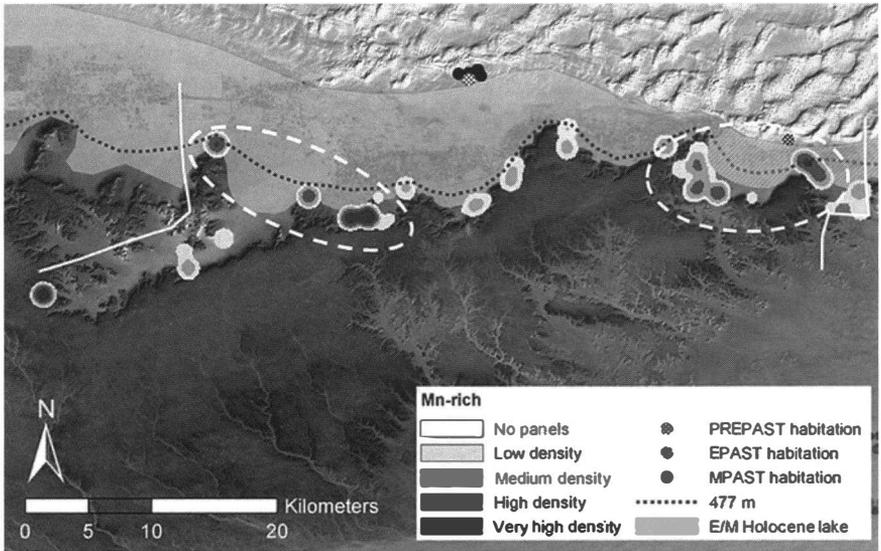


Fig. 5. — Density distribution of animal engravings with total Mn-rich patina. The extent of the palaeolake is based on the palaeoenvironmental research in the area; the shading at the eastern end of the palaeolake indicates an area of overflow during high lake stands (ARMITAGE *et al.* 2007; BROOKS *et al.* 2003; DRAKE *et al.* 2006, 2008). Location and age of the settlements as identified by the Fezzan Project (MATTINGLY 2007).

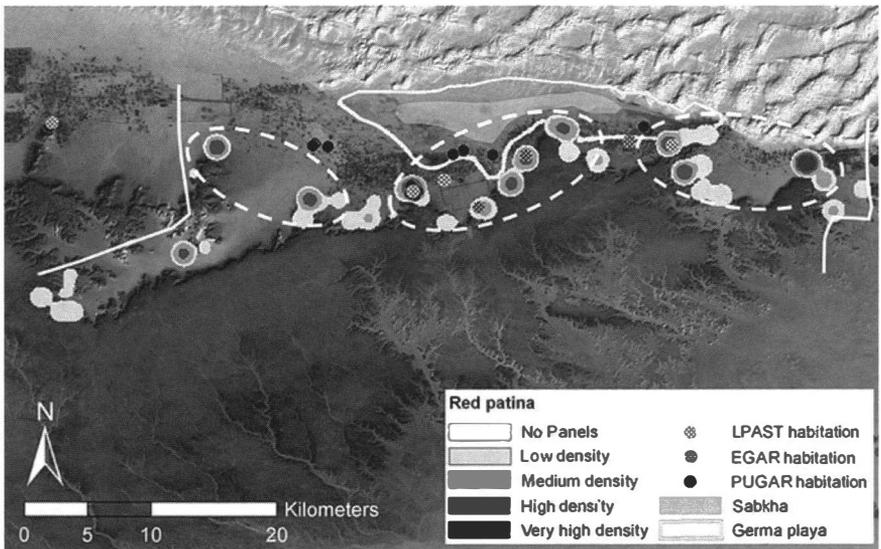


Fig. 6. — Density distribution of animal engravings with red patina. The extent of Germa playa is based on the palaeoenvironmental research in the area (ARMITAGE *et al.* 2007; BROOKS *et al.* 2003; DRAKE *et al.* 2006, 2008). Location and age of the settlements as identified by the Fezzan Project (MATTINGLY 2007).

which supports the chronological framework of the patina. Engravings with Mn-rich patina frequently depict savanna species. The content of the engravings with red patina shows a dramatic shift to the depiction of arid-adapted animals, which reflects the onset of arid conditions in the Holocene environment and the climatic conditions underlying the formation of the patina. Content and patina of the engravings therefore facilitate a link between the depictions and the Holocene climatic sequence, which establishes a broad chronological framework for the rock art of the Wadi al-Hayat. In turn, the images can then be related to the archaeological record and cultural context of the region.

Both the long-term climatic trend from savanna to desert as well as the establishment of annual wet and dry seasons during the middle Holocene are visible in the images. The relationship between the habitat of the engraved animals and the Holocene environment therefore shows that the images reflect the engravers' experiences and observation of the landscape. Moreover, the location of the engravings relates to the changing lake levels of the palaeolake. This additionally secures the chronology of the engravings and highlights the impact the changing Holocene environment had on the engravers and their societies. The relationship between the rock art and the climatic record therefore not only provides a link between the images and their cultural and environmental context but also highlights aspects of the engravers' perception of their changing environment.

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Éléments intéressant la chronologie relative des gravures rupestres du plateau du Messak au Fezzan (Libye)

par

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MOTS-CLES. — Messak; Thématique; Corrasion; Symbolisme.

RESUME. — Les méthodes archéologiques classiques ne permettant pas d'évaluer la durée d'une culture originale au Messak libyen, cet article propose d'analyser plus finement les thématiques et le degré de corrasion de certaines scènes gravées afin de distinguer une réappropriation partielle et plus tardive de certains thèmes. Nous montrons également la grande longévité de symbolismes graphiques dont certains atteignent notre époque.

1. Introduction

Tout observateur éprouve souvent quelque hésitation à situer chronologiquement une œuvre rupestre en se basant sur son apparence. Le signifiant — et la lecture que l'observateur en fait — n'est pas toujours univoque. Quelques éléments d'un sujet peuvent exclure certaines hypothèses, mais il faut avouer que, sans confirmation par les méthodes classiques de la stratigraphie ou d'autres méthodes physiques, le diagnostic est souvent ambigu.

Or, dans maintes situations, ces œuvres ne permettent pas l'application actuelle d'examen physiques chronologiquement significatifs. On leur attribue donc l'ancienneté des œuvres se trouvant dans le même contexte géographique ou stylistique. Dans la zone saharienne, cette méthode est valable pour les gravures d'époque cameline ou caballine, pour certaines écritures et pour des œuvres attribuées à une époque pastorale tardive différant des œuvres plus anciennes par leur inspiration et leur mode d'expression. Pour les périodes allant de la fin de l'élevage des grands bovidés au début de notre

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ère, le contexte climatique et culturel contribue, tout comme les différents types de patine, à préciser la chronologie (KROPELIN *et al.* 2008).

Quelques détails contribuant parfois à situer chronologiquement le sujet (armes, habits ou parures, attributs d'activités précises, comme ceux liés à la domestication de grands bovidés) ne permettent pas de proposer une ancienneté qui ne serait pas fondée. Par contre, l'attribution d'une représentation de grand bovidé à un contexte sauvage ou domestique n'est pas toujours certaine. Dans des situations favorables (dépôts éoliens anciens sur gravure), les techniques de luminescence ont donné récemment d'impressionnants résultats (HUYGE *et al.* 2010).

Nous devons constater que des observateurs chevronnés, ayant une vue pénétrante et globale d'un patrimoine, souvent dans une même zone géographique, ont émis des réserves sur l'unité chronologique des gravures plus anciennes qu'ils observaient. Ils percevaient des indices permettant de douter d'une trop belle cohérence, émettant l'hypothèse d'un étalement beaucoup plus important dans le temps, mais trouvant difficilement les arguments concrétisant ces thèses (ALLARD-HUARD 1993, 2000; MORI 1965, 1984; JELINEK 1994). Nous allons essayer de mener une approche du patrimoine du Messak sous cet angle de vue, et sans aucun *a priori*.

2. Le cas du Messak libyen

Le plateau du Messak, dans le sud libyen, se singularise par une abondance de sujets gravés à différentes époques (plusieurs dizaines de milliers) se répartissant sur les rives d'une quarantaine de vallées (fig. 1)*. L'approche est déroutante par la quantité d'œuvres et leur qualité, surtout pour celles apparaissant les plus anciennes (JELINEK 1994, LUTZ 1994, GAUTHIER *et al.* 1996, LE QUELLEC 1998, VAN ALBADA 1990-2000).

Un style particulier (double trait, effet de relief, dynamique) et une thématique redondante permettent d'identifier un groupe d'œuvres constituant un patrimoine original au Messak. La composition et l'esprit qui transparaissent des «phases anciennes» de cet ensemble nous semblent originaux et très éloignés des gravures, et surtout des peintures pastorales présentes dans les autres massifs. Les gravures pastorales du Messak mettent l'accent sur la beauté physique des animaux, plus que sur leurs capacités productives. Malgré la présence de scènes de traite, les pis des bovins sont rarement représentés et jamais hypertrophiés comme dans certaines peintures ou

* Cf. figures en fin de texte (pp. 168-174).

gravures rupestres d'autres massifs (Jebel Uweinat, Uri, Ethiopie). Un repli de peau triangulaire au niveau ombilical a souvent été identifié comme un sexe, alors que certaines races bovines présentent régulièrement cet attribut chez les femelles.

Des scènes, très détaillées, d'élevage de grands et petits bovidés situaient ces œuvres entre le début de l'holocène et la grande crise climatique du sixième millénaire BP. La patine sombre qui couvre beaucoup de sujets conforte cette ancienneté (CREMASCHI 1994, 1996; ZERBONI 2008). C'est également la période des monuments caractéristiques dits «en corbeille», souvent pourvus de pierres dressées centrales, parfois gravées. Ces monuments ont été datés par les ossements brûlés d'animaux (bovinés, autruches, ...) qu'ils contenaient entre 5500 et 6500 ans (BP calendaires) (DI LERNIA 2006, FERHAT *et al.* 1996).

3. Indications chronologiques

3.1. LES PATINES

Lorsqu'elles ont subsisté, les patines ont l'avantage de confirmer la différenciation d'époques caractérisées par des marqueurs simples (chameau – cheval – bovinés domestiques – faune sauvage – animaux disparus – êtres mythiques). Les périodes anciennes sont autrement difficiles à distinguer, car les patines sont d'aspect similaire (celle de la roche) ou altérées pour différentes raisons (dont la fréquente reprise à différentes époques). Dans le Messak, les patines sombres ou noires (microcouche avec fixation de manganèse) se sont essentiellement formées entre 6000 et 4000 ans (BP calendaires) durant le passage du second humide néolithique à la phase aride (ZERBONI 2008). Durant les trois derniers millénaires, le climat aride a pu abraser les patines préexistantes.

3.2. AUTRES FACTEURS D'APPRECIATION: LA COMPOSITION DU SIGNIFIANT

- Palimpsestes: synchrones et voulus (par exemple, animaux croisés ou imbriqués) dans un esprit qui se rapproche d'un «esprit paléolithique» (ne se rencontrent jamais dans le pastoral tardif et peu dans ce qu'on nomme souvent le «bubalin naturaliste» caractérisé par le double trait ou les réserves et perspectives) (fig. 2).
- Superpositions: avec croisement ou effacement de la gravure préexistante, sorte de réappropriation du support pour exprimer un autre tableau

(cas du célèbre «Apollon Garamante» où un bovidé est superposé à une scène avec chasseurs masqués). Parfois une différence de patine, mais souvent de contenu (bovidés sur rhinocéros) (fig. 3).

- «Dialogues rupestres» et non composition: association postérieure d'éléments modifiant probablement le signifié de l'œuvre et devenant indissociables de celle-ci (un auroch fait face à des chasseurs qui semblent rajoutés) (figs 4, 5).
- D'innombrables cas de «restauration». Nous pensons que certaines œuvres — peut-être la plupart de celles qui se remarquent le plus par leur côté monumental — sont des gravures plus anciennes retravaillées en respectant les anciens traits (sauf oubli de détails ou détournement de trait pour renforcer l'œuvre: pattes allongées, cornage magnifié, ...) mais en négligeant éventuellement certains éléments de la scène dont elles faisaient partie. Ainsi, des éléphants très lisibles sont suivis ou précédés d'un homme-chien presque effacé (nécessité de lumière rasante ou artificielle). Ces derniers cas nous semblent du plus haut intérêt, car les parties délaissées peuvent correspondre à une perte du signifiant de la scène entre deux époques (images non comprises ou sans signification pour les «restaurateurs»). (figs 6, 7, 8, 9, 10). La restauration de certains tableaux peut complètement modifier la perception de l'œuvre par creusement des traits et convergence de ceux-ci. Une scène dynamique de personnages d'allure simiesque s'avère une reprise d'une scène où plusieurs personnages marchent s'appuyant sur un bâton tel que le révèle un des personnages d'origine «oubliés» lors de la restauration (figs 11, 12). Des bovidés portant des attributs domestiques semblent souvent avoir été ajoutés aux tableaux, leur gravure paraissant plus «fraîche» avec un sillon ayant moins subi la corrasion. Les lions originaux, peu visibles, d'un site du wadi Tin Einessnis sont remarquables alors que leurs copies décalées sont clairement postérieures ainsi que le personnage et le bovidé qui l'accompagne (figs 13, 14).
- Des tableaux qui se superposent à un «fond confus», difficile à décrypter, mais où une grande différence de corrasion semble témoigner d'un hiatus temporel important. Certains éléments peuvent avoir été réappropriés et demeurent lisibles (fig. 15). L'estimation de cette corrasion différentielle très hétérogène semble impossible actuellement, corrasion qui témoignerait pourtant d'une phase plus ancienne, précédant une séquence aride.
- Répartition géographique comparée de différents thèmes sur l'entièreté du plateau ou dans certains secteurs: si certains thèmes sont ubiquistes (ovaloïde-à-cupule, femme-ouverte, grand buffle antique), d'autres sont

absents ou très rares dans certains secteurs. Nous n'avons pas observé de cercles réticulés au sud de Tilemsin ni de scènes comportant des hommes-chiens. Les «femmes stéréotypées» (une main sur la hanche, l'autre à hauteur du visage et coiffe pointue) sont rares dans le nord-est, mais présentes au sud de Tilemsin. Les sujets ubiquistes seraient des éléments dont le sens symbolique aurait persisté sur de longues périodes et suivi le déplacement des zones d'occupation.

- Eliminer, comme le font les tenants d'une «chronologie courte», la possibilité de gravures datant du premier grand humide néolithique ayant subi une corrasion pendant la phase aride mi-holocène nous semble prématuré. Précipitations s'intensifiant au début de l'holocène (surtout en altitude), occupation humaine et lacs auraient permis cette phase (KUPER & KROPELIN 2006). Rien ne nous semble permettre d'exclure d'anciennes phases d'occupation (VERNET 1995, AUMASSIP 1993, TAUVERON 1996) à l'instar des périodes «Early» et «Late» Akakus et «Early Pastoral» mises en évidence dans le massif voisin et très proches de l'Akakus (DI LERNIA & MANZI 1998).
- L'absence actuelle de preuves stratigraphiques, ou leur rareté potentielle, peut très bien se concevoir dans ce type de topographie. En effet, peu de lieux ont été fouillés à ce jour et aucun ne témoigne d'une implantation du début de l'holocène, alors que les outillages paléolithiques laissés en surface par la déflation sont très abondants. Actuellement, le plateau connaît encore quelques rares crues de ses vallées (1997) et l'effet de chasse est très violent. Des débris végétaux récents observés coincés à plus de 4 m au-dessus du lit de larges wadis laissent rêveur. Ce curage régulier en des périodes plus humides a certainement éliminé tout dépôt dans ces vallées étroites. Nous avons constaté que le niveau de base des wadis a très peu changé depuis la réalisation des gravures bovidiennes naturalistes. Du fait de ce régime torrentiel, peu de terrasses anciennes ont subsisté aux périodes humides.

4. Longévité des symboles graphiques

Si nous évoquons la possibilité d'allonger la chronologie de ces œuvres d'après leur examen attentif, c'est aussi parce que l'Afrique nous donne de magnifiques exemples de grande longévité de systèmes symboliques. Nous nous bornerons à quelques cas qui se retrouvent dans les conventions graphiques du Messak et se sont perpétués à des époques postérieures, voire jusqu'à nos jours.

- Plusieurs œuvres nous montrent des vues frontales de bovidés sauvages que nous identifions comme des aurochs (fig. 17). Solitaires, attendant à des dépouilles, devenant des ornements (donc des objets) pour les hommes, les hommes-chiens et même certains bovidés domestiques en situation cérémonielle (graphe en «trou de serrure») (fig. 16). Des amulettes des périodes Gerzéene et Nagada en tous points similaires ont été retrouvées en Egypte (figs 18, 19). Des sculptures sur bois africaines actuelles reprennent ces formes (fig. 20) ainsi que des panneaux publicitaires ayant trait à l'élevage (fig. 21).
- De nombreux hommes représentés dans différents contextes portent des masques-cimiers (ou coiffures) montrant des éléphants, rhinocéros, hippopotames, bovidés avec plus ou moins de réalisme. Des masques similaires se retrouvent actuellement en Afrique noire chez plusieurs ethnies. Certains masques complexes actuels du Sénégal (fig. 23) et du Sud-Mali (Sénoufo), comportant plusieurs paires de cornes, sont très comparables avec la célèbre femme en position de lotus du wadi Telisaghen (fig. 22).
- Un des cas les plus remarquables est celui des représentations de femmes-ouvertes qui évoluent graphiquement en un signe abstrait (symbole sexuel) pouvant, selon les cas, prendre l'aspect d'une main ou d'un symbole sagitté, scutiforme ou anchoriforme (figs 24-35). Ces graphismes sont représentés en objets de parure sur quelques femmes gravées du Messak (figs 25, 31, 36).
- La main symétrique ou «khamisa», comportant un motif au centre de la paume, est présente dans toute l'Afrique du Nord. Des objets de porcelaine offerts aux mariages berbères en Tunisie, reprennent ces symboles. On retrouve les motifs scutiformes sur le pisé de kasbahs marocaines et des bijoux touaregs reproduisent le motif anchoriforme (fig. 38). Le même motif anchoriforme se retrouve sur les peintures murales entourant les portes des maisons de Oualata en Mauritanie. Au même endroit, des peintures décoratives intègrent subtilement des femmes-ouvertes dans des arabesques sophistiquées (fig. 37).
- Nous constatons que le graphisme évolue vers un processus intellectuel d'iconisation aboutissant à des signes à forte charge symbolique. C'est ce qui nous permet de détecter leur signifié ancien. Par contre, d'autres signes très fréquents comme les «ovaloïdes à cupules» et les «roues réticulées» ne semblent pas avoir survécu. Leur signifié ne nous est de ce fait pas accessible.
- Bien des objets usuels identiques aux meules dormantes et aux poteries décorées néolithiques du Sahara se retrouvent dans nombre de concessions actuelles en Afrique de l'Ouest. Les mâts bifides et bois courbés

portés par les vaches du Messak sont des objets de construction courante dans les mêmes régions (y compris des escaliers pour atteindre les toits de maisons construites exclusivement de végétaux et de terre). Les vaneries serrées qui tiennent les liquides sont identiques aux récipients suspendus près de la scène de traite de Tiksatin. Les scènes pastorales que l'on peut observer actuellement autour des marigots et dans la savane, au sud de la zone sahélienne, sont similaires aux scènes pastorales décrites dans les gravures rupestres. Les taurins des gravures offrent une grande similitude avec les vaches N'dama d'ancienne origine africaine, sans bosse, et résistant mieux que les zébus à la trypanosomiase.

5. Conclusion

L'impression dominante est que beaucoup de gravures très lisibles actuellement sont des « restaurations » sur un fond plus ancien. L'époque d'épanouissement d'une société pastorale aurait alors réinterprété ce patrimoine en le perfectionnant techniquement et en l'enrichissant d'inventions stylistiques comme le double trait, les réserves sophistiquées et un rendu de relief. Il nous paraît utile de revoir tout le patrimoine graphique du Messak en tenant compte des reprises effectuées à l'apogée de la civilisation pastorale qui donnent le « style » observé, mais masquent quelquefois un signifiant archaïque différent, qu'on peut mieux cerner si l'on considère la thématique et la corrasion. La période qui correspond à un véritable « culte du bétail », pourrait être envisagée, en tout cas en ce qui concerne le Messak, comme l'aboutissement d'un long processus. A l'instar de nombreux « textes fondateurs » représentant les succès et désirs d'un peuple, l'iconographie riche et complexe, suivant des critères stricts dans sa forme et son signifié, apparaît peut-être comme la phase tardive d'une culture née bien plus tôt.

La pérennité de symbolismes graphiques remontant au début de l'holocène est impressionnante. Le passage de ces signes et objets de la préhistoire aux temps actuels ne laisse aucun doute sur la force du fond culturel africain illustré par l'art rupestre.

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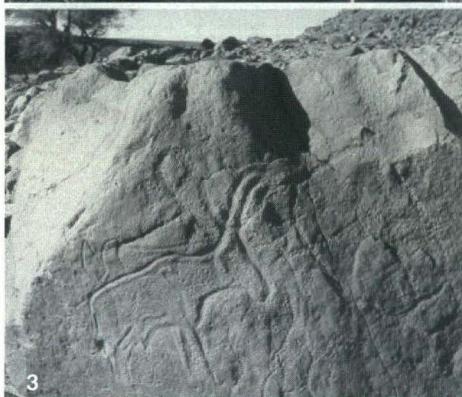


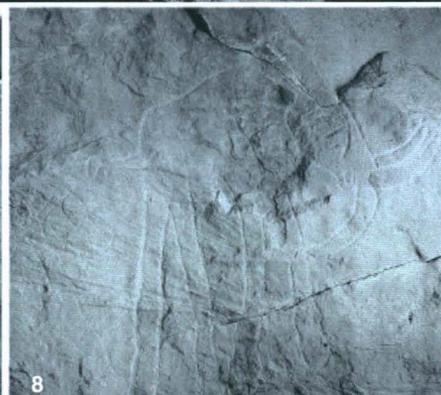
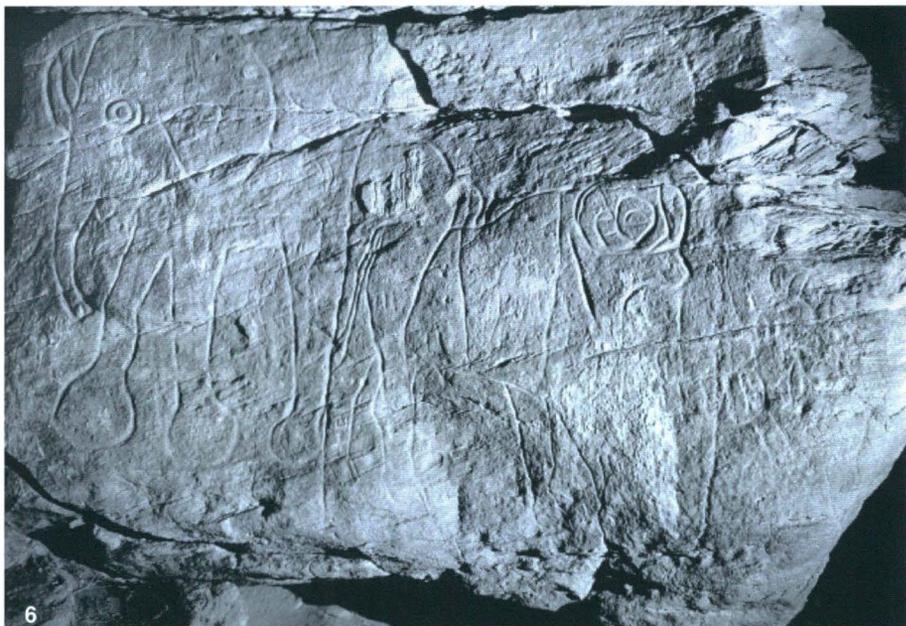
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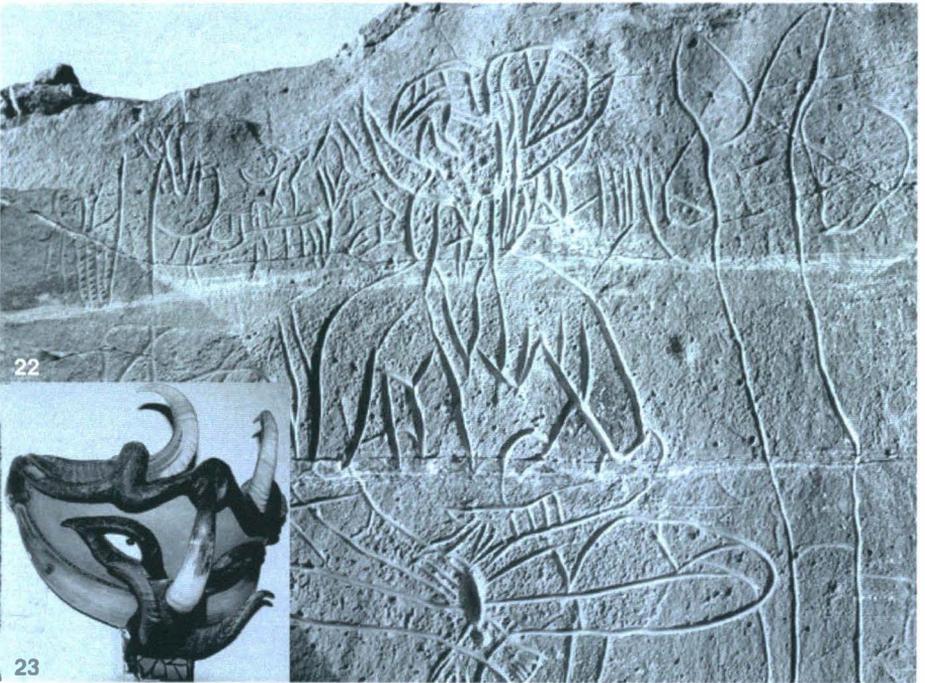
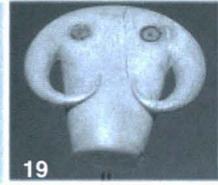
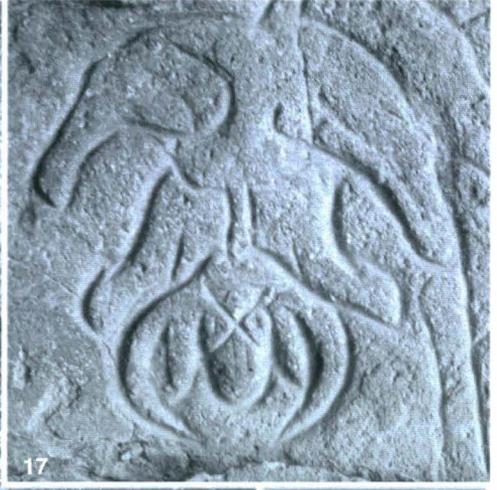
- FALAISE
- WADIS
- STATIONS RUPESTRES
- GUELTA SEMI-PERMANENTES
- PUITS
- REG- alluvions
- ERG- sables vifs

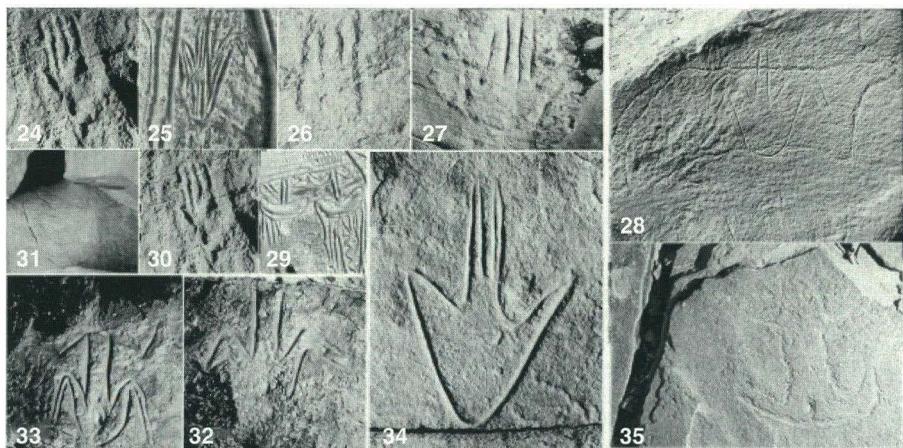
Carte par A. Van Albada, Toponymie selon M. Lelubre, Mohammed Khelifa Rhali & Salah Mohammed Hassan.











LEGENDES DES FIGURES (© AUTEURS)

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Rock Art in the Central Sahara (SW Libya): A Geoarchaeological and Palaeoenvironmental Perspective

by

Andrea ZERBONI*

KEYWORDS. — Rock Art; Central Sahara; Holocene Climate Changes; Rock Varnish; AMS ^{14}C Dating.

SUMMARY. — The Libyan rock art is known for a long time, and its stylistic and cultural issues have been widely discussed, but a convincing chronology is not yet available. This paper offers a geoarchaeological and palaeoenvironmental approach, allowing to interpret the central Saharan rock art in the perspective of the Holocene climate change and archaeology. The critical aspect of rock art dating is discussed in the same perspective. Even though important results have been acquired in the field of relative dating on the basis of rock varnish, radiometric dating results should be carefully evaluated, considering the environmental context and the climatic history of the region. Local climate changes occurred throughout the Holocene may have influenced AMS ^{14}C results.

1. Introduction

The importance of the central Saharan rock art is known for long (FOUREAU 1894, DURAND *et al.* 1926, GRAZIOSI 1942, LOTHE 1958, MORI 1965, DI LERNIA & ZAMPETTI 2008, DI LERNIA & GALLINARO 2009), when pioneering expeditions crossed the desert along the main caravan routes from the Mediterranean to continental North Africa and beyond. Its stylistic and cultural issues have been widely discussed, but a convincing chronology is not yet available; the main controversy is the opposition of the so-called “long” and “short” chronologies (MORI 1965, 2000; MUZZOLINI 1995;

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LE QUELLEC 1998). Many scholars and amateurs tried to find arguments supporting each chronology and in some cases third ways have been proposed. Most authors have focused on the symbolic interpretation of pictographs and petroglyphs, with scarce attention to their geoarchaeological and palaeoenvironmental implications. For this reason, in the frame of the activities of the Italian-Libyan Mission in the Acacus and Messak, a geoarchaeological survey of rock art in its environmental context has been carried out (CREMASCHI *et al.* 2005, 2008). The geoarchaeological approach and the comparison with independent palaeoclimatic data allowed interpreting the central Saharan rock art in the perspective of the Holocene climate changes.

In the first part of the paper a general discussion on the significance of the Tadrart Acacus and Messak rock art, compared with recent acquisition on the palaeoclimate of the region and geoarchaeological investigations, is presented. The second part of the paper deals with the development of a radiometric chronology for rock art, discussed on the basis of new data and reconsidering former results. Radiometric dating of rock art is a critical facet of the recent archaeological and anthropological research, representing a challenge in the Sahara as much as in rock art contexts from Europe, northern and southern America, southern Africa, and Australia (CAMPBELL *et al.* 1996, HEDGES *et al.* 1998, TUNIZ *et al.* 2000, ZOPPI *et al.* 2004, WHITLEY 2005).

2. Geography, Geomorphology and Palaeoclimate

The study area is located in SW Libya (fig. 1)*, between 26° and 24° latitude N. Geologically, this region constitutes the wide geosyncline of the Murzuq Basin (EL-GHALI 2005), composed of Palaeozoic and Mesozoic sandstone and marls, lying upon the intrusive formation of the Tassili. The main structural pattern consists of monocline relieves (organized in cuestas in the Tadrart Acacus area and as a plateau in the Messak), intercalated to flat areas and fluvial valleys, occupied by sand dunes.

The Tadrart Acacus massif is dissected by a fossil drainage network; a scarp delimits the massif towards the west, whereas to the east it grades through a pediment to the dunes of the erg Uan Kasa (CREMASCHI 1998). The valleys and canyons dissecting the mountains are the relicts of a landscape

* Cf. figures at the end of the text (pp. 191-195).

that has been shaped mostly under a Tertiary equatorial climate and the present morphology is the result of several processes, the most important of which having been fluvial and solutional on siliceous rocks (CREMASCHI & ZERBONI 2011). Geomorphological processes led to the development of rock shelters in massive sandstone by undersapping. Therefore, the walls flanking the wadis are pinpointed by a variety of rock shelters and caves that have been systematically occupied by the communities living in the Tadrart Acacus since the late Pleistocene. The Messak is a plateau cut into the Lower Cretaceous Nubian sandstone and delimited to the NW by an abrupt scarp (CREMASCHI 1998, ZERBONI 2008). The plateau is interpreted as a relict of a Tertiary peneplain (BUSCHE 1980, ZERBONI *et al.* 2011), dissected by a dense net of sinuous wadis with a dendritic pattern. Hydrographic density, channel shapes, and sinuous patterns indicate that the fluvial net is fossil and originated in the Tertiary under a rich water supply.

The present climate of the SW Fezzan is hyperarid; the mean annual temperature is 30° C and the mean annual rainfall is between 0 and 20 mm (FANTOLI 1937). The climate and palaeoclimate are governed by the seasonal migration of the Intertropical Convergence Zone, resulting in a belt of monsoonal climate with summer rains and winter droughts (GASSE 2000). Despite present-day aridity, during the Holocene the region suffered a period of wetter environmental conditions (the African Humid Period), which contributed to the flourishing of prehistoric civilizations. The environmental conditions since the beginning of the Holocene can be traced reconstructing hydrogeological changes that were triggered by the expansion and withdrawal of the SW African Monsoon (fig. 2). From the early to the middle Holocene, the area enjoyed a period of high rainfall (CREMASCHI 1998, 2002; CREMASCHI & ZERBONI 2009, 2011) that contributed to recharge the local aquifers (CREMASCHI *et al.* 2010, ZERBONI 2006). Subsequently, the entire area was settled (*cf.* fig. 2) by Epipaleolithic and Mesolithic groups (in this region defined as Early and Late Acacus respectively) and later by Pastoral-Neolithic communities (CREMASCHI & DI LERNIA 1998). The so-called African Humid Period was interrupted by transitory dry spells (MAYEWSKI *et al.* 2004, CREMASCHI *et al.* 2010); it ceased because of the reduction in the intensity of the African monsoon, at ca. 5,500 cal. years BP (CREMASCHI & ZERBONI 2009, 2011). This event has led to the present desert conditions following different modalities as the varying physiographic features responded differently to aridification (CREMASCHI & ZERBONI 2011).

3. Rock Art, Palaeoenvironment and Geoarchaeology

3.1. THE BEGINNING OF THE AFRICAN HUMID PERIOD

A recent, multi-proxy palaeoenvironmental research illustrates the time and steps of the onset and history of the African Humid Period in the central Sahara (CREMASCHI & ZERBONI 2011). At the beginning of the Holocene, deep water reservoirs were recharged, leading to the activation of springs and the formation of piezometric lakes between dunes (CREMASCHI *et al.* 2010, CREMASCHI & ZERBONI 2009).

In the Tadrart Acacus the activity of former springs is testified by the occurrence of calcareous tufa (carbonate-rich rocks formed in correspondence with former springs), which accretion required high precipitation, fully recharging the aquifers of the massif and a continuous soil wrap. As indicated by U/Th dating, such conditions lasted from ca. 9,600 to 7,600 years BP (CREMASCHI *et al.* 2010). The recharge of the surface aquifers in the low lands surrounding the Tadrart Acacus and the Messak is radiocarbon dated to the same period. A general lake level high stand has been recorded since ca. 10,000 cal. years BP (*cf.* fig. 2) between the dunes of the erg Uan Kasa, edeyen of Murzuq, and erg Tidersine (CREMASCHI & ZERBONI 2009). Isotopic data from lake carbonates and calcareous tufa are indicative of intense precipitation and larger water availability in the early Holocene (ZERBONI 2006). Pollen data point to a patchwork of savannah and wooden grassland for the first millennia of the Holocene, including plants requiring permanent freshwater resources (MERCURI 2008). The reconstruction of the landscape on the basis of palaeoenvironmental indicators is therefore representative of a savannah environment; today, an ecological equivalent is at some hundreds of kilometres southward (KROPELIN 1999).

During this period the central Sahara was inhabited by hunter and gatherer groups, living in the rock shelters of the Tadrart Acacus or along the lake shores (CREMASCHI & DI LERNIA 1998). The Early Acacus exploitation of the landscape was mainly based upon hunting of wild animals, while in the subsequent Late Acacus period the use of vegetal resources increased. Following this, it appears convincing dating the oldest rock art representation (mostly engravings) to the early Holocene and therefore synchronous with the Early and Late Acacus attendance of the region. The Wild Fauna style well fits with this palaeoenvironmental setting, and depicted themes are characteristic of hunters' communities: wild animals (elephants, hippos, giraffes, large gazelles, and wild bovines) represent the typical preys of hunters, as testified also by archaeozoological analysis (CORRIDI 1998).

The distribution of engravings with large animals considered in a territorial perspective is interesting (CREMASCHI *et al.* 2005): in both the Tadrart Acacus and Messak ranges they are engraved on vertical cliffs or isolated pillars, possibly indicating the pathways followed by games, and, in some cases, close to springs or water points (CREMASCHI *et al.* 2008). Sometimes scenes of wild animals were found close to active *gueltas*, which represent one of the main water resources of the massif. For example, at the entrance of the narrow canyon leading to the *guelta* of Agmir a scene with wild animals moving toward the pond is engraved. Another peculiar case illustrating the relation between wild animals and water resource is at the *guelta* Eknuien (central Tadrart Acacus): the scene is composed by two giraffes represented in the act of drinking, with the neck of the first one bended toward the rim of the pond (fig. 3). The giraffe-drinking motif occurs frequently in correspondence with *gueltas* in the Messak Settafet, as at wadi Erahhar and wadi Mathendush. Also the famous galleries of engravings in the Wild Fauna style walking along the banks of the wadi Mathendush are related to an important *guelta* of the Messak.

The Holocene wet period suffered an almost abrupt interruption related to an arid crisis dated at ca. 8,000 cal. years BP (ZERBONI 2006, CREMASCHI & ZERBONI 2011), in correspondence with the cold-dry event worldwide recorded at 8,200 cal. years BP (ALLEY & AGUSTSDOTTIR 2005). The dry phase lasted few centuries (*cf.* fig. 2): springs dried out in the mountain system (CREMASCHI *et al.* 2010) and the level of lakes suddenly dropped in the low lands (ZERBONI 2006). Moreover, a decrease in moisture announced the arid crisis (CREMASCHI *et al.* 2010). It is evident also in cave sequences: the layers corresponding to the Late Acacus attendance of the region consist of poorly-decomposed organics (CREMASCHI 1998). On the basis of archaeological and geoarchaeological evidence, an original attempt for delayed use of food resources for special periods was introduced in this period. At Uan Afuda Cave the last part of the Late Acacus attendance (DI LERNIA 2001) shows the occurrence of pedofeatures related to trampling, common *Ammotragus* coprolites in the inner part of the cave, and abundant straw and other vegetal remains (fodder). This has been interpreted as a forced enclosure of the Barbary sheep and rudimental forms of taming (DI LERNIA 2001). In the rock art sphere, during this transitional phase the *Ammotragus* became very important and it was frequently represented in the Round-Head style (fig. 4). The most famous painting is at In Taharin, but the fading figures at Uan Afuda Cave (DI LERNIA 1999) are of the outmost importance, as at the same site geoarchaeological evidence for *Ammotragus* taming were found.

3.2. THE MID-HOLOCENE TRANSITION

Geochemical and sedimentological analyses carried out on lake sections describe the environmental characteristics of water bodies and the sedimentary processes that took place during the Holocene, permitting to find substantial difference in the activity of monsoonal precipitation in the early and middle Holocene (ZERBONI 2006). The older lacustrine sedimentary phase (10,000-8,000 cal. years BP) is characterized by permanent freshwater lakes, whereas in the middle Holocene lake sections (7,700-5,500 cal. years BP) evidence for shallow brackish waters, suffering from seasonal fluctuation of level and episodic desiccation, are preserved. A dramatic change in environmental setting can be postulated: a shift from a higher precipitation rate in the early Holocene, allowing the duration of water reservoirs all over the year, to a less intense contribution of summer rains in the mid-Holocene and, therefore, enhanced climatic seasonality with recurrent droughts (ZERBONI 2006, CREMASCHI & ZERBONI 2009).

Besides a general change in palaeohydrological settings, the two wet phases are marked by a discontinuity in the archaeological record, defined by a gap in natural and anthropogenic sedimentation within the rock shelters (CREMASCHI & DI LERNIA 1998). This event is coupled with the introduction of herding. It is not yet clear the role played by the arid crisis in the transition toward food production, but this process is evident in the Early Pastoral-Neolithic sites (*e.g.* at Uan Muhuggiag; CREMASCHI & DI LERNIA 1998). The cultural transition has been registered also by rock art; in the Pastoral-Neolithic phase human communities and their daily life became the main represented subjects; this is the case, for instance, of the many scenes in the Uan Amil style found in the Tadrart Acacus. The idea of hunting is still present, but it is much more realistic; preys are represented with hunters that in many cases are followed by their dogs (CESARINO 2000). Besides, the innovative subsistence strategy based on cattle herding is well documented by pictographs and engravings. Herds are widely distributed in the central Saharan massifs; figures are attended by shepherds and depicted in the action of pasturing or moving in groups. One of the most famous scenes is at Uan Tabu, but large herds are also at Uan Muhuggiag, Ti-n-Taborak (fig. 5), Ti-n-Lalan, and engraved on rock walls in the Messak (VAN ALBADA & VAN ALBADA 2000). Rock art galleries with walking cattle have a further archaeological implication related to the transhumance that is attested in the archaeological record (BIAGETTI & DI LERNIA 2003): cattle bones (*cf.* fig. 5) were commonly found in cave-sites stratigraphic sequences (*e.g.* at Uan

Muhuggiag) and at the margin of open-air sites on the shores of former lakes (BIAGETTI & DI LERNIA 2003, CREMASCHI & ZERBONI 2011). The importance of cattle is clear looking at mid-Holocene palaeoclimate, alternating arid to rainy seasons: when aridity increased and progressive harshening of the environment heavily affected Pastoral-Neolithic communities, cattle became a primary resource (DI LERNIA 2006, DI LERNIA & GALLINARO 2010). To the same phase is dated the “Cattle Cult” (DI LERNIA 2006), whose nexus with rock art has been recently focused: engraved cattle are scattered around stone monuments (*corbeille* type) and along the ancient paths connecting the bottom of the wadi with its banks (DI LERNIA & GALLINARO 2010).

3.3. TOWARDS ARIDITY: THE ORIGIN OF THE OASIS

At ca. 5,500 cal. years BP (*cf.* fig. 2) the main climatic transition towards aridity occurred (GASSE 2000, CREMASCHI & ZERBONI 2009). The end of the African Humid Period is testified by a drop in lake level and by pollen data (MERCURI 2008); moreover, in cave sequences a progressive preservation of organics and an increase of goats are evident. In any case, dry conditions did not affect the whole region at once, and the reaction of specific ecosystems differed depending on their geomorphologic settings. The low lands suffered an almost immediate drought, while the Tadrart Acacus continued to host few ecological niches suitable for human life (CREMASCHI & ZERBONI 2011); in addition, a paradigmatic case of a delayed reaction of a terrestrial ecosystem to aridity is the wadi Tanezzuft.

The Tanezzuft river continued to be fed by the immense water reservoirs of the Tassili massif and its reduction in length was progressive, starting from 5,500 cal. years BP (CREMASCHI *et al.* 2006, PEREGO *et al.* 2007). This slow process led to the formation of the oasis, which became the main point of aggregation during the late prehistory and the Garamantian period (CREMASCHI & DI LERNIA 2001, DI LERNIA & MANZI 2002, LIVERANI 2005); moreover, the representation of the oasis can be found at several sites within the Tadrart Acacus (LIVERANI 2005). The most important scene is at Ti-n-Anneuin (fig. 6), where the oasis is illustrated as a palm grove, settled by bitriangular figures. At the same site, and elsewhere in the northern Tadrart Acacus, some geometric drawings (*cf.* fig. 6) may be interpreted as rudimental plans of the Garamantian forts (di Lernia, pers. comm.) located along the caravan routes at the entrance of the main wadis of the Tadrart Acacus (LIVERANI 2005, BIAGETTI & DI LERNIA 2008).

4. Rock Varnish, Patination and AMS ^{14}C Dating

Several direct and indirect, relative and radiometric dating methods have been proposed for rock art of the world and their feasibility and reliability discussed in some review papers (ROWE 2001, BEDNARIK 2002, WHITLEY 2005, and references therein). From a literature survey it comes out that each rock art context requires a careful approach, including the definition of an appropriated methodological protocol to be applied. In a Saharan perspective, not all methods seem to be appropriate; the attempts of research were mostly devoted to: (i) AMS (accelerator mass spectrometer) ^{14}C determination on the organic fraction of the pigments in pictographs (radiometric, direct method); (ii) AMS ^{14}C of organics/oxalate trapped in rock varnish or surface crust developed upon pictographs and petroglyphs (radiometric, indirect method); (iii) luminescence dating of sediments accumulated against walls with rock art (radiometric, indirect method); (iv) rock varnish formation and degree of patination (relative, indirect method); (v) superimposition of furrows (relative, indirect method).

4.1. ROCK VARNISH IN THE CENTRAL SAHARA AND ITS ARCHAEOLOGICAL IMPLICATION

Considering engravings, the most objective criteria to define their relative age rest with the superimposition of furrows and rock varnish development. Rock varnish is a geomorphological feature that in arid lands coats sub-aerially-exposed rock surfaces, including those decorated by petroglyphs (DORN 1998). A recent SEM-EDS and optical microscope investigation sheds light on the processes leading to rock varnish formation in the central Sahara, while direct AMS ^{14}C dating on microlayers and relative radiocarbon dating on dark-varnished Pastoral-Neolithic stone monuments suggest a reliable chronology for its development (ZERBONI 2008).

In the Fezzan, rock surfaces dating to the Holocene host three microlayers formed by different weathering processes that recorded the climatic transition from wet to arid conditions (fig. 7). The innermost microlayer includes illuvial clay and calcite, incorporated during the early to middle Holocene (9,200-5,500 uncal. years BP) under wet environmental conditions. The second microlayer is the typical Mn-rich rock varnish (DORN 1998), biomineralized during a phase of growing aridity in the middle Holocene (5,500-3,900 uncal. years BP). The upper microlayer is composed of aeolian dust, and it dates back to the last hyperarid millennia.

Petroglyphs have different degrees of varnishing and their original furrows can be considered as a fresh substratum for varnish development. According to CREMASCHI (1996), this fact appears to be time-dependent, as older engravings have thicker and darker varnish than the younger ones. The furrows of the Wild Fauna style have the same corroded aspect of the rock surface, while the Early Pastoral engravings are sharp and the striations due to polishing are still evident. The furrows of Late Pastoral engravings are cut into previously varnished surfaces, and show a bright yellowish-red colour; finally, petroglyphs realized in the last millennia have no varnish.

Starting from the Ti-n-Ashig panel (CREMASCHI *et al.* 2008) and working on the development of varnish and the wear of furrows, it is possible to describe its evolution. The scene is very complex and includes different representations both from the stylistic and rock varnish points of view (fig. 8). The rhino and buffalo in the background (Wild Fauna style) belong to the first group of representation, showing (as the hosting rock surface) deep, corroded, and dark-varnished furrows; this group can be attributed to the early Holocene attendance of the region. A giraffe is superimposed to these figures; due to its less deep and corroded but still dark varnished furrows, it can also be attributed to the early Holocene. The following group consists of several giraffes and a bovine, engraved in the dark-varnish with red-coated furrows; without specific microscopic analyses, also a group of horsemen can be attributed to the same period. This cluster of figures should be dated to an advanced stage of the transition toward aridity (second part of the middle Holocene), roughly corresponding to the Late Pastoral-Neolithic horizon; moreover, the occurrence of horses with the same red coating can suggest a Final Pastoral-Neolithic or Early Garamantian period. The most recent representation of the panel are camels, which are engraved in the dark varnished rock substrate and do not present any coating; they were made under severe aridity and can be dated to the historical period.

4.2. AMS ¹⁴C DATING OF PICTOGRAPHS FROM THE TADRART ACACUS: RESULTS AND SIGNIFICANCE

Though important results have been acquired in the field of relative dating, at the moment radiometric techniques seem hard to be applied to Saharan contexts. Several samples of pigments, mostly related to the older styles of rock art (Round-Head and Pastoral-Uan Amil styles), have been submitted to AMS ¹⁴C dating. The organics embedded within pigments were enough to obtain results (tab. 1). All dates were performed at the same laboratory

(Geochron Lab, USA) and then calibrated, with a precision of 2σ , using the program OxCal v. 3.10 (BRONK RAMSEY 2005) with the IntCal04 atmospheric data (REIMER *et al.* 2004). Radiocarbon ages are expressed as uncal. years BP, while once converted into calendar ages they are indicated as cal. years BP (fig. 9).

Table 1

AMS ^{14}C dating results and calibration for rock paintings from rock shelters in the Tadrart Acacus massif (the age of the anthropogenic deposit — if available — is reported)

Site	Style	Age of deposit (years BP)	Lab. code (AMS)	$\delta^{13}\text{C}$	AMS age (years BP)	AMS age cal. 95.4 %	
						(years BC)	(years BP)
19/02, Rahar- mellen	Early Pastoral	–	GX-29576	-24.3	4,760±110	3,800-3,300	5,750-5,250
05/05, Arifan	Round Head	–	GX-32345	-12.7	3,690±70	2,290-1,890	4,240-3,840
02/4, Ti-n- Taborak	Uan Amil	–	GX-29577	-24	2,460±70	770-400	2,720-2,350
99/206 I, Afar	Round Head	4,960±80 to 8,390±75	GX-29574	-26.8	2,380±110	800-200	2,750-2,150
99/206 G, Afar	Round Head	4,960±80 to 8,390±75	GX-28573	-24.4	1,770±140	50-600 AD	2,000-1,350
02/92, Agmir	Early Pastoral	–	GX-29575	-25.6	1,660±160	0-700 AD	1,950-1,250

Results (tab. 1) are distributed in the last millennia and are not in accordance with the archaeological context; a single result falls within the limits of a later Pastoral phase (*cf.* fig. 9). Even though such results have scarce relevance in the context of rock art research, they find higher correspondence in comparison with palaeoclimatic data: they are almost coincident with the onset of aridity and overlap the most recent dating obtained from cave sequences (fig. 10). Radiocarbon dating on rock paintings does not represent the moment of pictographs' realization, but they should be referred to the closing of the carbon system, corresponding to the last phase of biological activity. Thus, age results may be regarded as altered by the local climate change.

An attempt to apply radiocarbon dating in the Tadrart Acacus was published by PONTI & SINIBALDI (2005) and MORI *et al.* (2006), and discussed also by an ICOMOS thematic study (2007). The authors collected several

samples of pigment (tab. 2), dated following the chemical protocol proposed by ROWE & STEELMAN (2002), based on the separation of amino acids not altered by biological activity. Considering their results in an archaeological and palaeoenvironmental perspective, we notice that only in one case results are far from the post-Neolithic aridity and in general dates do not find any correspondence with the archaeological context, possibly confirming a certain influence of climate change on results. Notwithstanding that, also the single age published by MORI *et al.* (2006) obtained at Lancusi is not convincingly consistent with rock art interpretation and archaeological record. Its significance may be warily evaluated also considering the poor state of preservation of the rock art panel, which appears heavily weathered (DI LERNIA & GALLINARO 2010).

Table 2

AMS ¹⁴C dating results and calibration for rock paintings dated by PONTI & SINIBALDI (2005) and MORI *et al.* (2006) (the age of the anthropogenic deposit is reported)

Site	Style	Age of deposit (years BP)	Main binder	AMS age (years BP)	AMS age cal. 95.4%	
					(years BC)	(years BP)
Lancusi X	Early Pastoral	7,685±36	Proteins	6,145±70	5,300-4,900	7,250-6,850
Ta-Fozziart	Round Head	7,900±36	Hydrocarbons	5,360±50	4,330-4,050	6,280-6,000
Ta-Fozziart	Round Head	7,900±36	Terpenoids	5,580±210	4,950-3,950	6,900-5,900
A-Fozziart	Middle Pastoral	7,900±36 to 5,260±160	Hydrocarbons	4,990±50	3,950-3,650	5,900-5,600
Ti-n-Thora	Round Head	7,070±60 to 5,260±130	Terpenoids	4,040±200	3,100-1,900	5,050-3,850

5. Conclusion: Adjusting the Methodological Trajectory

In conclusion, after this brief analysis on the palaeoenvironmental and geochronological issues in Saharan rock art, some general suggestions can be postulated in order to update, in a multidisciplinary perspective, this field of archaeological research. First of all, single rock art galleries should not be considered as isolated units, without significant interaction with the surroundings, but their spatial and chronological interrelations should be investigated. Moreover, rock art scenes should be positioned in their present and past landscapes, on the basis of geomorphological, palaeoenvironmental, and archaeological findings (CHIPPINDALE & NASH 2003, DI LERNIA

& GALLINARO 2010). This approach could help the interpretation of representation, giving a preliminary chronological framework. Furthermore, it may offer a starting point to apply appropriated direct and indirect dating techniques, whose results require to be discussed in a palaeoenvironmental and archaeological (*i.e.* geoarchaeological) perspective.

The development of rock varnish microlayers is a phenomenon widespread in the Saharan region, and depositional events are regulated by both local and regional dynamics (ZERBONI 2008). Due to the uniformity of rock substrate (EL-GHALI 2005), varnish chronology and inferred palaeoenvironmental information are valid for the central Sahara, but a potential use of this petroglyphs' dating-tool in surrounding regions is also possible, carefully considering local climatic history. On the contrary, in arid regions radiometric dating results should be carefully evaluated, considering the environmental settings and the cultural context. In many cases age determinations might be influenced by modification in the environmental moisture and biological activity, determined by global or local climatic changes occurred throughout the Holocene. Rock art specialists should be aware that even after an accurate chemical preparation results might not reflect the true age of pictographs, and therefore independent dating methods may be applied to support AMS ^{14}C results.

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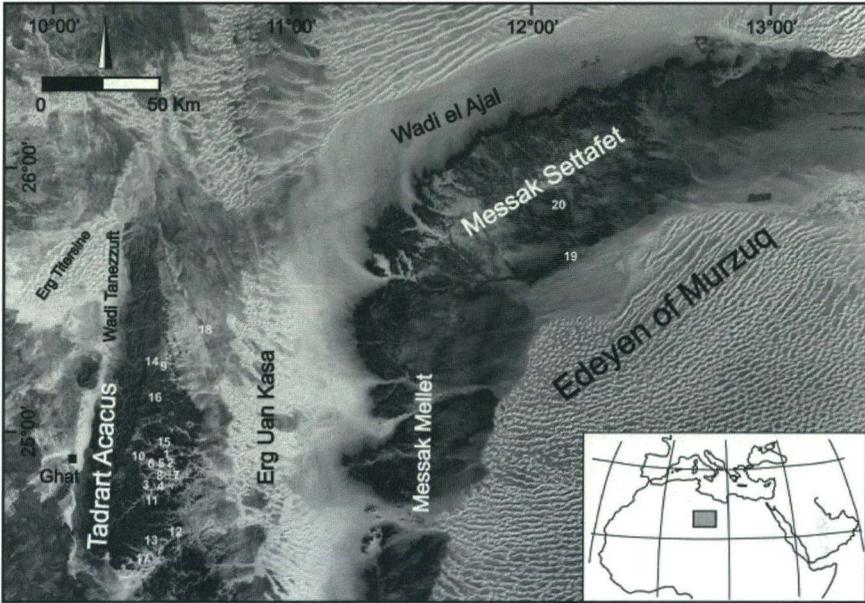


Fig. 1. — Landsat 7 satellite imagery of the investigated area, including the main localities cited in the text. The insert shows the position of the area in a regional context. Key: 1. *guelta* Agmir; 2. *guelta* Ekniuen; 3. Uan Afuda Cave; 4. Uan Muhuggiag; 5. Ti-n-Anneuin; 6. Ti-n-Ashig; 7. Lancusi; 8. In Taharin; 9. Ti-n-Taborak; 10. Ti-n-Lalan; 11. In Farden; 12. Ta-Fozzigiart; 13. A-Fozzigiart; 14. Ti-n-Thora; 15. wadi Raharmellen; 16. wadi Arifan; 17. wadi Afar Cave; 18. wadi Imassarajen castle; 19. wadi Mathendush; 20. wadi Bedis.

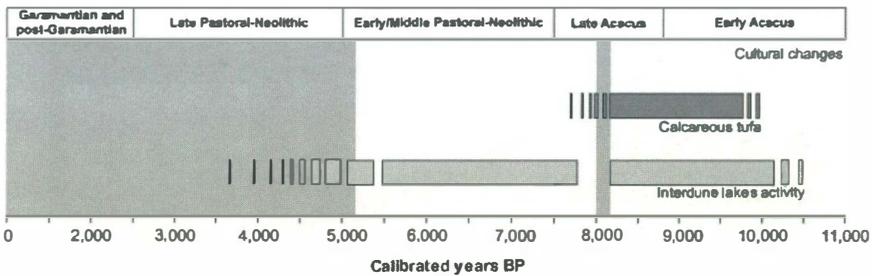


Fig. 2. — Holocene climate changes in the central Sahara as reconstructed on the basis of the palaeohydrological records discussed in the text; cultural changes are also reported (shadows indicate the 8,200 cal. years BP event and the mid-Holocene aridity).

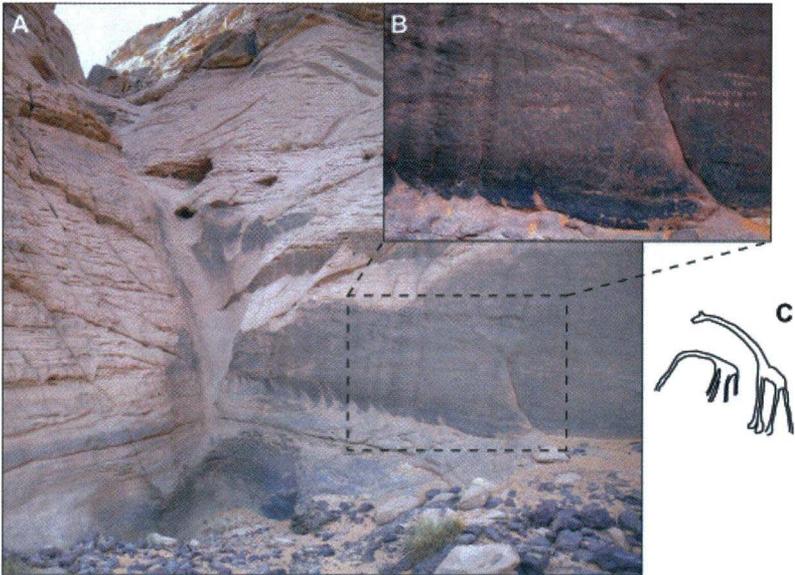


Fig. 3 – At the *guelta* Ekniuen (A) two engraved giraffes drink (B) at the pond. In (C) a drawing explicative of the scene.

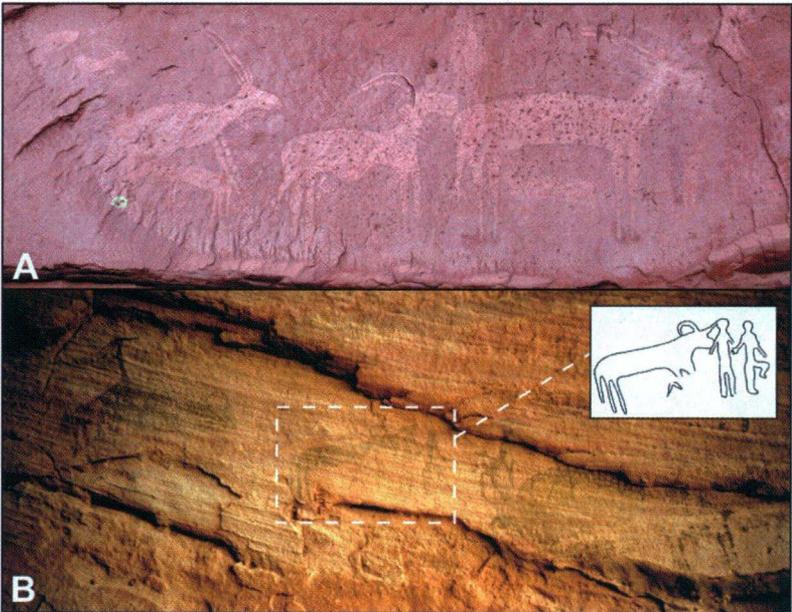


Fig. 4 – Paintings of *Ammotragus* in the Round-Head style at In Taharin (A) and Uan Afuda Cave (B); the insert is a drawing of the scene in the dashed box (after DI LERNIA 1999).

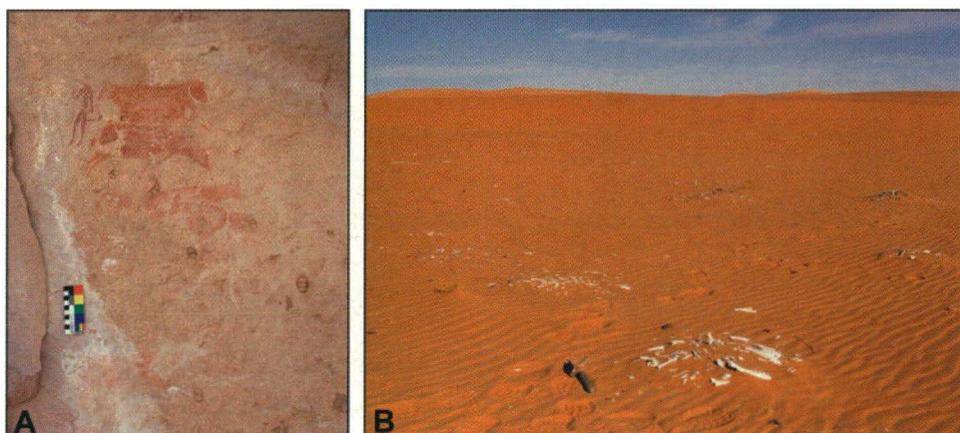


Fig. 5. — (A) A herd with shepherd at Ti-n-Taborak; (B) besides the massifs, the other poles of the transhumance (BIAGETTI & DI LERNIA 2003) of cattle and shepherds were the sandseas, as testified by cattle bones' heaps at the margin of the Pastoral-Neolithic sites in the erg Uan Kasa.

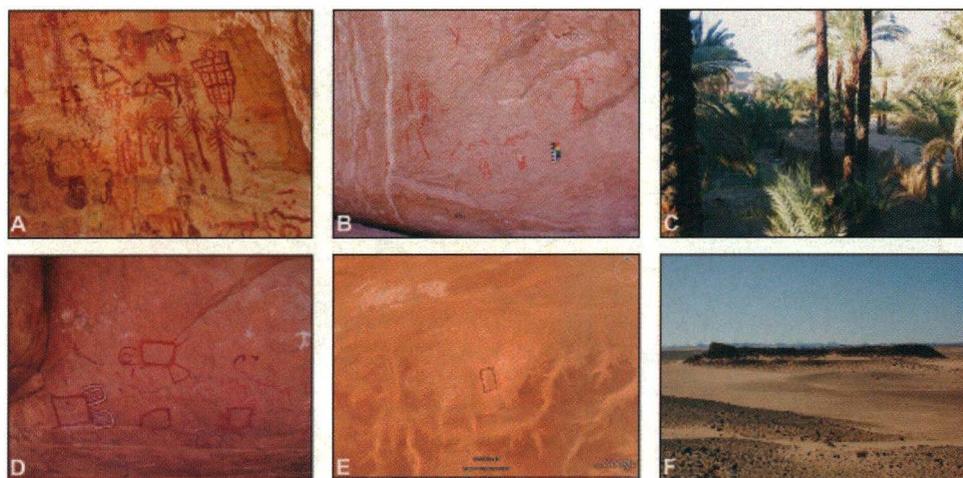


Fig. 6. — Representation of the landscape in the Garamantian phase. (A) Ti-n-Anneuin: a palm grove with bitriangular figures; (B) wadi Agmir: a palm with bitriangular figures; (C) the extant oasis of Ghat; (D) in Farden: silhouettes possibly representing the plan of Garamantian forts (di Lernia, pers. comm.); (E) the Garamantian castle at wadi Imassarajen (BIAGETTI & DI LERNIA 2008) as from GoogleEarth™; (F) the external reinforcement of the cattle at wadi Imassarajen.

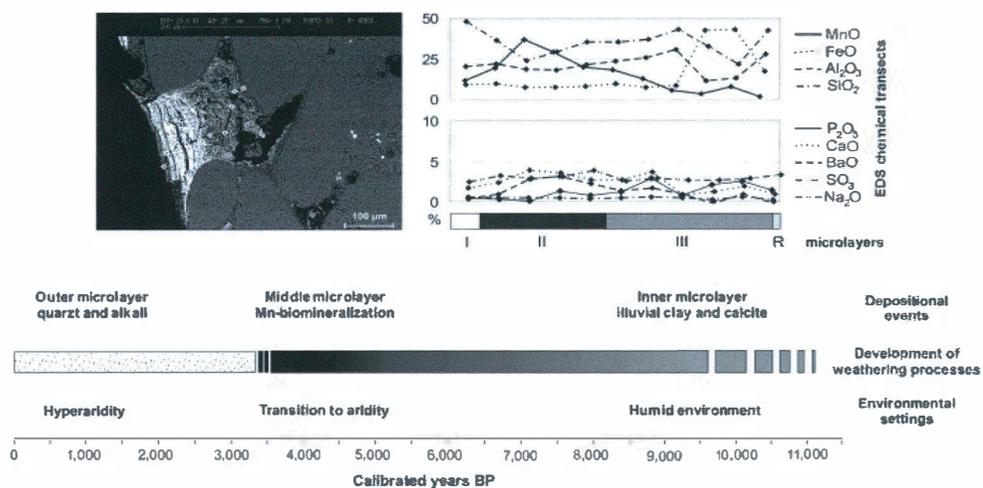


Fig. 7. — SEM image of a cross section of rock varnish and results of EDS chemical analyses (microlayers are indicated in the lower bar). In the lower part: genesis, palaeoenvironment, and chronology of rock varnish in the central Sahara are summarized.

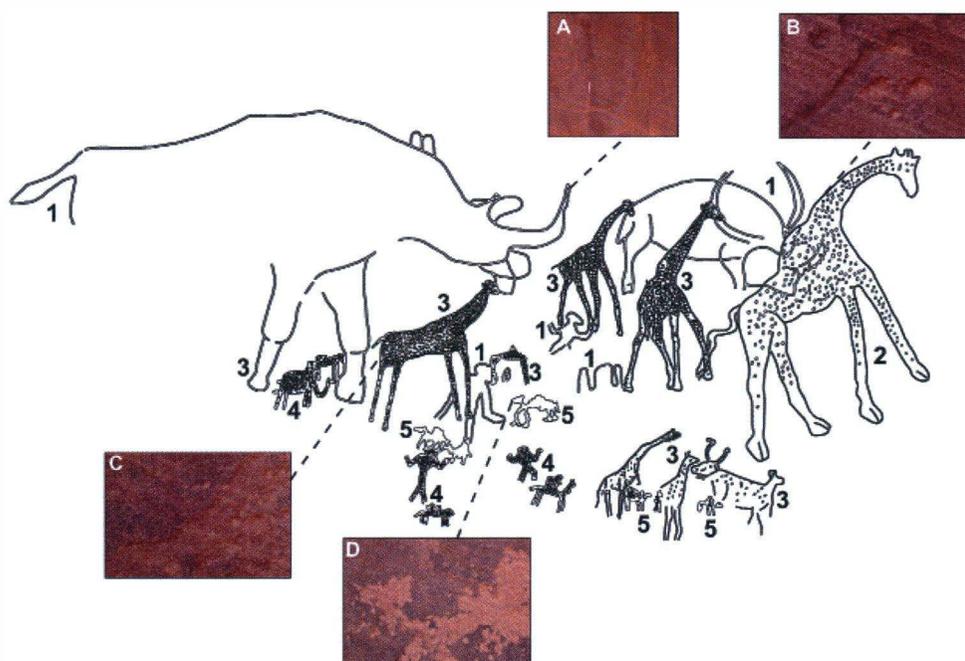


Fig. 8. — The Ti-n-Ashig panel with examples of the different degrees of patination for selected engravings: (A) dark varnish; (B) dark varnish with fresh furrows; (C) red patina; (D) no varnish. Numbers (1 to 5) indicate the phase of realization of petroglyphs as discussed in the text (drawing by M. Minoli).

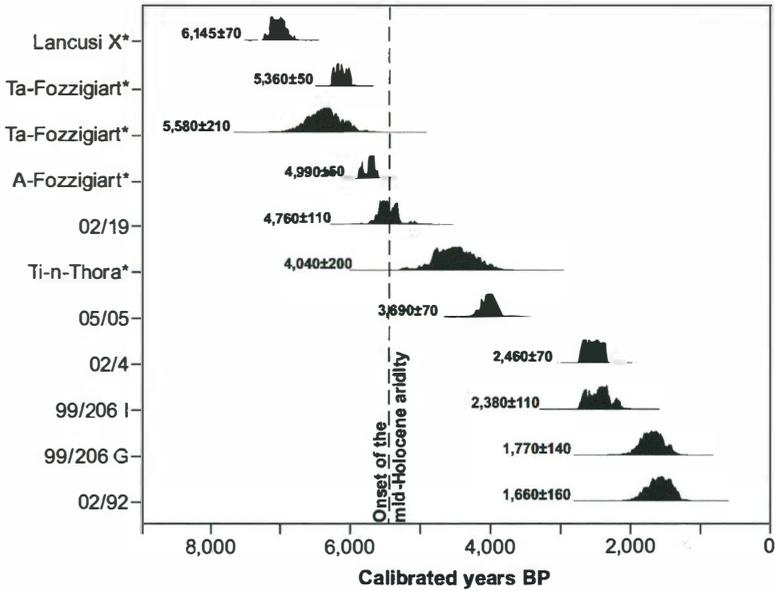


Fig. 9. — Calibrated AMS ¹⁴C dating on pictographs from the Tadrart Acacus (asterisks (*) mark sites discussed in PONTI & SINIBALDI (2005) and MORI *et al.* (2006). The dashed line indicates the onset of the mid-Holocene drought). Atmospheric data from REIMER *et al.* (2004); OxCal v3.10 BRONK RAMSEY (2005).

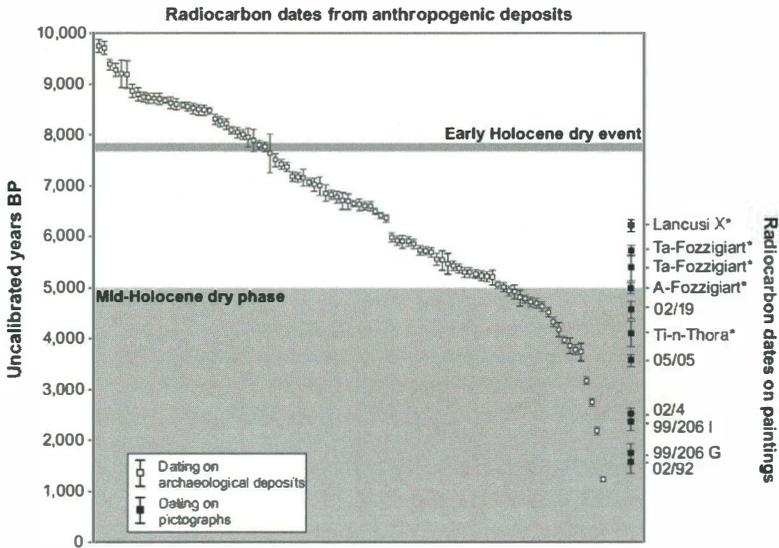


Fig. 10. — Comparison between uncalibrated radiocarbon dating on anthropogenic deposits from the Tadrart Acacus and AMS ¹⁴C ages obtained on prehistoric paintings (asterisks (*) indicate results from PONTI & SINIBALDI (2005) and MORI *et al.* (2006). Grey bars indicate the Holocene dry periods).

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The ‘Cave of Beasts’ (Gilf Kebir, SW Egypt) and its Chronological and Cultural Affiliation: Approaches and Preliminary Results of the Wadi Sura Project

by

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KEYWORDS. — Egyptian Sahara; Gilf Kebir; Wadi Sura; Rock Art and Contextual Landscape Archaeology; Mid-Holocene; Prehistory; Gilf B Phase.

SUMMARY. — The so-called Wadi Sura II shelter in the western Gilf Kebir (SW Egypt), widely known as the ‘Cave of Beasts’, ranks among the most important prehistoric rock art sites in the Sahara. Accidentally discovered in 2002 by M. Foggi, the shelter’s rear rock wall bears thousands of well-preserved painted figures — humans, various animals including strange headless beasts, and others — as well as some engravings and a large number of hand stencils. Due to their exceptional richness and variety in terms of motifs and styles, the representations, often showing superimpositions, offer unique insights into a past cultural world when living in this remote area of the Libyan Desert was still possible.

Since 2009, a joint project of the University of Cologne, the *Deutsches Archäologisches Institut*, Cairo Department, and the Cologne University of Applied Sciences has been devoted to the meticulous documentation and analysis of this site and its drawings, but also aims to investigate the palaeoenvironmental and settlement history of the whole Wadi Sura region, including the famous ‘Cave of Swimmers’ (Wadi Sura I) already discovered in 1933. This paper reports on some preliminary results of the project, focusing on the role of contextual landscape archaeology as a means to determine the general chronological and cultural setting of rock art in arid regions. The evidence gathered so far allows us to attribute the drawings displayed in the ‘Cave of Beasts’ (as well as at most other rock art sites in the region) to a hunter-gatherers’ society roaming the area within a time span of between c. 6500 and 4400 calBC (‘Gilf B phase’).

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Introduction

The so-called Wadi Sura region is part of the western Gilf Kebir, a vast mountain massif some 700 km from the Nile Valley in Egypt's Western Desert (fig. 1)*. The Arabic designation 'Wadi Sura' (or 'Wadi Sora'), 'Valley of Pictures', goes back to the year 1933, when the Hungarian desert explorer Laszlo Almásy led the German scholars Leo Frobenius and Hans Rhotert to a number of prehistoric rock art sites in the Gilf Kebir/Jebel Ouenat area. During the expedition, Almásy discovered within this valley, among a few other rock art sites, a large decorated shelter, which has become known as the 'Cave of Swimmers' (ALMASY 1936, pp. 78-80, pls. X-XI, XIII; ALMASY 1999, p. 321; LE QUELLEC *et al.* 2005, pp. 167-182, figs. 414-455; ZBORAY 2009, site WG 52). Indeed the most striking motifs among the paintings were some representations of humans lined up horizontally as if they were floating or swimming. There was also a drawing, partly destroyed, of a strange headless beast, which was, by then, without any parallel and thus not well understood. Documented in 1935 and published by Rhotert in 1952 (RHOTERT 1952, pp. 52-70, fold-out opposite p. 52, pls. XXIX-XXXII, especially pp. 58-61, pl. XXX.1, 3-7), these unusual motifs did not receive much scientific attention for many years.

In 2002, Massimo Foggini and Ahmed Mestekawi discovered, at a hill only 10 km to the north-west of the 'Cave of Swimmers', another large shelter displaying rock art motifs very similar to the latter (LE QUELLEC *et al.* 2005, pp. 193-237, figs. 526-664; ZBORAY 2009, site WG 21). Although this new site is meanwhile widely known as the 'Cave of Beasts' due to several representations of the strange headless creature just mentioned, or as 'Foggini/Mestekawi Cave', we prefer to call the sites 'Wadi Sura I' and 'Wadi Sura II', respectively.

The Wadi Sura II shelter is perched high on the hillside and partly filled with wind-blown sand that has accumulated over millennia (fig. 2). The decorated surface of the rear rock wall, covering an area of about 18 m in width and up to 6 m in height, bears thousands of well-preserved figures, mostly painted, but there are also some engravings (fig. 3). Among the various motifs, hundreds of hand stencils occur, as do wild animals such as ostrich, giraffe and gazelle or antelope, whereas distinct representations of cattle, otherwise often attested in the Gilf Kebir/Jebel Ouenat rock art (ZBORAY 2009), are, remarkably, lacking. The most important subject for the prehistoric 'artists', however, was humans. Some of them are shown with bows and arrows, perhaps pointing, in combination with the apparent absence

* Cf. figures at the end of the text (pp. 210-216).

of cattle drawings, to a society of hunter-gatherers rather than to a community of pastoralists. Although women marked as such in the representations are comparatively rare, the community's solidarity is a basic topic, which becomes visible in many group scenes. Some of them are very lively and dynamic in expression and show humans apparently engaged in some kind of dancing or ritual activity (fig. 4).

The mysterious headless beasts, which seem to be restricted to the Wadi Sura region and its surrounding area, occur several times and are often surrounded by small human figures. Some of them are touching the beast, which apparently consists of parts of different animals and is usually shown with only two or three legs and a long, raised tail (fig. 5). Obviously it does not represent a real animal, but is to be regarded as something imaginary. There are scenes where humans seem to be 'swallowed' by the beast or 'offered' to it, at the place where instead of the creature's head just a hollow or slit has been indicated. And again we meet the so-called 'swimmers' (fig. 6), another characteristic of what can be termed the 'Wadi Sura style' (ZBORAY 2009).

Due to the exceedingly rich and complex rock art, which offers unique insights into a past cultural world, the Wadi Sura II shelter certainly ranges among the most important prehistoric sites in the entire Sahara. In recent years, attempts have been made to directly link its imagery with ancient Egyptian mythological and religious concepts (LE QUELLEC *et al.* 2005; LE QUELLEC 2005, 2008, 2010; D'HUY 2009; BARTA 2010; GEORGE 2010), culminating in the statement that the Gilf Kebir is to be regarded as the 'possible place of birth of ancient Egyptian civilisation' (BARTA 2010, p. 22). Considering the spatial as well as chronological gap between the prehistoric rock art of the central Libyan Desert and Pharaonic beliefs in the Nile Valley, such as expressed in the Coffin Texts or in the Book of the Dead, this approach must, however, be regarded as highly speculative (KUPER 2011, FÖRSTER & RIEMER 2011) [1]*. Before daring any far-reaching interpretation, the documentation, preservation and thorough analysis of this exceptional rock art site should be primary objectives — the more so, as the integrity of the archaeological context is meanwhile seriously endangered by touristic activities (KUPER 2007, fig. 7; KUPER 2009).

The Wadi Sura Project

In 2009, a joint project of the University of Cologne, the Cologne University of Applied Sciences and the *Deutsches Archäologisches Institut*, Cairo

* The number in brackets [] refers to the note, p. 207.

Department, started to achieve these objectives (KUPER *et al.* 2009a, b, 2010; KUPER 2011). Directed by Rudolph Kuper, Hans Leisen and Stephan J. Seidlmayer, the Wadi Sura Project is also devoted to the investigation of the landscape archaeology of the region in order to provide a contextual framework to determine the chronological and cultural setting of rock art. Before dealing with this second focus of the project (see below), the main work that was conducted, during three field seasons from spring 2009 until spring 2010, within the Wadi Sura II shelter itself (labelled Wadi Sura 09/2 in our site catalogue) should briefly be summarized. It fell into the following parts (for details, see the reports on the individual campaigns accessible on our website: <http://wadisura.phil-fak.uni-koeln.de/7236.html>):

- A drilling series that was carried out in spring 2009 in order to assess the depth of the sand fill and to detect possible cultural layers underneath. Due to technical reasons, the drillings had to be stopped after reaching a maximum depth of about 3.5 m, without touching the bed-rock. Neither artefacts, nor organic material pointing to a former habitation floor were found. The sediment fill consisted of eolian, sterile sand, with some broken rock falls embedded, and at that point of time it had to be expected that the drawings on the rear rock wall would continue for some metres below the present surface.
- The systematic recording of the visible rock art: In view of thousands of figures and restrictions of time, the detailed recording of the drawings, adopting criteria established by Tilman Lenssen-Erz for the rock art at the Brandberg in Namibia (*cf.* Lenssen-Erz in PAGER 2006, pp. 465-478), requires special means. In cooperation with Reinhold Goss, 'CaveOne', a database-driven computer system based on FileMaker, was developed and applied on site. Using standardized value-lists as well as graphic charts, it allows a rather fast recording of each single figure according to its main characteristics, such as colour, size and style, orientation, shown posture and action, superimpositions, body decoration, and others (KUPER *et al.* 2009b, pp. 10-11, fig. 11). This ongoing computer-aided recording will facilitate a subsequent search for individual motifs, characteristics or decorational patterns. It will also help to establish a relative chronology of the various motifs and styles, based on the many superimpositions that can be observed on the decorated rock face. For example, most of the hand stencils belong to a period earlier than that of the human figures painted in red-brown, and most of the figures painted in yellow belong to a later one. The space of time, during which drawings were produced in the shelter, is of course not easy to define, and some paintings almost

disappeared and are hard to identify. The visual enhancement of faded colours by modern image processing (using, *e.g.*, the ImageJ/DStretch program, *cf.* <http://www.dstretch.com>) may contribute to a better assessment of such traces.

- In autumn 2009, a three-dimensional laser scanning and digital photogrammetry of the shelter was conducted by Erik Büttner (*Zoller+Fröhlich GmbH*). This data collection can be used for various purposes, ranging from the creation of plans, maps, sections and an overall grid system for the further rock art recording up to the possibility to produce a replica of the shelter for exhibitions. It may also provide a reference system for a virtual visit of the site in an internet application or on DVD.
- Hans Leisen and Sabine Krause explored and documented the state of preservation of the shelter's rock and rock art. A variety of weathering forms and damage symptoms were recorded and mapped, for example the crust reduction that was probably caused by wind-blown sand, or abrasion by animals and/or humans during the prehistoric occupation of the site. Among other work carried out by the conservation scientists, the non-destructive pigment analysis of paints as well as the study of painting techniques should be mentioned.
- In April 2010, a systematic, high resolution digital photographic documentation of the exposed decorated surface was conducted by Jürgen Seidel (*cf.* fig. 3). This will form the basis for the final, comprehensive publication of the rock art at Wadi Sura II.
- Finally, during that season a test excavation was carried out in the eastern part of the shelter, close to the rock face (fig. 7). Except for some plant remains and animal droppings, probably from goats, only sterile eolian sand was present — no artefacts and no indication of a former habitation floor up to a depth of more than 2 m. Nevertheless, it turned out that the rock drawings in this part of the shelter continue only for about 1 m below the sand level, less than suspected. So, future excavations will indeed expose many more drawings in the 'Cave of Beasts', but, fortunately, they will come in a manageable number.

Archaeological Survey and Approaches in Context Dating of Rock Art

The project's second approach to understanding the rock art of Wadi Sura is the study of its archaeological context. This approach turned out to be particularly useful in the relative dating of the rock art of the region. What

is termed here the archaeological 'context' does not only imply the intra-site context and its artefacts associated to rock art at a specific site; it also represents an approach on a regional scale, implying that careful analysis of the occupational history of an entire region may provide dates on rock art as well (fig. 8).

The intra-site context usually includes excavations below rock art panels in the hope of discovering stratigraphically-buried fragments that had dropped off the panel, or tools and materials used in the making of pigments and rock depictions. The stratigraphical context can be dated by chronologically-distinctive artefacts or absolute dating methods, the results of which may provide useful ages for the tools used in the making of the art, or minimum ages for the art in case of decorated fragments spelled from the panel. This approach was adopted not only at Wadi Sura II by partly excavating the sand fill below the shelter, but also at a number of other rock art shelters, the most impressive results of which yielded the excavation at a site listed as Wadi Sura 10/29. Although less certain, surface artefacts found in rock art shelters may also provide some indication of the periods when the site was used.

The regional context was, first and foremost, pursued in favour of gaining information on the occupational history of the region, implying that a number of changes in subsistence and artefact traditions occurred during this sequence starting with the early Holocene reoccupation of the Sahara in the 9th millennium BC and ending when drier conditions progressed during the 5th to 4th millennium BC (KUPER & KRÖPELIN 2006). Moreover, we hoped to find insight into aspects of site types and functions, and how specific sites were integrated into the landscape. Eventually, it appeared that the frequency in which motif types of specific chronologically-relevant style types occur together with artefacts and site types significant for certain chronological phases may provide information on the dating of rock art. This approach turned out to be appropriate because of a number of preconditions, some of which were not fully to assess at the beginning of the survey:

- A number of studies of the climatic and occupational sequences of the Western Desert of Egypt, in particular SW Egypt, already existed, including an overview of the material culture and archaeological key types to be found during a sequence of three phases from about 8500 to 3500 BC (SCHÖN 1996, LINSTÄDTER & KRÖPELIN 2004, LINSTÄDTER 2005).
- It was also known that some economic changes occurred during this sequence, in particular the introduction of domesticated animals and the adoption of a pastoral lifestyle, which might have left traces in rock art as well as in the artefact assemblages.

- A relative rock art style chronology was developed by ZBORAY (2009), illustrating the appearance of cattle herders in the second half of the sequence.
- While these aspects were known at the beginning of the survey in 2009, it appeared even after gaining a preliminary insight into the archaeology of the region that Wadi Sura is represented by a significant pattern in the distribution and frequency of rock art styles and tool traditions. This fact allowed us to draw basic conclusions concerning the dating of regional rock art.

Pottery and the Regional Context Dating

One third of the total number (about three hundred and forty) of investigated sites at Wadi Sura yielded pottery. When finally examined, they will provide further information about the chronological position of the inventories. As a preliminary result, according to the analysis of four hundred and eighty-six potsherds found during the 2009 campaigns, the pottery now highly supports the conclusion that the major occupation of the area took place during the Gilf B phase (c. 6500-4400 calBC; labelling of Gilf Kebir phases according to LINSTÄDTER 2005), given the fact that about 95 % of the potsherds and about 85 % of the inventories where pottery has been recorded, can be affiliated to this phase (fig. 9).

The ceramics of the Gilf B phase comprise large open vessels of Khartoum style pottery (fig. 10), which is characteristic for southern Egypt (RIEMER & JESSE 2006, KUPER & RIEMER 2010). Decorations, though few, feature in particular the 'Packed Dotted Zigzag', but also 'Dotted' and 'Incised Wavy Line'. By far the largest number of potsherds, however, is undecorated, apart from rim decorations which occur relatively frequently. The undecorated material can easily be affiliated to the Khartoum style complex by means of the fabrics (*i.e.* types of tempering), which are in contrast to the ceramic material of later periods.

In contrast to the sites yielding Gilf B phase pottery, there are only very few and short-termed occupation sites from the post-dating Gilf C phase (c. 4400-3500 calBC). Moreover, the preceding Gilf A phase (c. 8500-6500 calBC), for which pottery is still lacking, both in Wadi Sura as well as in most parts of the Western Desert of Egypt, is evidenced at very few sites by characteristic elongated microlithic elements and a typical blade technology in the lithic material.

In sum, there is ample reason to conclude that the Gilf B phase represents the climax in the prehistoric occupation history at Wadi Sura. This is

supported by a number of observations, such as the fact that the Gilf B phase has yielded by far the largest and most diversified camp sites in the area, while Gilf C phase sites are extremely small and exhibit a very ephemeral character.

Regarding rock art, there is Andras Zboray's fundamental catalogue of more than eight hundred rock art sites from the Gilf Kebir/Jebel Ouenat region published in 2009 (first edition published in 2005), which allowed him to draw a number of warranted conclusions on stylistic diversity and the relative chronological position of some of the styles (ZBORAY 2009). The latter is mainly based on superimpositions at a number of key sites where motifs of different styles overlap. The preliminary definitions of the styles and their position within a chronological framework established by Zboray can, therefore, be regarded as the best outline of the rock art sequence currently available for the region.

In simple terms, Zboray has recognized two major style complexes. The earlier style complex comprises the so-called 'Ouenat roundheads' and the 'Small human figures' occurring in the Jebel Ouenat and its surroundings, while the Gilf Kebir is mainly characterized by the 'Wadi Sura style'. The latter features the 'headless beasts', the 'swimmers', and possibly hand stencils, though the latter apparently predate the beasts and 'swimmers' and are to be found in other regions as well. The later style complex is the 'Cattle herders style'. The pastoral subsistence vividly highlighted in the rock art of this style is regionally more homogenous and occurs from Jebel Ouenat to the Gilf Kebir. At Wadi Sura, however, it is easy to recognize that the 'Wadi Sura style' clearly dominates rock art, while cattle and relative representations of the 'Cattle herders style' are few. This concerns not only the number of respective sites, but also the percentage of figures represented at individual sites. The only larger rock art site where paintings of cattle dominate is WG 35 (as termed in Zboray's catalogue), or Wadi Sura 09/22 (as numbered in our site catalogue).

Given the very small amount of Gilf C pottery and the few representations of the 'Cattle herders style' in the rock art of Wadi Sura, it is highly suggested that this rock art style developed during the Gilf C phase, c. 4400-3500 calBC. In turn, taking into account that most of the rock art found in the Wadi Sura area can be affiliated to the 'Wadi Sura style', it is to be concluded that most of the paintings in the area date to the Gilf B phase, c. 6500-4400 calBC, to which most of the ceramics date.

Yet, it cannot fully be excluded that some regional rock art dates back to the early Holocene or epipalaeolithic Gilf A phase. The Gilf A phase is aceramic but features a distinctive lithic industry with regular blades and

microliths made of bladelets. Sites typical for this phase are, however, only few at Wadi Sura, and it is, therefore, suggested that the majority of rock art of the 'Wadi Sura style' was produced during the Gilf B phase that indicates the heyday of prehistoric settlement activities in the region.

Shelters and the Site Context Dating

The rock art at Wadi Sura is usually to be found under rock overhangs or in other positions sheltered by rocks. What is clear to us from the first two years of research at Wadi Sura is that patterns in the location of archaeological sites can be interpreted in such a way as to indicate that activities in open-air camps of the Gilf B phase were closely connected with the rock art shelters, with the conclusion that most of the rock art was created when people occupied the camp sites. This is indicated, for instance, by artefacts found under the overhangs or more regularly by concentrations of dense scatters of potsherds, grinding implements, and flaked lithic artefacts in the immediate surroundings of the shelters. Moreover, shelters were not only used for creating rock art, but for other daily life activities, in particular to keep goats as is indicated by dung found there. Rock hooks were cut into the drip lines of overhangs at almost all rock shelters, obviously used to put up equipment, such as baskets, water-skins, or ceramic pots in nets, as is known from more recent ethnographic parallels.

More conclusive evidence is given by artefacts found in excavated stratified contexts in rock shelters. A good example is the excavation in the rock art shelter 10/29 in the south-eastern part of the Wadi Sura survey area. The excavation trench covered only a small part of the surface scatter of artefacts in front of the rear rock face of the shelter; however, it yielded more than five thousand pieces of debitage, some potsherds, and a mass of dung pellets. Among the stone tools found, there are more than fifty microlithic elements distinctive for the Gilf B phase, such as transversal arrow heads (fig. 11). The age affiliation is confirmed by some potsherds of the same phase. Although paintings on the rear rock wall are poorly preserved due to stone erosion, a small exfoliated piece of the rock surface exhibiting paint of red colour, as well as raw pieces of red-ochre and a red-ochre stone with polished edges were found in the excavation. Such pigments indicating the processing of paints were found in several surface collections of Gilf B camp sites. Traces of red ochre were also identified from a 'palette' made of a Gilf B potsherd on site 09/10, about one kilometre east of Wadi Sura II, indicating how the colour pigments were processed in order to make paints out of them.

The context of this site yielded a typical Gilf B assemblage comprising a great number of Gilf B phase pottery.

Conclusion

The archaeology of Wadi Sura may contribute to our understanding of regional rock art, and there is also some substantial information on the dating of the prevailing 'Wadi Sura style'. This style is well represented, not only at the 'Cave of Beasts' (Wadi Sura II), but also at most other sites in the area. The correlation with the dominating pottery tradition that is affiliated with the time period of the Gilf B phase, c. 6500-4400 calBC, provides the time frame for the 'Wadi Sura style' (or for most of its elements, such as the 'headless beasts' and the 'swimmers', which appear younger in superimposition than the hand stencils). The dating approach as outlined in the present paper is supported by the correlation of the spatial distribution pattern of rock art sites and open-air camp sites, as well as by a number of other remarkable observations. If this correlation of the chronologies is correct, the creators of the 'Wadi Sura style' drawings were hunter-gatherers or 'pastro-foragers', judging from what we know about the major changes of human subsistence in the eastern Sahara (RIEMER 2007, KUPER & RIEMER, in press). They may have kept goats, and perhaps cattle as well, during the last stage of the Gilf B phase, but they cannot be regarded as a pastoral society. The kind of 'art' they created is difficult to interpret facing the chimerical creatures, such as the headless beasts, or the many humans involved in what might be ritual activity. Nevertheless, this 'mythological' element in the imagery completely differs from the paintings of the 'Cattle herders style' succeeding after c. 4400 calBC. The latter vividly illustrate the daily life of cattle-centred pastoral nomads and their obviously quite contrasting concepts in ideology and social structure.

ADDENDUM

In spring and autumn 2011, two further campaigns of the Wadi Sura Project took place, during which the work described above was continued. The extended archaeological survey in the region, including small-scale excavations at a few sites, yielded additional data supporting the general picture outlined in this paper. Within the 'Cave of Beasts', samples from various levels, up to a depth of c. 6.5 m, of the shelter's sand fill were taken by hand drillings for OSL dating, but still await processing. After this, the sand was

completely removed up to the level where the decorated part of the rear rock wall ends, which is at 1.10-1.20 m maximum below the original surface, and all the newly exposed drawings were recorded by three-dimensional laser scanning, digital photogrammetry and photography. Surprisingly, in the lowermost section of the central part of the decorated rock face, a painted scene came to light, which shows, next to some drawings of wild animals, the representations of goats as well as of what seems to be a (domestic?) cow (fig. 12). Nevertheless, a few distinctive microlithic elements found, among some other material, during the excavation again point to the Gilf B phase as the shelter's major occupation period.

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NOTE

- [1] LE QUELLEC (2008, p. 35; cf. LE QUELLEC *et al.* 2005, pp. 284-289, esp. 288-289) tentatively dates 'the florescence of regional rock art' at Wadi Sura to around 4500 ± 500 BC.

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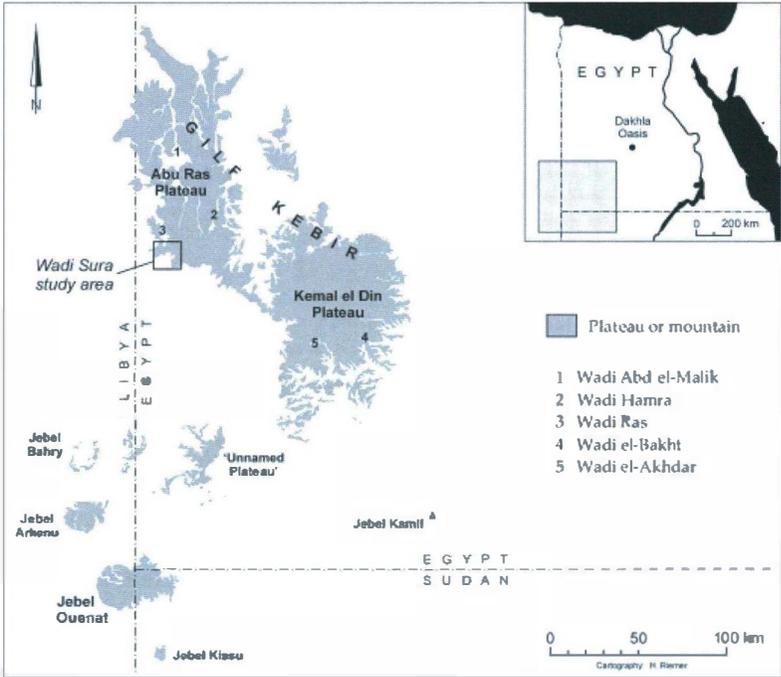


Fig. 1. — Map of the Gifl Kebir/Jebel Ouenat area in southwestern Egypt, showing the location of the Wadi Sura region (for a close-up of the study area of the Wadi Sura Project, see fig. 8).



Fig. 2. — View from the south at the Wadi Sura II shelter ('Cave of Beasts'), situated above a 20 m high sand slope (centre).



Fig. 3. — Western part of the decorated rock wall in the Wadi Sura II shelter, showing thousands of well-preserved painted figures as well as a large number of hand stencils.



Fig. 4. — Some of the many human group scenes displayed in the 'Cave of Beasts'.



Fig. 5. — Some of the headless hybrid creatures depicted in the ‘Cave of Beasts’, two of which are surrounded and touched by small human figures.

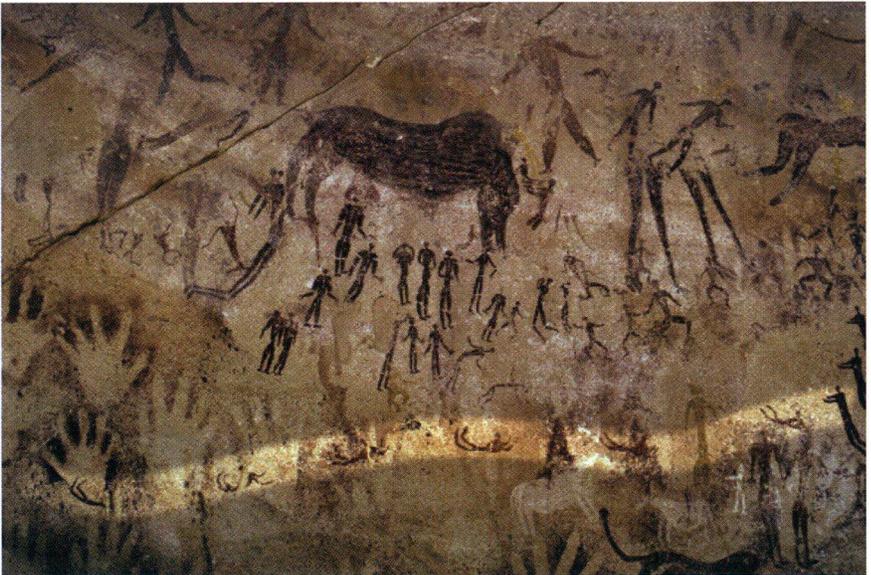


Fig. 6. — Row of so-called ‘swimmers’ shown in the Wadi Sura II shelter (highlighted by the white band). Above, another representation of a headless beast surrounded by human figures.

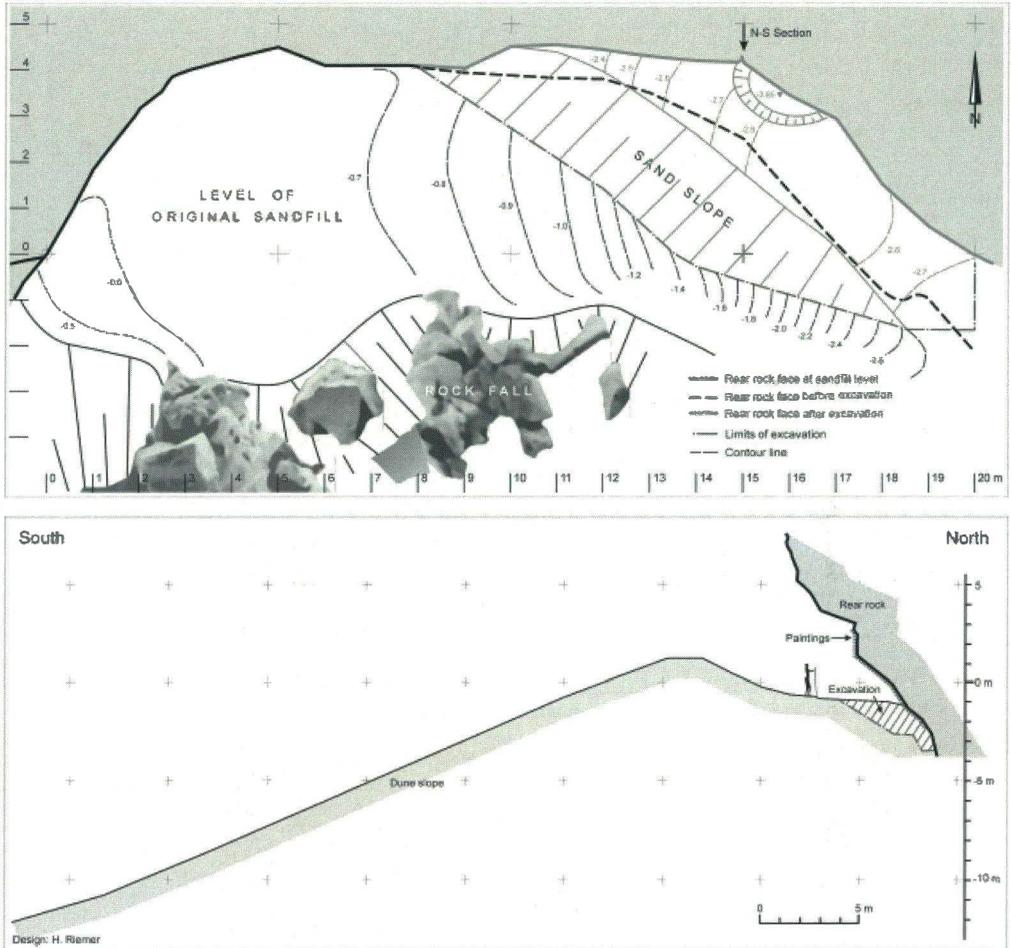


Fig. 7. — Ground plan and section of the Wadi Sura II shelter illustrating the extension of the test excavation carried out in spring 2010.



Fig. 8. — Map showing the study area of the Wadi Sura Project, as well as archaeological sites recorded during the 2009–2010 survey campaigns. Sites mentioned in the text are additionally indicated by their catalogue number (*map source*: Google Earth).

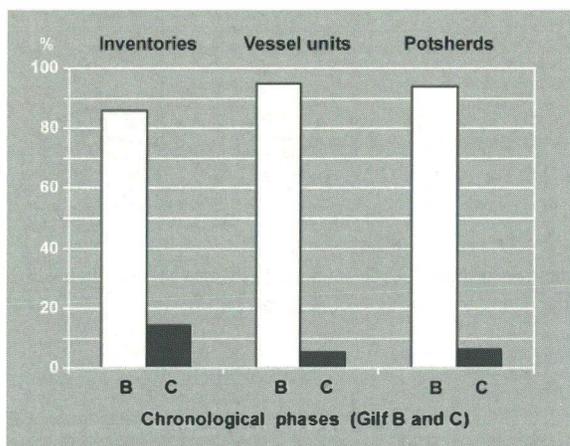


Fig. 9. — Dating of Wadi Sura pottery, based on preliminary results of the examination of 486 potsherds from sites recorded during the 2009 campaigns.

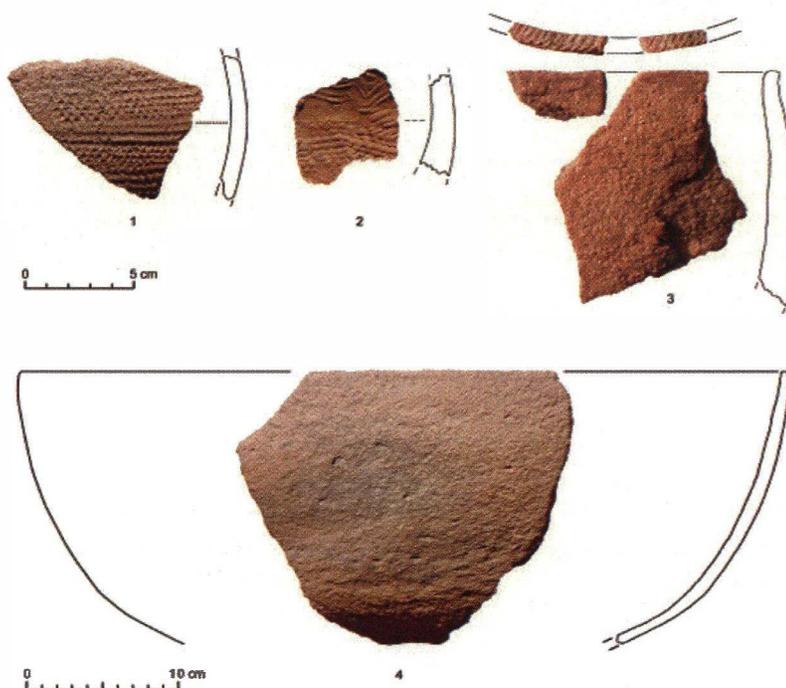


Fig. 10. — Khartoum style pottery of Gilf B phase found at Wadi Sura: 1. 'Packed Dotted Zigzag' (PDZ) decoration; 2. 'Dotted Wavy Line' combined with PDZ; 3. Potsherds with decorated rim; 4. Rim sherd representing a large open vessel.



Fig. 11. — Transversal arrow heads, such as excavated at site Wadi Sura 10/29, are characteristic microlithic stone tools of the Gilf B phase.

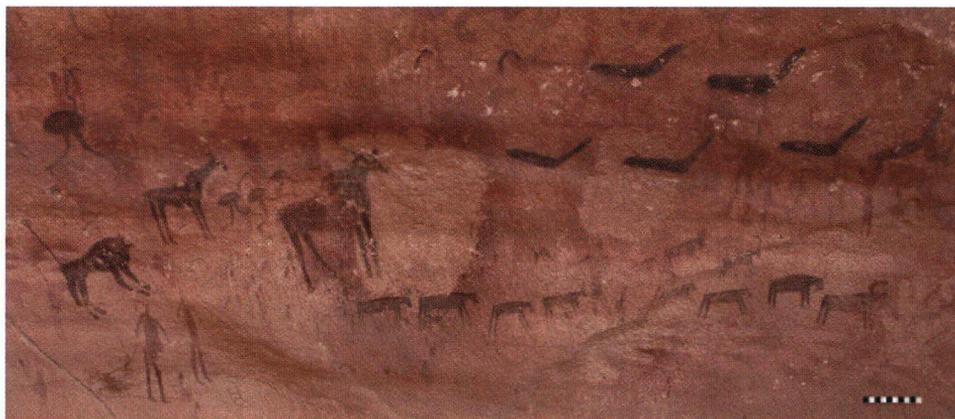


Fig. 12. — Newly exposed drawings showing, inter alia, a group of wild as well as domesticated (?) animals in the lowermost section of the decorated rock wall at Wadi Sura II.

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A Revision of the Identified Prehistoric Rock Art Styles of the Central Libyan Desert (Eastern Sahara) and their Relative Chronology

by

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KEYWORDS. — Libyan Desert; Rock Art Styles; Relative Chronology.

SUMMARY. — The massifs of the central Libyan Desert, Jebel Uweinat, Arkenu and the Gilf Kebir plateau have emerged as one of the principal rock art bearing regions of the Sahara. New discoveries over the past ten years have vastly increased the corpus of available data, permitting a revision and improved definition of the observed rock art styles and the underlying prehistoric cultures. The analysis of paintings reveals a succession of four hunter-gatherer societies centred on Jebel Uweinat, with the unique Wadi Sora culture occupying a narrow belt along the western Gilf Kebir. As evidenced by demonstrable superimpositions and relative weathering, all these distinct cultures were replaced throughout the investigated region by a homogeneous culture of cattle pastoralists.

Introduction

The great massifs of the central Libyan Desert (eastern Sahara), the mountains of Uweinat, Arkenu and the Gilf Kebir plateau have long been known to harbour prehistoric rock art. Since their discovery in the 1920s and 30s, the paintings and engravings have been subject to much study and analysis, with several attempts made to produce a systematic description and establish their chronology.

Already Ahmed Hassanein, who reported the first engravings of giraffe and other wild animals at Jebel Uweinat (HASSANEIN 1924), speculated on their great antiquity. Spurred by Hassanein's discoveries, Prince Kemal el Din visited Uweinat in 1925 and 1926, and documented several more rock

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styles based on the information available from sites known at the time. The second edition (ZBORAY 2009b) was expanded to over eight hundred sites, all new finds in the elapsed three-year period. The style listing was partially revised to reflect the new findings. Since then a further approximately two hundred new sites have been documented by the author and others, bringing the total count of localities to over a thousand (BORDA 2010; 2011a, b; ZBORAY & BORDA 2010; MENARDI-NOGUERA & ZBORAY 2011a).

With this corpus of new data, a number of early cultural horizons may be identified, principally in the Jebel Uweinat environs, all predating the cattle pastoral period which were unknown or unrecognized by authors of earlier studies. Substantial new light had also been shed on the known and recognized styles, mostly confirming to, but in a few cases adding to or contradicting previous thought, both on the definition of distinct recognized styles and their chronological order. In the following an attempt is made to integrate all available information derived from rock art on the main cultural periods in the Gilf Kebir – Jebel Uweinat area (central Libyan Desert) and produce a series of definitions and chronological sequences that fit the presently available evidence.

All previous principal publications made attempts to categorize the paintings and engravings into distinct recognizable styles. While most had merits, the vast increase of known sites and styles have made such earlier divisions obsolete. The present work will use as a basis the categorization originally developed in 2005 and amended in 2009 (ZBORAY 2005b, 2009b), however significantly revised to reflect new finds and valid critical observations. LE QUELLEC (2005, 2009) used a slightly different categorization and terminology, the differences will be noted under individual styles.

One particular problem in rock art literature when dealing with styles is the habit of authors using the terms style, culture and period as synonyms, putting an equation sign between them whether founded or unfounded. While clearly individual styles, when present in large numbers and in a well-definable geographical scope, may be considered as the product of a distinct culture that may be placed into a definable time period, this is not always the case. Some styles may be the product of the same culture (as apparent in certain cases at Uweinat). Several more or less related cultures may be contemporary, occupying different geographical niches.

While the definitions of style and culture may fill several volumes and are far beyond the scope of this work, for the sake of clarity the following definition will apply to all of the styles described and defined in the following: a group of people sharing the same subsistence strategy, customs and manners is said to share the same culture. If this culture produced any rock art,

it will be expressed through a distinct style with some fundamental distinguishing traits. A culture will have a defined geographical and temporal range. While the first one is readily evident from the geographical distribution of sites, the second may or may not be identifiable based on current evidence. As a working assumption, a culture may be associated with only one of each of the rock art styles of engravings and paintings.

In rock art studies, a style is defined by a recognizable set of conventions (here called stylization conventions) in rendering on the rock surface the animate or inanimate entities of choice from the real or imaginary world. Obviously the chosen medium and technique (like pecking, carving, engraving or painting) will result in very different expressions, even when produced by the same people. The medium and technique employed is as integral to style definition as the subject matter. Variations in the way of depicting certain subjects (most commonly humans), while the subject matter remains identical and the overall set of stylization conventions remain similar, may be called style variations. However, as long as the similarities are far in excess of differences, defining them as individual styles (and by implication presuming them to be the produce of different cultures) is considered inappropriate. Of course any such classification is dependent on the considered and available samples, and often the samples and the defining stylization conventions are selected in a subjective way. As new finds emerge some definitions may need revision, as has been the case since the original classification scheme was compiled by the author in 2005.

All references in the following to individual sites use the numbering system developed and revised by the author (ZBORAY 2009b) unless otherwise noted.

The author wishes to convey his special thanks to Alessandro Menardi-Noguera for reading the draft of this paper, correcting several errors and inconsistencies, and suggesting a number of improvements to the final text.

The accompanying black and white illustrations were processed and enhanced using dStretch, a software tool for the digital enhancement of pictographs written by John Harman, freely available to the rock art research community at www.dstretch.com.

Main Rock Painting Styles of the Region

In the autumn of 2009, when the list was closed for the second edition of the catalogue (ZBORAY 2009b), a total of eight hundred and three sites had been recorded. Of these, ninety-five may be found in the Gilf Kebir, the

remaining majority at Jebel Uweinat and the surrounding massifs of Arkenu, Kissu and lesser rocky hills. The rock art sites are almost evenly balanced in the proportion of engravings to paintings, with four hundred and two sites recorded with engravings and four hundred and fifty-six sites with paintings. However, the proportions may shift significantly depending on local geography. In the Gilf Kebir engravings slightly outnumber paintings, the latter predominantly concentrated along a short section of the western Gilf, centred on Wadi Sora. Engravings are more scattered, mainly in the three principal valleys of the northern Gilf Kebir. At Jebel Uweinat there is a very noticeable pattern of engravings (with few paintings) appearing at lower altitudes around the base of the mountain and in the lower courses of wadis, while paintings are concentrated in the upper sections of the wadis, reaching up to the highest altitudes of the mountain. This geographic distribution will probably have chronological implications for the engravings, however at present remains unexplained.

The western, granitic part of Jebel Uweinat is completely void of any engravings while paintings are prolific, without doubt explained by the unsuitability of the extremely hard medium for engravings.

In the introduction, attention was already drawn to the problem of dating engravings and paintings. Author's views ranged from engravings in general being much earlier (or later) than paintings to both being contemporary and the work of the same people, with stylistic variations being purely the result of the differences in the artistic medium.

Unfortunately with engravings the technique and medium allows for much cruder execution than the fine detail resulting in paintings, thus the distinction of individual styles is based more on subject matter and overall execution than any finer detail. Patination, often used to establish relative ages for engravings, is a very unreliable indicator, as even on the same panel one may observe different degrees of weathering depending on the exposure of the rock to prevailing wind and sandblasting. Even the categorization of the engravings, beyond very simplistic terms like cattle present or absent, or the very recognizable late dromedaries, is very problematic. One thing is certain: the numerous engravings depicting cattle (more than half of all engravings) are with a very high degree of probability the work of the same people who made the paintings depicting cattle and pastoral themes, the differences being easily explainable by the different media. However, for the wild fauna depictions, of which there are probably ones predating the cattle period, and some postdating, it is very hard to make meaningful and consistent distinctions. It will require much future effort to categorize the various engravings into the currently established cultural and chronological framework.

Due to the above limitations, the evidence from engravings will be excluded from the present study, and focus will be on the main styles of paintings and the associated cultures, which are readily identifiable.

There are around twenty ‘anomalous’ paintings, usually with single examples and often in a bad state of presentation, that do not seem to fit into the categorization presented in this study. As individual examples are always problematic (the case example being BH 4 which for a long time was the only known “Uweinat roundhead” site), they will not be discussed in this work. With new finds likely to continue into the future (at time of writing more than two hundred new sites have been reported from the Jebel Uweinat area, not included in the above count), hopefully more and more of the anomalies may be allotted their place in a revised framework.

It is to be noted that more than one style may be observed at some of the sites, both adjacent and superimposed. As a result, in the following discussion of individual styles/cultures, the summing of site numbers given for individual styles will give a number greater than the total recorded sites.

Uweinat Cattle Pastoralists

The vast majority of the paintings at Jebel Uweinat depict cattle and associated humans. Of four hundred and fourteen sites with paintings, three hundred and thirty-seven contain paintings that may be assigned to the cattle pastoralists. Most of the other styles have been recognized only very recently, earlier authors dealt exclusively with cattle-themed paintings when discussing classification and styles of the Jebel Uweinat paintings.

VAN NOTEN (1978) noted that some of the pastoralist paintings also contained goats depicted in the same style as cattle, and noted the numerous layers of superimpositions at several sites. He attempted to categorize the paintings based on the observation that the style of clothing depicted on the human figures corresponds to variations in human body stylizations. Based on this observation, paintings were assigned to three styles equated to different ethnic groups of pastoralists: “People in double loincloths”, “People in simple loincloths and women with skirts” and “Naked people and people with belts”.

LE QUELLEC (2005, 2009) followed the approach of Van Noten, but focused only on the depiction of human figures among the cattle pastoralist paintings belonging to Van Noten’s second style. Within this group he distinguished two styles: *longiligne* (thin long-limbed) and *filiforme à tête en bec d’oiseau* (thread-like with head shaped like a bird’s beak). However, he

observed that the two were closely related, the latter a variant of the former. LE QUELLEC (2009) did not consider or discuss at all Van Noten's "People in double loincloths".

The definition of styles based on human depictions masks the most important aspect of the pastoralist paintings. The dominant theme of paintings is cattle, with some panels showing hundreds of them in a great variety of form and colour. Some paintings show goats, with or without cattle, but depicted in the same style as the cattle paintings. Many of the paintings contain human figures, commonly with accessories like body decoration, waist pouches or loincloths, shoulder bags, footwear, bow & arrows. However, the variations in the styles of depicting humans noted by Le Quellec are not reflected in the style of depicting the animals which accompany the humans.

The author (ZBORAY 2005b, 2009b) used the term "Cattle herders" referring to these paintings, with others (MENARDI NOGUERA & SOFFIANTINI 2008, BOCKLI & MARAI 2008) referring to the "Uweinat pastoralist style". However, LE QUELLEC (2009) justly pointed out that the term while intuitive, is meaningless without a proper definition, which all authors failed to provide.

In the following an attempt is made to provide such a definition, under the proposed term "Uweinat cattle pastoralist style", combining in the name the two most important attributes of the style and the underlying predominant culture with its geographical distribution densely centred on the massif.

While cattle pastoralist paintings dominate Jebel Uweinat and the surrounding massifs, a number of scattered sites attributable to the same style may be found in the Gilf Kebir. SHAW & KENNEDY (1936) reported a shelter in the southern Gilf Kebir (SG 1) with paintings identical to those found at Uweinat, and after visiting Wadi Sora with Bagnold, PEEL (1939) recognized the paintings in the smaller of the two main shelters (WG 53) to be of the same type. Further finds by the author (ZBORAY 2003, ZBORAY & BORDA 2010) and BORDA (2008, 2009) have provided conclusive evidence that the cattle pastoralist people roamed across the entire region encompassing Jebel Uweinat, the surrounding smaller massifs and the Gilf Kebir plateau. There are several scattered cattle pastoralist sites (eighteen in all) in the Gilf Kebir, and many more at the numerous inselbergs on the 100-km plain separating the southern tip of the Gilf Kebir and Jebel Uweinat. It is the opinion of the author that the relative scarcity of sites in the Gilf Kebir is more due to the relative lack of shelters suitable for paintings rather than being indicative of human activities. In practically all of the recently found shelters that appeared from afar as suitable localities for rock art, paintings of cattle have been found. The style of these paintings is so identical to those at Jebel Uweinat

that there can be no doubt the same people have made them, despite the most distant being over 300 km apart (figs. 1 & 2)*.

The style of depicted cattle is instantly recognizable on sight; however, the large variation does not lend itself to an easy verbal description. The most distinctive feature of the Jebel Uweinat cattle is the depiction and spacing of the legs; however, this is a statistical observation valid for the majority, and a large number of outliers do not conform to this definition.

The rear legs are spaced wide apart, with a prominent udder in between in case of cows, or the penis in case of bulls. In contrast, the front legs are spaced closely together. The rump above the rear legs is usually exaggerated, giving the animal a distinctly rear-heavy appearance. The tail is commonly depicted as a thin line following the curve of the rump, exaggerated in length, with a wider elongated tuft at the end. In contrast to these rather standardized elements, the head and especially horns are shown in varied postures and views, with horns both long, short or absent, shown in profile, curving forwards or downwards. The body decoration ranges from plain monochrome to elaborate polychrome decoration. Body postures are usually static, either standing or resting with bent legs, with a few rare dynamic examples. Figure 3 depicts an ensemble of typical examples of both cows and bulls. When goats are present, the same defining characteristics may be observed (allowing for differences in overall body anatomy), and there are a few rare examples of giraffes dispersed among cattle which have a similar, instantly recognizable style.

These cattle are associated with humans depicted on a wide ranging scale and degree of elaboration; however, the key defining stylistic traits of all of them conform to the *longiligne* style of Le Quellec. The *têtes en bec d'oiseau* defined by Le Quellec as having thread-like bodies are also known with bodies exactly matching those of the *longiligne* definition (figs. 4 & 5). Furthermore, there are several thread-like human depictions without the bird-like head, identical to the *longiligne* type in everything except upper body proportions. It is interesting to note that the very scene Le Quellec used to illustrate the two styles (LE QUELLEC 2009, fig. 2) shows two figures side by side as part of the same composition, probably drawn by the same artist, with the only distinction being the depiction of the heads and the upper body proportions, with all other attributes practically identical. Similarly, the differences in clothing noted by Van Noten is spread across a wide range of body proportions, with no clear definable distinguishing traits, all unified by the commonality of animals and other depicted accessories.

* Cf. figures at the end of the text (pp. 242-255).

There is one attribute of the humans, which is common across all of the depicted variations, and may be used as a further defining feature of the Uweinat cattle pastoralist style. This is a peculiar shoulder bag, probably a combined quiver cum utility bag (MENARDI NOGUERA & ZBORAY 2011b) with a tail-like decoration that frequently appears carried by male figures. This bag had been noted from the whole geographical range of the Uweinat cattle pastoralists, and lacks any analogies among other cattle pastoralist art of other Saharan regions (fig. 6).

There are a number of recurring themes and standardized scenes that appear in a large number of paintings, common to all variations among human figures attributed to the Uweinat cattle pastoralist style, further supporting unity for this cultural group. These include the depiction of shelters with utensils and accessories hanging from the ceiling, occupied by humans that in some cases may be interpreted as families, with a clear male/female couple and a number of figures on a smaller scale, most likely children. Cattle or more commonly calves tethered to a stake or tree are also a recurring theme, as is the almost standardized depiction of cattle with a (usually male) human figure standing immediately behind.

Apart from goats and cattle, the only domesticated animal shown are dogs, but very few in numbers. At present, only three unambiguous examples are known, two in hunting scenes, one depicted with a collar and a leash held by a person. Wild fauna is occasionally shown, but only very sparingly. VAN NOTEN (1978) noted only two painted examples of giraffe, including one scene where they were hunted by men with bows and dogs. However, in the meantime several other examples of painted giraffe were found with the depiction of the animals and any associated humans being in the same style as the cattle (MENARDI NOGUERA *et al.* 2005). Thus, giraffe are rare but not unique in the period, and appear to be a supplementary source of food. In one exceptional shelter (KTW 26/B) numerous hunting scenes are shown, including giraffe and dama gazelle; however, the rarity of such scenes implies that the principal means of subsistence was based on the cattle herds.

The principal Uweinat cattle pastoralist sites present several layers of superimpositions. While the essentials of the style remain unchanged in all the layers, suggesting a cultural continuity over a period of time, it must be emphasized that the stylistic variations observed by Van Noten and Le Quellec could form the basis of internal subdivisions and a possible chronological sequence. However, any such study must include the cattle and other elements of the depictions, not only human figures. With the vast number of sites, some containing in excess of a thousand individual depictions, this will be an immense task to perform.

VAN NOTEN (1978) noted a distinct style of human depictions, with the men wearing double loincloths (with associated women wearing skirts). His observations were made in a single large shelter (KT 83/A-B) with relatively few examples intermingled with the much more numerous Uweinat cattle pastoralist figures. The same type of figures exist in a shelter in northern Karkur Talh (KTN 11/A) originally described by WINKLER (1939). However, neither LE QUELLEC (2005, 2009) nor the author (ZBORAY 2005b, 2009b) made special mention of them, nor was their significance realized.

It was only after the finding of site CC 21 (BORDA 2008), which contains a remarkable group of dancing bicolour girls or women (fig. 7), that this style was re-studied. The human depictions are quite different from the elongated figures of the Uweinat cattle pastoralists. Generally they are much smaller on scale, with natural body proportions, often with digits depicted on the hands. The cattle associated with these human figures also do not conform to the definition of the 'standard' Uweinat cattle, being more rounded and even proportioned, well illustrated by the ensemble of site KTN 11/A (fig. 8). These elements by themselves point towards defining the "people in double loincloths" as a separate distinct style.

However, one of the female figures of site CC 21 is wearing the same type of shoulder bag/quiver which is considered a defining feature of the Uweinat cattle pastoralist style (fig. 7, left). This suggests a cultural continuity and leaves open the question of whether these paintings should be treated as a separate style or a mere variation of the pastoralist style. With the very few available samples, this question may only be decided if more "double loin-cloth" paintings are discovered.

Wadi Sora

Ever since their discovery by the Hungarian explorer László ALMÁSY (1935, 1936), the paintings of the large shelter at Wadi Sora (WG 52) have been something of a mystery. The depicted humans (and the few animals) were very unlike anything else seen in the region, and interpretation was made more difficult by the very eroded nature of the shelter, with only a fraction of the original painted surface remaining. RHOTERT (1952) used the term *Keilstil* (wedge-style) on account of the triangular shape of the upper torsoes of some of the figures; however, this is a mere repetition of a descriptive term coined by FROBENIUS (1931) for rock art in a very different geographical and temporal context. MUZZOLINI (1995) made a comparison with the 'roundheads' of the Tassili, but till 2002 no analogies or better preserved

examples were available. The only observation one could make was that the paintings contain a very high degree of abstract symbolism (fig. 9).

With the discovery of the “cave of the beasts” (WG 21) in 2002 the picture changed dramatically. The new shelter contained the same type of paintings, showing humans and wild fauna, superimposed on a “wallpaper” of negative hand (and occasionally foot) prints, in perfect state of preservation. One partially damaged figure in WG 52 proved to be a strange “headless beast”, of which dozens of examples were depicted in the new site, together with some of the characteristic “swimming” figures, thousands of other human figures and pictures of wild fauna (mainly giraffe, dama gazelle, ostrich). While some isolated individual human figures (and animals) are comparable to those at some Jebel Uweinat sites, the complete ensemble of figures points to a very distinct well-definable culture. One notable feature is the complete absence of any domesticated fauna on the depictions with the exception of very few dogs, the themes depicted suggest a hunter-gatherer society with no indication of any organized food production.

The most distinctive defining feature of the style is the “headless beast”, an abstract composite creature that appears to be at least in part feline, with no readily identifiable head. A feature that could be interpreted as a ‘mouth’ is evident on a couple of the examples, showing the creature appearing to devour a human being (fig. 10). However, these scenes could equally be interpreted as human figures emerging from the beast. In many cases it has apparent male attributes, with a group of people surrounding and touching the penis and other body parts as if restraining or adoring it. An alternative suggestion is that the ‘penis’ may in fact be the navel (Tilman Lennsen-Erz, personal communication).

While elements of the Wadi Sora style appear elsewhere (see “Uweinat elongated roundhead” and Wadi Wahesh styles, below), the “headless beast” is unique and appears to be the central feature of many of the larger compositions depicted on the paintings. A further five shelters have been recorded, all in the Wadi Sora vicinity, containing recognizable depictions of this “headless beast”.

In both the principal shelter of Wadi Sora (WG 52) and the “Cave of Beasts” (WG 21) there is a row of small figures in a contorted posture which ALMASY (1935, 1936) called “swimmers” (in fact they might be doing any number of things, swimming being the least likely). They appear to form a part of the composition involving the “headless beasts” and are considered another defining feature of the style (fig. 9). Both the beasts and the swimmers, together with the compositions surrounding them, suggest a very high

degree of abstraction and symbolism; clearly these images and their connotations carried a very special significance to the people who made them.

Certain authors (D'HUY & LE QUELLEC 2009, BARTA 2010) compared some elements of the Wadi Sora style with elements of the Egyptian iconography and professed to see the origins of Ancient Egyptian religion in the Wadi Sora paintings. However, invariably the basis of such conclusions was the process of taking isolated elements out of context from both cultures and only treating the similarities, while ignoring the differences and the lack of any systemic relationship within the remaining corpus of evidence. It is the firm opinion of the author that there is no demonstrable link between Wadi Sora (or any of the discussed other prehistoric cultures of the central Libyan Desert) and the Nile Valley. This is not to say that such a link is entirely inconceivable, however at present there is no evidence to support it.

In contrast to the above two unique elements, the remainder of the Wadi Sora repertoire is less diagnostic. Human figures are depicted in a number of ways, with or without body decoration, with varying body proportions. The same may be said of the depicted wild fauna and the negative handprints. Some admitted similarities with paintings found along the southern side of Jebel Uweinat prompted LE QUELLEC (2005, 2009) to use the term “Wadi Sora style” to encompass the entire Gilf Kebir – Jebel Uweinat region. However, more recent finds of the so-called “Wadi Sora” type human figures at Jebel Uweinat present a clear pattern, distinctly different from Wadi Sora, and allow for the definition of distinct styles on their own right.

LE QUELLEC (2005, 2009) considered the small “swimming” figures to be a separate style, mainly on account of a single figure located at site SU 16 in southern Uweinat. While the similarity is acknowledged, the author is of the opinion that the two known examples of Wadi Sora “swimmers” are an integral part of the Wadi Sora iconography associated with the “headless beasts”. The single southern Uweinat example is unrelated if the full context is compared (in fact, it fits comfortably into the definition of the “Uweinat elongated roundhead” style), there is no need for separate terminology.

In light of the above, the “Wadi Sora style” needs to be re-defined as one with a very narrow geographical range, associated with a culture that inhabited a 30-km stretch of land below the cliffs of the western Gilf Kebir. Based on the large number of superimpositions at WG 21, the culture appears to have lasted for a significant period of time. However, the similarities with some Uweinat paintings are too strong to be ignored, they seem to be evidence of cultural contacts or perhaps cultural continuity between the Wadi Sora people and groups with similar subsistence strategies living at Jebel Uweinat some 200 km away. These similarities will be discussed in detail

below, in the sections describing the respective styles restricted to the Jebel Uweinat area.

“Uweinat Roundheads”

The first known “round-head” site was instantly recognized as being distinctly different, unlike all other Jebel Uweinat paintings hitherto known. It was the panel at Bu Helega in Karkur Idriss (BH 4) described by VAN NOTEN (1978). However, this was not the first time such figures were observed. Rhotert had already recorded and reproduced a site in Karkur Talh (KT 72/D) with such figures, although in a very damaged condition (RHOTERT 1952, plate XXV/11,12). As an isolated example, its significance was not recognized. Winkler also found a site with such paintings (KTN 21/A), however did not even publish the photo, which laid unnoticed in the Egypt Exploration Society archives in London for over sixty years (EES, Winkler archives, photo M1107).

In the past ten years over fifty further sites were found with these characteristic paintings, mostly at Jebel Uweinat in all the principal valleys and among the scattered inselbergs to the north-east, with a few additional ones at Jebel Arkenu (BORDA 2009, 2010, 2011b; ZBORAY 2003, 2006). This provides a sufficiently large sample to define the style.

The exclusive subjects of the paintings are human figures. Sometimes only one is being depicted, but they are generally found in groups. The main defining feature is the circular round head, exaggerated in size compared to normal body proportions, and is completely void of facial features. The rest of the body is of normal proportions, with a triangular torso and narrow hips, the arms and legs are robust and proportionate, hands and feet are drawn without any digits (fig. 11). Sometimes a secondary white circle or oval is seen attached to, and partially overlapping the head. Often but not always split white bands are depicted on the upper arms. In some cases the white paint weathered away, resulting in an appearance as if the arms were dangling on thin threads. The figures are shown in contorted body positions which are being repeated across the range of sites. The figures are mostly plain monochrome, but in some cases body decoration can be observed (arm and leg bands, stripes and chevrons on trunk), in some rare examples some kind of dress is discernible (fig. 12), and some figures may be seen holding bow and arrows (fig. 13). The human figures range from approximately 15 to 30 cm in size. Despite the complete lack of any animals associated with human figures, depicting bows suggest hunting to be the primary means of subsistence.

The nomenclature for this particular style is still open to some debate. The term “Uweinat roundheads” (to be always used within quotation marks) signifies the geographical range and defining characteristic of the style, while maintaining the very necessary distinction from the roundhead style as used in central Saharan rock art terminology. The problem comes from the very similar visual appearance, combined with the hesitancy to use the same terminology for two groups separated by distances of several thousand kilometres of hyperarid desert. MUZZOLINI (1995) noted that had the BH 4 paintings been found in the Tassili, there would be no hesitation in assigning them to the later roundhead period. For the time being there is no evidence for any relationship, however nor is there any for the contrary, leaving the nature of these people, and their affiliation with the central Saharan roundheads one of the most exciting questions to be answered by future research.

Originally LE QUELLEC *et al.* (2005) used the same “Uweinat roundhead” term, but more recently (LE QUELLEC 2009) proposed “Libyan Desert roundheads”, on account of a single figure attributed to the Wadi Sora area (2005, fig. 745), which would extend the range of this style to the Gifl Kebir. However, the attribution of the published figure remains in question, as it is not located in any of the known and recorded sites in the area (which the author and Le Quellec visited together in 2003), and could be the result of accidental mislabelling of the photograph. However, in any case a single site in the Gifl Kebir would not materially change the centre of the distribution, firmly located within the Uweinat massif. The “Uweinat roundhead” terminology is appropriate even if a few sites are found in the future away from the immediate vicinity of the mountain.

“Uweinat Elongated Roundheads”

In 1998 Le Quellec recorded (but did not publish at the time) a number of sites to the immediate south of Jebel Uweinat which had distinct round featureless heads, and bore some resemblance to some human figures at Wadi Sora, and also to some extent to the “Uweinat roundhead” figures. Initially the author (ZBORAY 2005b) considered them to be a variation of the “Uweinat roundhead” style, while LE QUELLEC (2005, 2009) used the “Wadi Sora style” to describe them. Fortunately, in the elapsed years several well-preserved new sites were recorded containing paintings of this peculiar style (BORDA 2009, 2010; ZBORAY 2005a, 2006) and the corpus of evidence (a total of twenty sites, all at Jebel Uweinat and environs) permits the definition of a distinct style.

The theme of the paintings is exclusively human figures, echoing the classic “Uweinat roundhead” style; however, the depiction of the figures is markedly different. The head is completely round and mostly featureless, but here the similarity ends. The head is small in comparison to the rest of the body and is joined to the trunk by an unnaturally long neck (usually executed with white paint which in many cases disappeared), which is the main defining characteristic of the style. The body is unnaturally thin and elongated, with legs being relatively thick and short in proportion to the rest of the body. The arms are very disproportionate, short and stubby, sometimes just shown as a short featureless line. The figures often bear extensive body decoration and some hold bow and arrows, sometimes in a shooting posture (figs. 14 & 15). Some (but not all) depicted bows appear to be composite ones (fig. 15), a technologically more advanced construction than the simple bows appearing on practically all other known depictions, irrespective of style. There appears to be a complete absence of animals shown; however, in some very weathered shelters it is possible that some adjacent animals appearing to belong to later styles may in fact be a part of the earlier scenes. Regardless, they appear to be a hunting society, like the “Uweinat roundheads”.

While some elements of the body decoration and the disproportionate small round head may be compared to human figures of the Wadi Sora style, there are some key differences. Most importantly, none of the Wadi Sora style human figures display the elongated white neck that joins the head to the upper body, while all the figures attributable to this style do. Wadi Sora figures display a wide range of body proportions, while the ones at Jebel Uweinat always present the long neck and body with disproportionately short arms.

There are some similarities with the “Uweinat roundhead” style, principally in some body postures and the round head, however here the similarity ends. Enough examples of both have now been found to state with confidence that the overall body proportions are consistent and distinctly different across the two styles. Furthermore, the two styles are almost never mixed. In the very few sites where both styles may be observed, the two are either on separate panels or at widely spaced areas of the site (with the single notable exception of EH 33, the significance of which shall be discussed below).

In light of recent finds (BORDA 2009), the geographical range of this style appears to overlap that of the “Uweinat roundhead” style, but the frequency of the sites is less than half. Most of the known sites are along the southern foothills of Jebel Uweinat, with a few known in Karkur Talh, Jebel Arkenu, the inselbergs immediately to the north-east of Uweinat and at an isolated site near Clayton’s Craters about 50 km further to the north-east. On account

of the geographical range and the key defining features of the bodies, the term “Uweinat elongated roundheads” is proposed for this distinct style.

Miniature Style

The first of these characteristic figures were observed by RHOTERT (1952) in a shelter in southern Karkur Talh (KTS 15/C), underlying several layers of cattle pastoralist paintings. He called them *miniaturstil*, aptly describing their main feature. The author (and others quoting the author) used the term “small human figures” in the past; however, LE QUELLEC (2009) correctly pointed to the nomenclature used by Rhotert, which should have precedence.

Rhotert could only work from a single example; however, finds in the past decade brought the total of known sites to twenty-eight, including an excellently-preserved large shelter (KTN 31, ZBORAY 2003) that allows the proper definition of the style.

The subject matter is human figures and wild fauna. The human figures are depicted on a very small scale, adults 8-15 cm, with tiny figures of children as small as 2-3 cm. Family scenes are common, with mothers holding children in various but realistically depicted postures. This ‘mother with miniature child’ scene is perhaps the best defining element of the style. Males and females are clearly distinguishable, females having prominent breasts and wearing skirts, while males wear loincloths and frequently carry bow and arrows. Hunting scenes are common, with males shooting arrows at very well-drawn and proportioned giraffe. There is no hint of any domestication. Overall, the style has a very high degree of realism in comparison with any of the above-mentioned styles (fig. 16).

LE QUELLEC (2005, 2009) identified one giraffe hunting scene (found at site KTW 21/A, which also contains classic family scenes of the Miniature style) as a different style, *Petit rayé* (“small-striped figures”) on account of the hunters having striped decoration on their bodies (fig. 17), as opposed to the undecorated torsos in the family scenes. However, the author believes that such distinction is unwarranted, especially based on a single example. There are several giraffe hunting scenes attributable to the Miniature style with unstriped bodies that are practically identical to the single striped one at KTW 21/A except in this one detail, associated with other miniature-style figures in the same shelter (fig. 18). The *Petit rayé* figures are considered to be just a variation of the Miniature style, and not a distinct style.

The geographical range of the style extends throughout Jebel Uweinat, with the main concentrations in Karkur Talh and Karkur Ibrahim, the style

being conspicuously absent from the southern part of the mountain. A recent find by BORDA (2010) extended their range to Jebel Arkenu.

Wadi Wahesh Style

The Wadi Wahesh style, named after the locality where most of the principal examples are located, was the last distinct style of paintings to be recognized at Jebel Uweinat. Already in 1998 Le Quellec found some figures of wild animals at southern Uweinat which did not appear to fit any of the known categories, but bore resemblance to some of the paintings at Wadi Sora. In the absence of any further analogies, these were assigned to the Wadi Sora style (LE QUELLEC *et al.* 2005) together with the figures now recognized to be “Uweinat elongated roundheads”.

In March 2005 a group of large and well-preserved sites were found in shelters located in the upper reaches of Wadi Wahesh (ZBORAY 2005a) which placed these isolated and mostly damaged earlier examples into context. A very distinct style was revealed, centred on the southern part of Jebel Uweinat, with a few isolated (and sometimes doubtful) examples occurring in the Karkur Talh area. At present there are about twenty sites that may confidently be assigned to this style, the majority of them in the very narrow geographical confines of the upper Wadi Wahesh, with a few scattered sites along the southern side of Jebel Uweinat and in Karkur Talh. Recently one isolated site with paintings possibly attributable to this style was found near Clayton’s Craters about 50 km north-east of Jebel Uweinat (BORDA 2009). The style is not easy to define, if individual human figures are observed many features are common to both “Uweinat elongated roundheads”, the Miniature style and to some of the Wadi Sora paintings.

Perhaps the biggest set of commonalities are with Wadi Sora, with similarities in body decoration, all digits shown on the hands, and having negative handprints underlying some of the paintings. Undoubtedly, if some Wadi Sora figures were transplanted into Wadi Wahesh scenes (and vice versa), they would comfortably blend in with the rest of the scene.

The most conspicuous feature of the style is the frequent depiction of individual digits on the hands of human figures, sometimes in an exaggerated manner. However, these are intermingled in apparently the same or related compositions with figures lacking the depiction of digits. Admittedly the scale, posture and appearance of some of the depicted humans echo the Miniature style, suggesting some possible contact or relationship. However, the key feature of the Miniature style, the family scene of mother and child, is

absent. There is a presence of non-human elements common with the Wadi Sora style (negative handprints, ostriches without body), a variety of wild fauna is shown (giraffe, various gazelle and antelopes), and there are numerous depictions of domesticated dogs (fig. 19). The depicted wild fauna (including a giraffe held by a tether tied to its neck) suggests a hunter-gatherer society. There are however some elements of the Wadi Wahesh style that are unique and do not readily give themselves to interpretation. These are abstract shapes made out of dots (fig. 20) without any known analogies.

It is to be stressed that the separate definition of the Wadi Wahesh style does not preclude a connection with the Wadi Sora people. The key defining features of Wadi Sora, the “headless beast” and the “swimmers” (and many other motifs), are missing. However, the large number of superimpositions observable in the “cave of beasts” (WG 21) suggest that the Wadi Sora style may, with further study, be subdivided into internal periods. It is not inconceivable that the Wadi Wahesh style will be found to correspond to one such subdivision, which lacks the “headless beast” and associated figures, but retains other common elements.

One clue supporting a possible link between Wadi Sora and Wadi Wahesh was the recent finding of a shelter (BORDA 2009) at Clayton’s Craters, about one third of the distance between Jebel Uweinat and Wadi Sora. The shelter contains very weathered paintings, but it is possible to recognize several negative handprints, and small-scale human figures that are identical to the more crudely executed ones at the principal Wadi Wahesh sites in every detail. The shelter also contains “Uweinat elongated roundhead” figures, a style frequently found in shelters in association with Wadi Wahesh style paintings.

Relative Chronology

The key to the establishment of a relative chronology in the area is the existence of superimpositions, suggesting a temporal succession of identifiable styles in a given geographical location. However, a fundamental hypothesis is made that cannot be confirmed by the overpainting sequences alone. It is assumed that the styles may be associated with different cultures as defined by their characteristic traits and geographical range, occupying overlapping geographical areas in different time periods, or occupying separate geographies in possibly overlapping time periods.

One indirect confirmation of the above hypothesis comes from the lifestyles of the depicted people, as inferred from the paintings. Both hunter-

gatherers and nomadic herders require a large area of land for subsistence in marginal environments. Ethnographic analogies suggest that it is extremely unlikely for two rival groups of hunter-gatherers to coexist in the same area. While there are some examples for the coexistence of distinct groups of pastoralists and hunters, they are restricted to areas of abundant resources, which is very unlikely in a climatically-stressed environment like the Jebel Uweinat region. If we associate the distinct styles with distinct cultural identities, it seems very unlikely that these coexisted at the same time in the same space.

Different degrees of weathering of paintings of distinct styles at the same locality, whether in a superimposition relationship or adjacent to each other, may provide evidence to confirm that styles were separated in time. This would depend on the assumption that the makers of the later paintings did not attempt to erase by washing or other means the earlier ones. This assumption is supported by observations of panels where there are multiple superimpositions of paintings in the same style. In these cases it is clear that earlier paintings were not erased, but were simply painted over, a practice very common among cattle pastoralist paintings. In such cases, there is little observable difference in weathering. In contrast, all of the styles predating the cattle pastoralist paintings are distinctly fainter and more weathered, both when observed overpainted by cattle pastoralist paintings or where only the older styles are found at a site. This suggests that relative weathering may be a good indicator of temporal differences.

Superimpositions

Although superimpositions are fundamental to the establishment of a relative chronology of rock art in a given area, until recently few opportunities arose for such dating in the Gilf Kebir – Jebel Uweinat area. The already mentioned KTS 15/C site was one of them, which ALMASY (1935) called the key to the chronology of the region. In this site he recognized three layers from the cattle pastoral period, and the fourth and oldest one was what Rhotert called the Miniature style.

Fortunately, in the last ten years several new sites have been located which allow for the establishment of a firm sequence of styles both at Jebel Uweinat and the Gilf Kebir.

In the Wadi Sora area, four sites contain Wadi Sora style figures that are overpainted by cattle pastoralist figures (figs. 21 & 22). While none of the sites have a figure of the “headless beast” in a superimposition, the earlier

paintings are clearly of the Wadi Sora style, based on analogies with the large key sites. Thus, demonstrably the Wadi Sora style predates the cattle pastoralist style in the western Gilf Kebir. In the remainder of the Gilf Kebir only cattle pastoralist paintings may be found without any association with other styles.

At Jebel Uweinat there are several sites where cattle pastoralist paintings are found superimposed over older paintings. The key site is KTW 21/A, where small red figures of the cattle pastoralist style overlie a giraffe-hunting scene attributable to the Miniature style, which are yet over larger “Uweinat roundhead” figures (fig. 23).

In the already mentioned KTS 15/C site the Miniature style is clearly under the cattle pastoralist paintings, while at KTN 13/B a series of “Uweinat roundhead” figures are under the cattle paintings. In the large shelter of Wadi Waddan (WWD 21), MENARDI NOGUERA & SOFFIANTINI (2008) uncovered with image enhancement software a pair of very faint large “Uweinat roundhead” figures under vivid cattle pastoralist paintings. Some recent finds (site KTW 51, ZBORAY & BORDA 2010) provide further evidence for the Miniature style – Cattle pastoralist style sequence. The combined evidence points to the following sequence: “Uweinat roundheads” predate the Miniature style, which in turn predates the Uweinat cattle pastoralist style.

In the key site of the Wadi Wahesh style (WW 52), there are a number of superimpositions involving cattle pastoralist scenes over earlier Wadi Wahesh type figures, also observable in one of the adjacent shelters (fig. 24). There are a couple of “Uweinat elongated roundhead” figures in the same shelter. Fortunately, there is a small overlap with one of the Wadi Wahesh style figures (one that would be categorized as Miniature style were it in another shelter out of context), clearly establishing the earlier date of the “elongated roundheads” (fig. 25). A recent find (site KTW 53, ZBORAY & BORDA 2010) also confirms the placement of the “elongated roundheads” before the cattle pastoralist paintings. Thus, the following sequence may be established: “Uweinat elongated roundheads” predate the Wadi Wahesh style, which in turn predates the Uweinat cattle pastoralist style.

A fortuitous observation made recently on a detail of a photograph taken by the author at site EH 33 at the end of 2010 finally provides the long-sought link between the two sequences at a point before the cattle pastoralists. While the scene is very faint and weathered, using dStretch image enhancement software it is possible to ascertain (partially based on the surrounding context) that a “Uweinat roundhead” figure executed in dark red partially overlaps several small “elongated roundhead” figures executed in yellow, barely visible on unenhanced photographs. The evidence suggests

that the “Uweinat elongated roundhead” style is the earliest of the Uweinat cultural sequence (fig. 26). However, given the weathered state of this single example, it is hoped that further finds will be made to support this conclusion.

At present, the position of the Wadi Wahesh style relative to the “Uweinat roundhead” and the Miniature styles remains unknown. The lack of any apparent geographical overlap does not preclude a possible contemporarity of the Wadi Wahesh and Miniature styles, though inconclusive evidence from relative weathering (see below) may suggest an earlier date for the Wadi Wahesh style.

Relative Weathering

The relative weathering patterns by themselves provide few and unreliable clues to the age of various styles. Apart from the assumption of the lack of intentional erasure, allowance must be given for more intense weathering in wetter climate periods, thus the magnitude of faintness cannot be directly equated with absolute age differences. However, when the full range of available data are looked at, they may be used to support conclusions derived from other evidence.

In all four mentioned examples, the Wadi Sora style paintings are much more weathered than the overlying cattle pastoralist ones. In three of the four cases, the cattle pastoralist paintings appear practically unweathered, with faint but recognizable Wadi Sora figures underneath (figs. 21 & 22). In the fourth case the cattle pastoralist paintings themselves are much weathered, and the underlying Wadi Sora style figures are so faint that they can only be recognized using image enhancement software. In addition, all of the Wadi Sora style paintings in the area show much more intense weathering than the cattle pastoralist paintings. The evidence suggests that a considerable time period elapsed between the Wadi Sora style paintings and those made by the cattle pastoralists.

The “Uweinat roundhead” sites are consistently among the faintest and most weathered sites, which is only partially explained by the fact that their makers favoured vertical rock faces as opposed to the more protected shelters. Even in sheltered locations the “Uweinat roundhead” paintings are faint, more markedly so than any of the other pre-cattle pastoralist styles with the exception of the “elongated roundheads”. In the case of superimpositions, at KTW 21/A the “roundhead” figures are markedly fainter than the overlying Miniature style (fig. 23). In cases where “roundhead” paintings

are overlain by cattle pastoralist figures, there is a similar or greater difference in faintness as observed relative to the Miniature style paintings.

Essentially the same may be said of the “elongated roundhead” paintings. In terms of weathering there is little to differentiate them from the classic “Uweinat roundhead” paintings. There is a marked difference in faintness compared to the Wadi Wahesh figure at WW 52 (fig. 25) and an even greater difference compared to cattle pastoralist paintings at a recently discovered site in upper Karkur Talh (KTW 53, ZBORAY & BORDA 2010).

The Wadi Wahesh and Miniature style paintings show a moderate degree of additional weathering in comparison to the cattle period paintings, and some well-protected shelters show very good preservation (comparable or better than that exhibited by the Wadi Sora style paintings in more favoured locations).

There is a single shelter in Karkur Talh (KT 99/D) where a couple of Miniature style figures are shown in the company of a pair of larger and smaller figures with distinct digits on the hands, which may tentatively be assigned to the Wadi Wahesh style. The figures with digits are considerably more weathered than the Miniature style figures; if we accept the style assignment, this would imply an earlier age for the Wadi Wahesh style (fig. 27). It is appealing to consider the similarities between Wadi Wahesh and the Miniature style combined with a sequential chronology as a sign of cultural continuity, with the Wadi Wahesh style giving rise to the Miniature style through time. However, more sites need to be found before such a relationship may be suggested with any level of confidence.

Overall the relative weathering patterns support the conclusions derived from the superimpositions and point towards a substantially greater age for the “Uweinat roundheads” and the “Elongated roundheads” than for the cattle pastoralists. The Miniature style and Wadi Wahesh styles occupy a period in-between with their relative positions at present open to debate.

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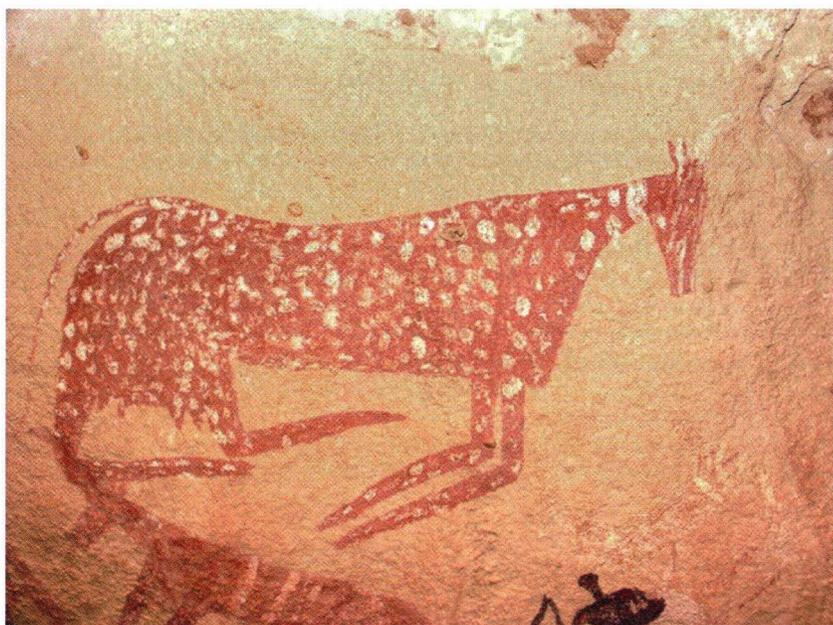


Fig. 1. — Cattle painting, site KTW 26/B, Karkur Talh, Jebel Uweinat.

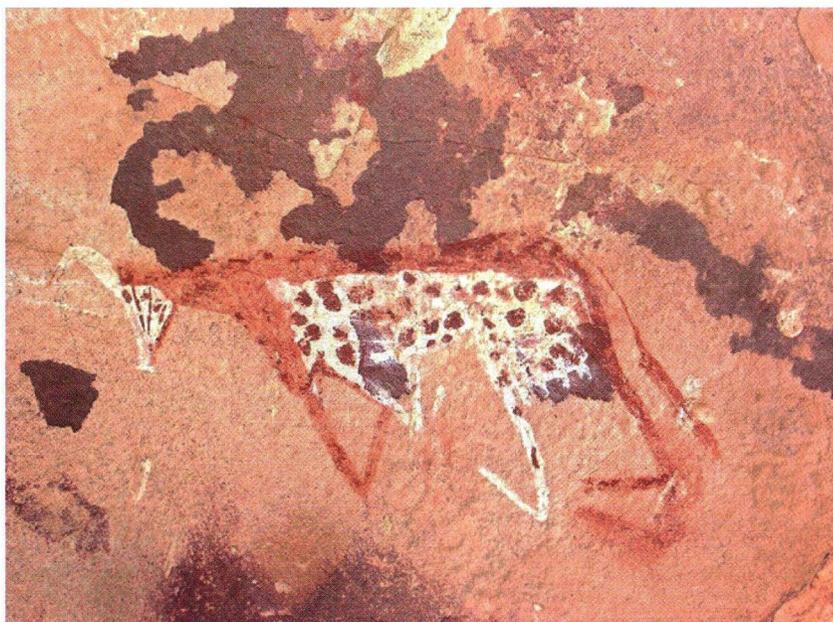


Fig. 2. — Cattle painting from site AM 51 in the central section of Wadi Abd El Melik, Gilf Kebir.

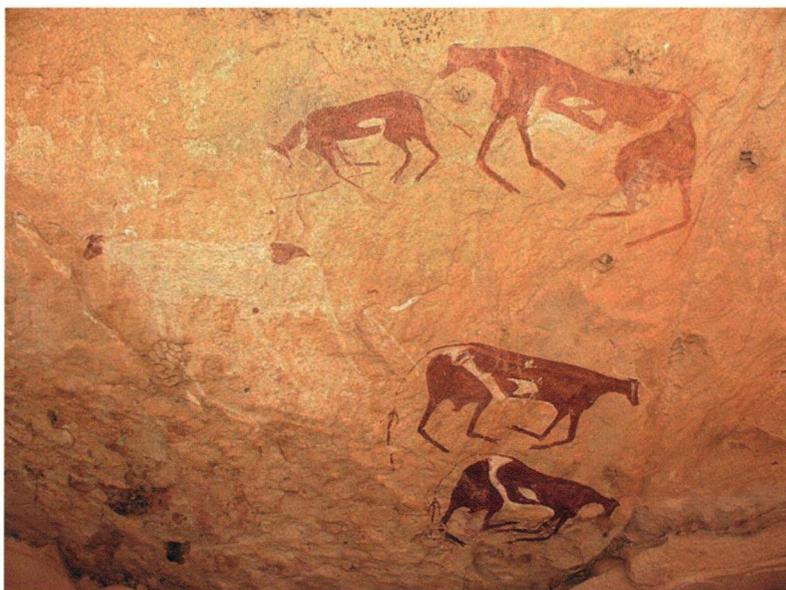


Fig. 3. — Cattle from site KT 85/B, Karkur Talh, Jebel Uweinat.

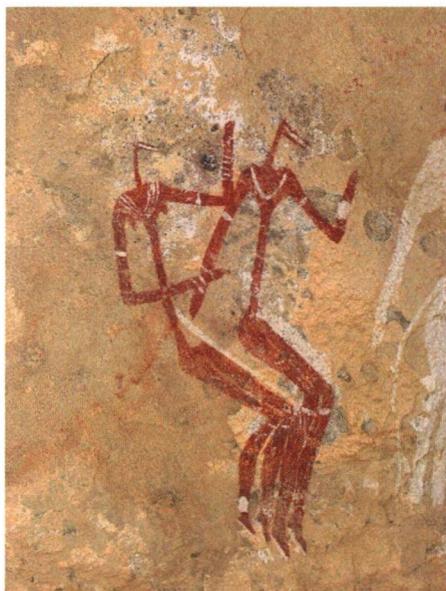


Fig. 4. — Male and female couple conforming to Le Quellec's *filiforme à tête en bec d'oiseau* definition, KTW 51, Karkur Talh, Jebel Uweinat.

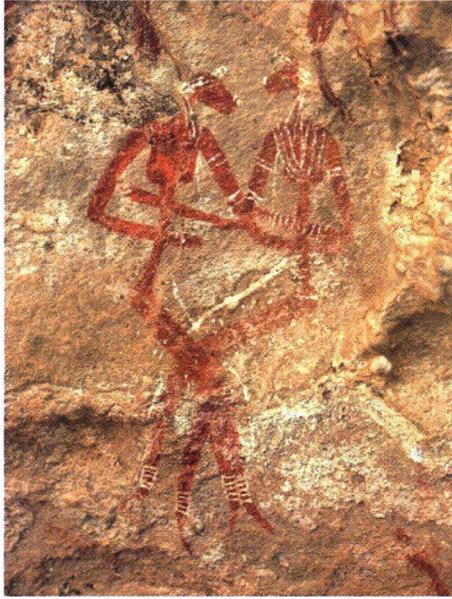


Fig. 5. — Pair of female figures conforming to Le Quellec's *longiligne* definition, KTW 16/B, Karkur Talh, Jebel Uweinat.

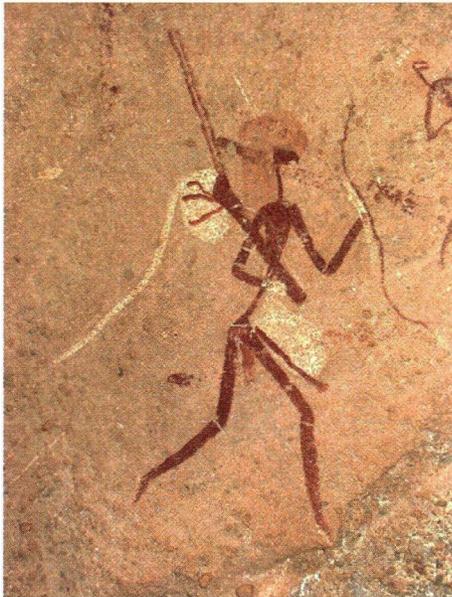


Fig. 6. — Running archer, site KTW 26/B, Karkur Talh, Jebel Uweinat.

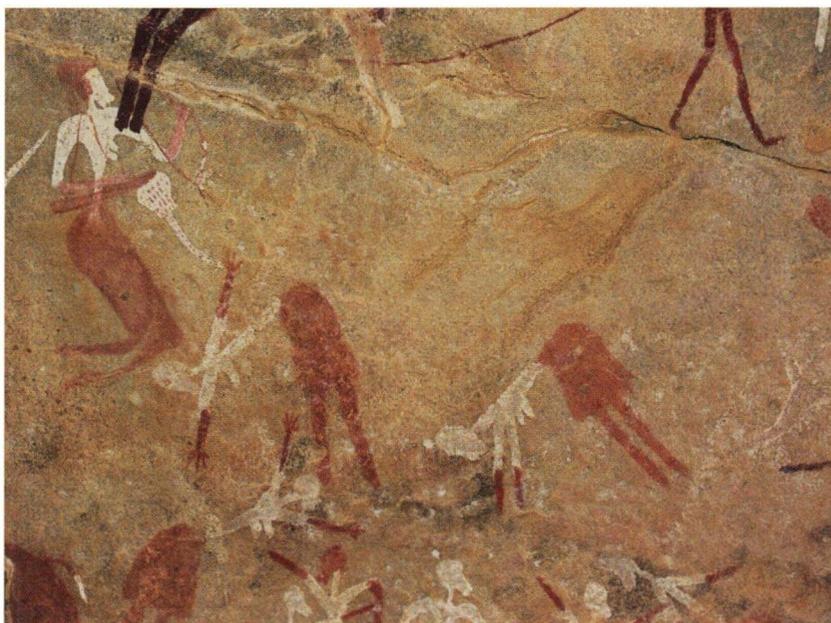


Fig. 7. — Dancing females, site CC21, on plain north of Jebel Uweinat (note shoulder bag/quiver on figure at left).

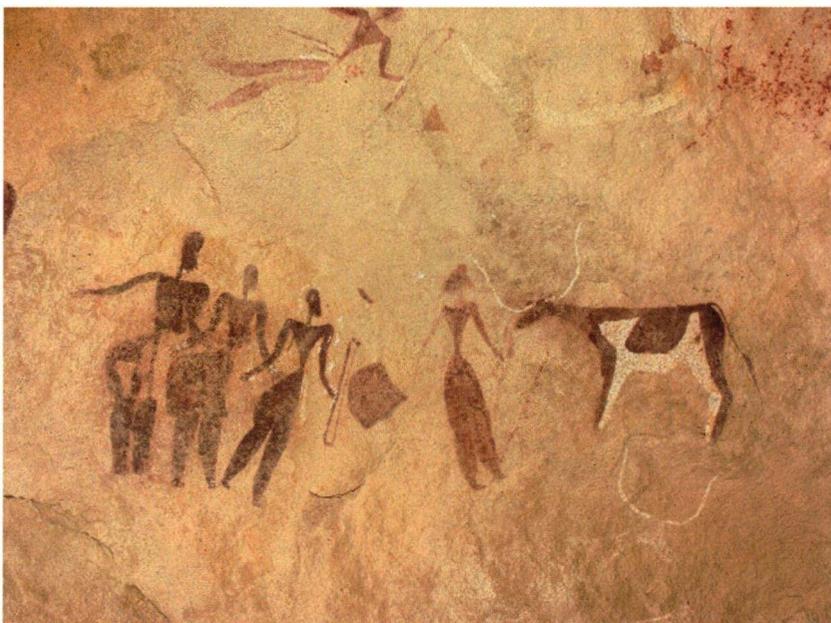


Fig. 8. — “People in double loincloths” and associated cattle, site KTN 11/A, Karkur Talh, Jebel Uweinat.

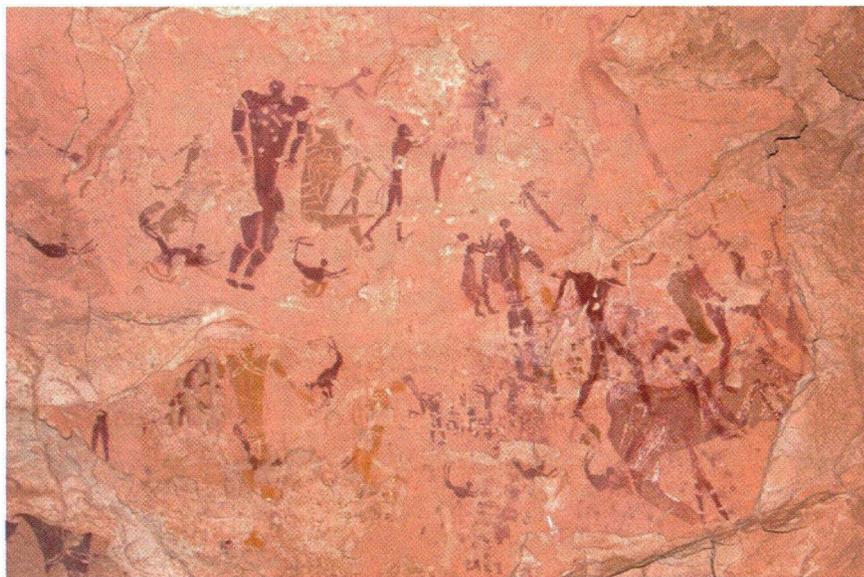


Fig. 9. — Wadi Sora main shelter (“Cave of Swimmers”), site WG 52, western Gilf Kebir.

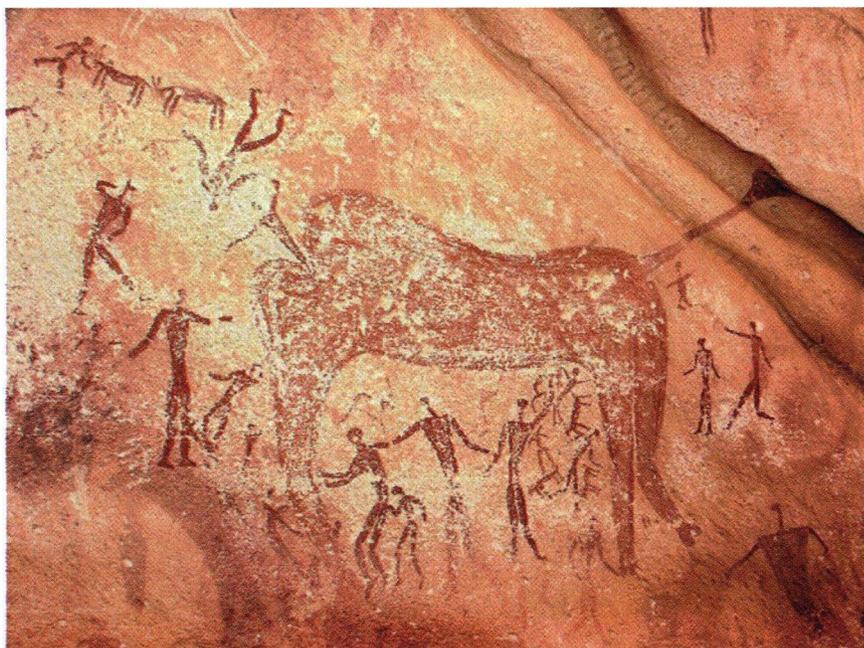


Fig. 10. — Headless beast, site WG 21, “Cave of Beasts”, near Wadi Sora.

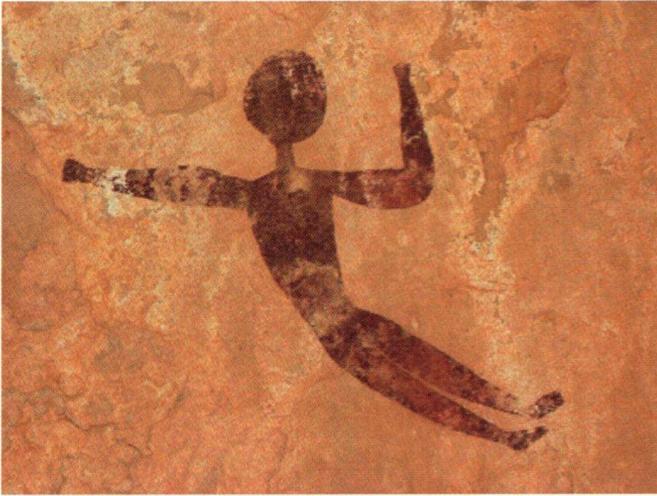


Fig. 11. — Typical “Uweinat roundhead” figure, site KTW 31, Karkur Talh, Jebel Uweinat.



Fig. 12. — Elaborately dressed and decorated “Uweinat roundhead” figure, site KTW 11/D, Karkur Talh, Jebel Uweinat.

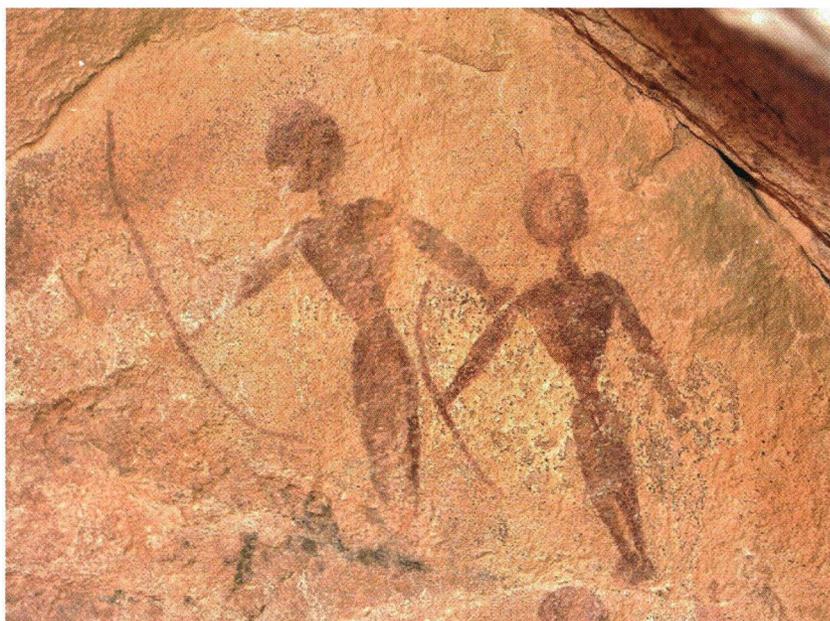


Fig. 13. — “Uweinat roundhead” figures with bows, site WH 41/D, Wadi Handal, Jebel Uweinat.



Fig. 14. — “Elongated roundhead” figures with elaborate body decoration, originally assigned to “Wadi Sora style” by Le Quellec, site SU 16, south Uweinat.



Fig. 15. — “Elongated roundhead” figures with bows and arrows, site KTW 27/G, Karkur Talh, Jebel Uweinat.

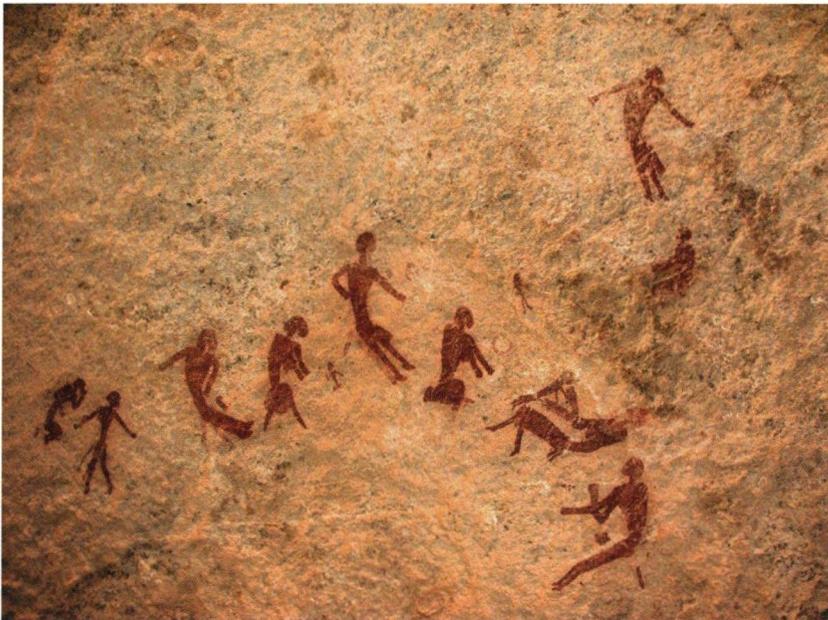


Fig. 16. — Miniature style figures, site KTN 31, Karkur Talh, Jebel Uweinat.



Fig. 17. — Giraffe hunt assigned to *Petit rayé* style by Le Quellec, site KTW 21/A, Karkur Talh, Jebel Uweinat.

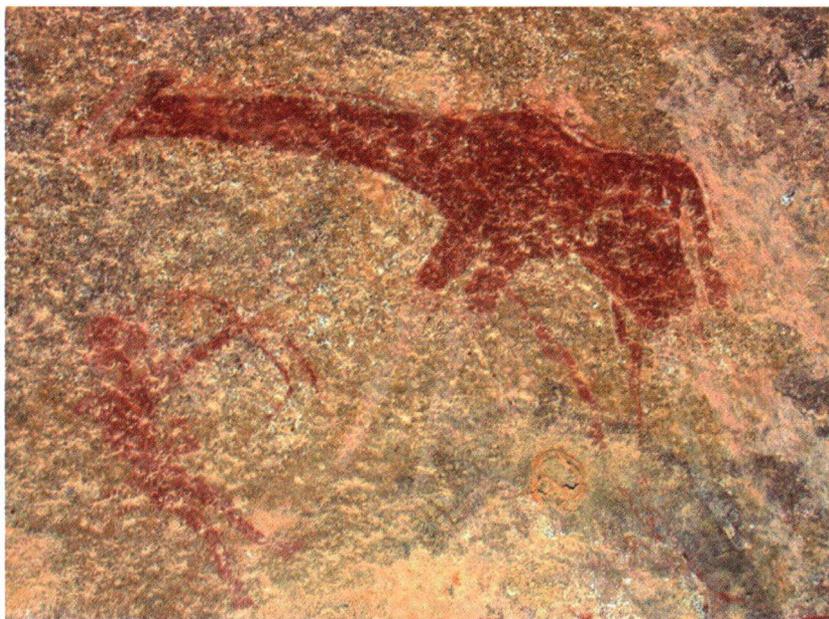


Fig. 18. — Giraffe hunt (Miniature style), site KTN 31, Karkur Talh, Jebel Uweinat.

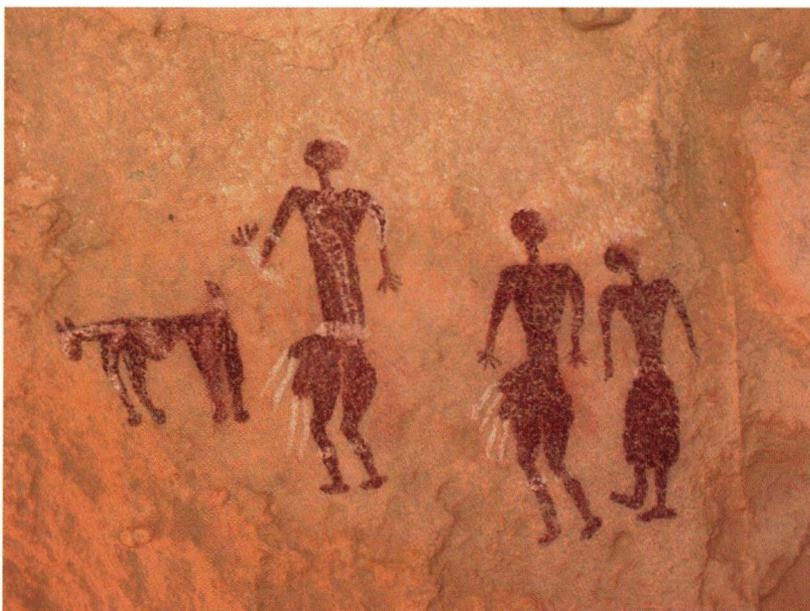


Fig. 19. — Wadi Wahesh style figures, site WW 52, Wadi Wahesh, Jebel Uweinat.

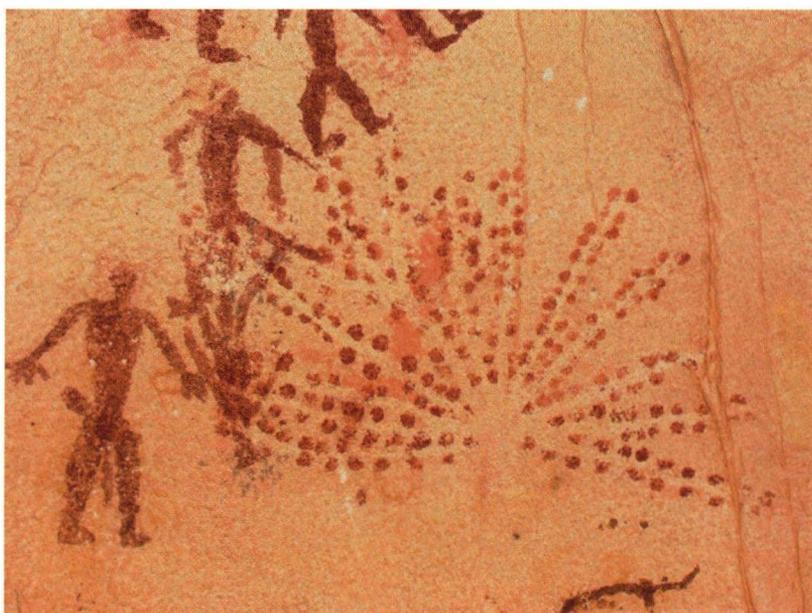


Fig. 20. — Abstract composition, site WW 56/A, Wadi Wahesh, Jebel Uweinat.



Fig. 21. — Archer of the cattle pastoralist style superimposed on faint Wadi Sora style figures, site WG 72, Wadi Sora environs, Gilf Kebir.

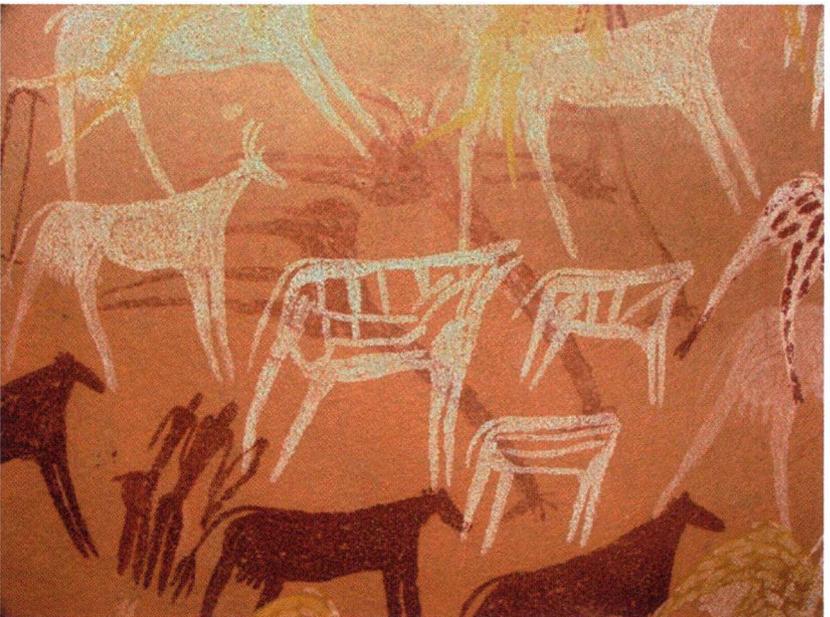


Fig. 22. — Cattle painted over Wadi Sora style giraffes, site WG 35, near Wadi Sora, Gilf Kebir.

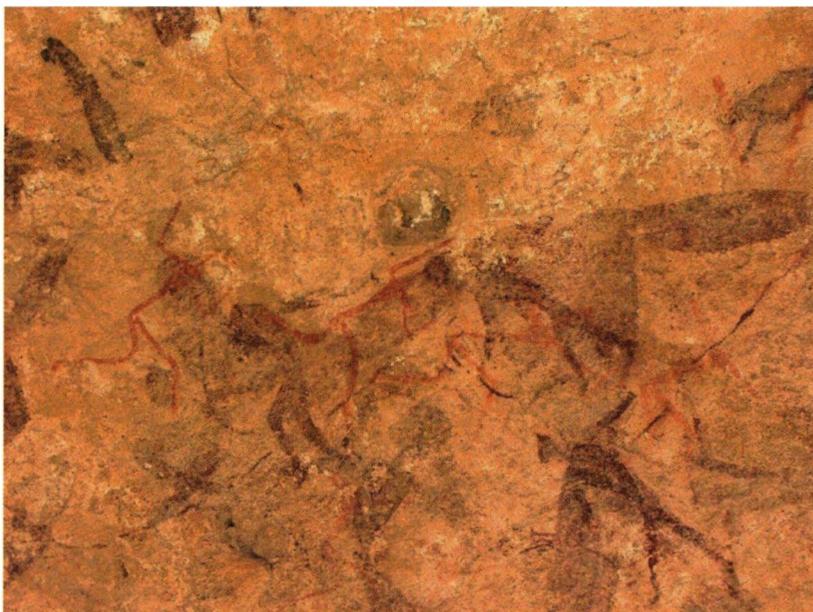


Fig. 23. — Superimposition sequence of three successive styles, site KTN 21/A, Karkur Talh, Jebel Uweinat.

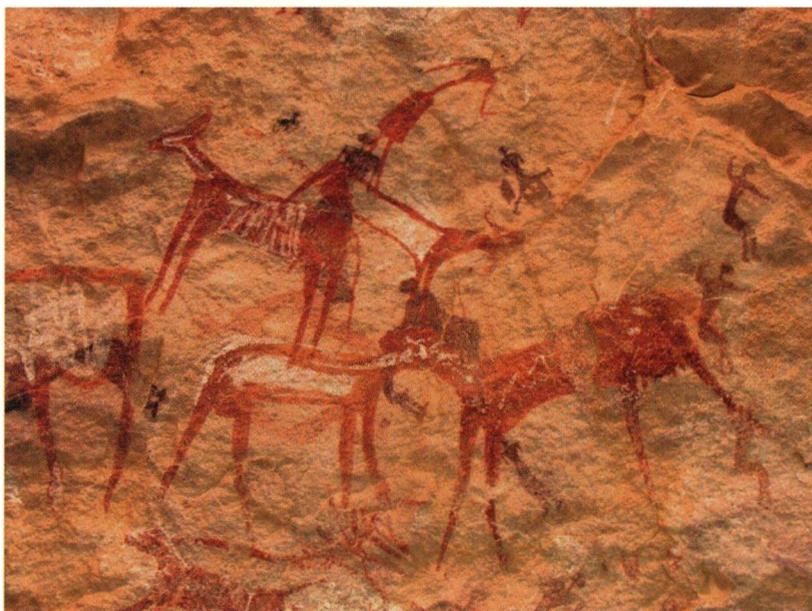


Fig. 24. — Cattle painted over Wadi Wahesh style figures, site WW 52, Wadi Wahesh, Jebel Uweinat.



Fig. 25. — Wadi Wahesh style figures superimposed on an “Elongated roundhead” figure, site WW 52, Wadi Wahesh, Jebel Uweinat.



Fig. 26. — “Uweinat roundhead” figure superimposed on small yellow “Elongated roundhead” figures, site EH 33, Emeri Highland, western Uweinat.

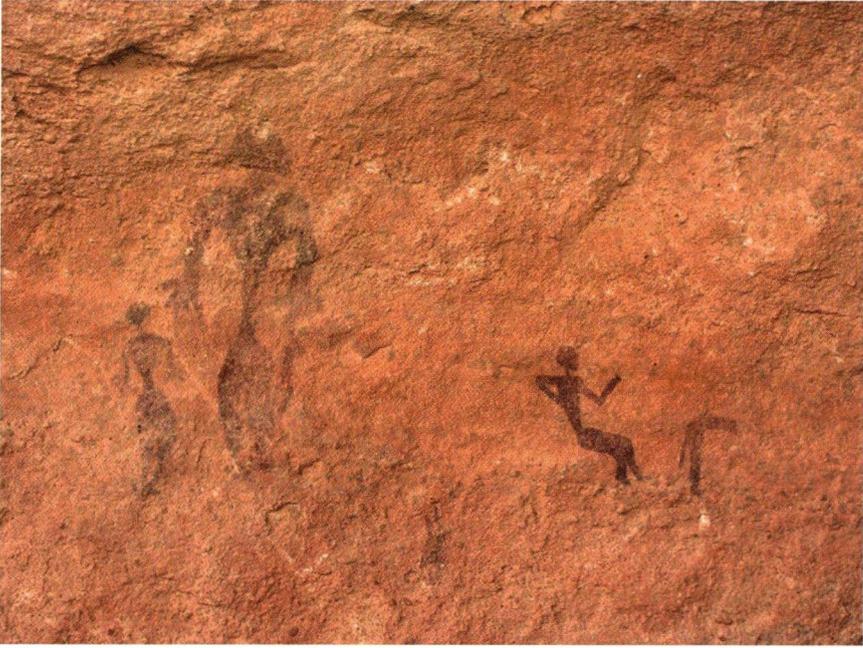


Fig. 27. — Possible Wadi Wahesh and Miniature style figures on the same panel, KT 99/D, Karkur Talh, Jebel Uweinat.

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Premiers témoignages d'un art rupestre pléistocène en Afrique du Nord: confirmation de l'âge des pétroglyphes de Qurta (Egypte) par datation OSL de leur couverture sédimentaire

par

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MOTS-CLES. — Art rupestre; Pléistocène; Datation par OSL; Egypte; Afrique du Nord.

RESUME. — La question de l'existence d'un art rupestre pré-holocène en Afrique du Nord a soulevé des débats pendant des décennies. Des trouvailles récentes en Egypte, plus spécifiquement à Qurta dans la vallée du Nil en Haute-Egypte, fournissent à présent les premiers témoignages d'un art rupestre figuratif sophistiqué datant du pléistocène, au nord du continent africain. Des sédiments éoliens ayant recouvert en partie les pétroglyphes des panneaux de Qurta II ont permis d'obtenir une suite de dates par la technique de luminescence stimulée optiquement (*optically-stimulated luminescence* ou OSL), démontrant que l'âge minimum de l'art rupestre remonte à ~15 000 années calendaires. Ces résultats prouvent indéniablement que les gravures rupestres de Qurta sont de loin les plus anciennes retrouvées jusqu'à ce jour en Afrique du Nord.

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Introduction

La question de l'existence d'un art rupestre pré-holocène en Afrique du Nord a soulevé des débats depuis 1974, lorsque certains pétroglyphes sahariens (libyens) ont été attribués au pléistocène supérieur (MORI 1974). Cette hypothèse a provoqué presque exclusivement des réactions de rejet (MUZZOLINI 1992, LE QUELLEC 1998). Jusqu'à présent, les pétroglyphes les plus anciens identifiés avec un certain degré de certitude en Afrique du Nord — les motifs dits «pièges à poissons» et les dessins figuratifs et géométriques associés à el-Hosh en Haute-Egypte — avaient été attribués à l'holocène ancien et datés provisoirement de ~9000 cal yr BP (HUYGE *et al.* 2001, HUYGE 2005). Il s'avère désormais qu'il existe dans la même région un art plus ancien remontant au pléistocène: l'art rupestre de Qurta.

Les circonstances particulières de la découverte de l'art rupestre de Qurta ont été rapportées en détail dans plusieurs publications préliminaires (HUYGE *et al.* 2007, HUYGE 2008, HUYGE & CLAES 2008). Qurta est situé sur la rive est du Nil entre Edfou et Assouan (24° 37' 45'' N, 32° 57' 45'' E) (fig. 1)*. Trois sites d'art rupestre y ont été identifiés: Qurta I, II et III (désormais QI, QII et QIII). Ils sont situés dans la partie supérieure des falaises de grès nubien qui bordent la plaine alluviale du Nil, à environ 35-45 m au-dessus du niveau de la plaine alluviale actuelle. Plusieurs localités d'art rupestre, panneaux et figures ont été identifiés sur chaque site, portant à un minimum de cent quatre-vingts le nombre des images individuelles. La majorité d'entre elles sont des figures animalières de style naturaliste (HUYGE & IKRAM 2009). Les bovidés (*Bos primigenius* ou aurochs) prédominent (plus de 75 % du nombre total de figures), suivis par des oiseaux, des hippopotames, des gazelles, des poissons et une antilope bubale (fig. 2). En outre, quelques créatures indéterminées et plusieurs représentations de figures humaines très stylisées (souvent réduites aux fesses proéminentes mais sans autre caractéristique humaine) apparaissent également. Sur base des caractéristiques intrinsèques de l'art rupestre (sujets, techniques et styles), de la patine et du degré d'érosion due à l'action du sable éolien et/ou des eaux de ruissellement ainsi que du contexte archéologique et géomorphologique, nous avons proposé d'attribuer ces pétroglyphes au pléistocène supérieur, et plus particulièrement au paléolithique supérieur (~19 000 à ~18 000 cal yr BP; HUYGE *et al.* 2007, HUYGE 2009). Cette interprétation n'a rencontré que très peu de critiques de la part de la communauté archéologique, mais aucune datation scientifique, directe ou indirecte, n'avait pu être avancée jusqu'à ce jour.

* Cf. figures en fin de texte (pp. 266-268).

Micromorphologie

Lors de la mission de 2008, il s'est avéré que quelques panneaux d'art rupestre à QII, plus particulièrement les panneaux QII.4.2 et QII.5.1, étaient partiellement couverts d'accumulations de sédiments prises entre la surface rocheuse gravée et les débris grossiers de grès nubien qui se sont séparés de la falaise (fig. 3). La nature et la possible provenance de la couverture sédimentaire ont été étudiées par analyse pétrographique en lame mince. La comparaison avec des échantillons de référence démontre que ce sédiment n'est pas le produit de la désintégration du grès nubien local. Il s'avère également différent du matériel éolien récent. En réalité, le sédiment est dérivé, par remaniement éolien, des dépôts de la plaine alluviale paléolithique de la région correspondant à la phase du «Nil sauvage». Ces sédiments alluviaux furent déposés avant ~14 500 cal yr BP, soit durant le pléistocène supérieur (PAULISSEN & VERMEERSCH 1989). Le remaniement éolien a eu lieu à une époque connaissant un environnement différent de celui qui caractérise la région actuellement, à savoir une étendue plus importante des dépôts du «Nil sauvage». La nature éolienne de la couverture sédimentaire la rend particulièrement apte à une datation par la technique de luminescence stimulée optiquement (*optically-stimulated luminescence* ou OSL). Contrairement à la couverture sédimentaire du panneau QII.4.2, celle du panneau QII.5.1 contient, du moins localement, un mélange substantiel de matériel non éolien qui la rend moins propice à une datation OSL.

Datation OSL

La méthode de datation OSL permet de mesurer le temps écoulé depuis le moment où des grains minéraux enfouis ont été exposés pour la dernière fois à la lumière du soleil (AITKEN 1998, DULLER 2004). La méthode utilise la fraction minérale détritique du sédiment même, à savoir des grains de quartz ou de feldspath, et non du matériel associé. Elle offre ainsi un moyen direct pour déterminer le moment de déposition et d'accumulation d'un sédiment. La méthode de datation OSL exige que les grains sédimentaires soient transportés dans des conditions permettant une exposition suffisante à la lumière du soleil et remettant ainsi à zéro «l'horloge luminescente» avant déposition et enfouissement. Actuellement, la procédure OSL la plus fiable utilise des signaux OSL de quartz en combinaison avec la procédure dite «protocole régénératif d'aliquote unique» (*single-aliquot regenerative-dose* ou SAR) (MURRAY & OLLEY 2002, VANDENBERGHE *et al.* 2004, WINTLE & MURRAY

2006, DERESE *et al.* 2010). A Qurta, nous avons appliqué cette procédure sur quatre échantillons afin de déterminer le temps écoulé depuis le dépôt de sédiments au-dessus du panneau QII.4.2 et d'obtenir dès lors un âge minimum pour les pétroglyphes (tab. 1). En effet, l'analyse pétrographique en lame mince démontre que ces sédiments sont d'origine purement éolienne et donc particulièrement aptes à une datation OSL.

Tableau 1

Résumé des résultats de datation OSL: valeurs D_e , doses annuelles, âges optiques et incertitudes aléatoires (σ_r), systématiques (σ_{sys}) et totales (σ_{tot}). Les incertitudes mentionnées sous D_e et les données de dosimétrie sont aléatoires; toutes les incertitudes représentent 1 sigma. Le nombre de mesures répétées de D_e (n) est donné entre parenthèses en indice

<i>Panneau</i>	<i>Profondeur (cm)</i>	<i>Echantillon (code GLL)</i>	D_e (Gy)	<i>Dose annuelle (Gy ka⁻¹)</i>	<i>Age (ka)</i>	σ_r (%)	σ_{sys} (%)	σ_{tot} (%) (ka)	
QII.4.2	40	080302	18,3±0,5 (n=23)	1,86±0,03	10	3,0	9,8	10,2	1
QII.4.2	75	090806	23,1±0,5 (n=24)	1,81±0,04	13	3,0	10,8	11,2	1
QII.4.2	95	090807	27,0±0,6 (n=24)	1,61±0,03	17	2,6	10,6	11,0	2
QII.4.2	115	090808	24,3±0,5 (n=24)	1,56±0,02	16	2,4	10,6	10,9	2

Les datations OSL ont été effectuées au laboratoire de datation par luminescence de la *Universiteit Gent* (Belgique) (pour des informations générales concernant les procédures et techniques de datation telles qu'elles sont utilisées dans le laboratoire de Gand, voir VANDENBERGHE 2004; VANDENBERGHE *et al.* 2004, 2009). Une présentation détaillée de l'approche méthodologique et des caractéristiques OSL des échantillons dépasserait la portée de cette communication; elle sera exposée dans une revue spécialisée. Les datations ont été obtenues en déterminant la paléodose du quartz à l'aide du protocole SAR (MURRAY & WINTLE 2000, 2003). Les doses annuelles ont été déduites des concentrations de radio-isotopes obtenues au moyen de spectrométrie gamma bas bruit de fond (VANDENBERGHE 2004, DE CORTE *et al.* 2006) en utilisant les facteurs de conversion d'ADAMIEC & AITKEN (1998). La teneur moyenne en eau du sédiment pour la période d'enfouissement a été estimée à 3 ± 1 % (égale à la valeur de la teneur en eau actuelle).

Les âges OSL obtenus pour les échantillons du sédiment couvrant le panneau QII.4.2 sont, stratigraphiquement, parfaitement cohérents (figs 4 & 5, tab. 1). Les dates s'étendent de 10 ± 1 ka au sommet de la séquence jusqu'à 16 ± 2 ka à la base. Etant donné que la couverture sédimentaire est éolienne et que le quartz se comporte bien comme dosimètre OSL, nous concluons que les résultats OSL pour ces échantillons sont des dates de sédimentation valables. Celles-ci fournissent la preuve formelle de l'âge pléistocène concernant l'art rupestre de Qurta.

Datation au radiocarbone

Outre la datation OSL, nous avons tenté d'obtenir des âges minimum pour l'art rupestre de Qurta par la datation au radiocarbone de restes de microvertébrés récoltés dans le sédiment couvrant les pétroglyphes. L'échantillon faunique, collecté au même niveau que l'échantillon OSL GLL-090808 (16 ± 2 ka), a été subdivisé en deux composants: un composant terrestre, comprenant essentiellement des ossements de souris et d'oiseaux, et un composant aquatique, constitué d'ossements de grenouilles et de poissons. Le collagène n'étant pas présent en quantité suffisante pour la datation, une autre substance a été utilisée, en particulier le bio-apatite, suffisamment riche en carbone organique. Ces analyses ont donné les résultats suivants: $12\ 130 \pm 45$ BP (KIA-41532) pour le matériel terrestre et $10\ 585 \pm 50$ BP (KIA-40546) pour le composant aquatique, ce dernier ne nécessitant pas de correction d'effet de réservoir (DEE *et al.* 2010). Ceci implique un âge calibré (cal yr BP) de $\sim 14,0$ ka et $\sim 12,7$ ka respectivement (calibration utilisant OxCal Version 3.10; BRONK RAMSEY 1995). Au niveau 2-sigma, ces deux datations au radiocarbone ne sont pas significativement différentes de la datation OSL pour l'échantillon GLL-090808, quoique les résultats au radiocarbone pour les composants terrestre et aquatique soient incontestablement différents entre eux. Ceci peut indiquer que des événements différents ont été datés et/ou qu'il y a eu un échange de carbonate entre le matériel osseux et son environnement. Sur le terrain, aucune certitude n'a pu être observée concernant des perturbations post-dépositionnelles du sédiment qui auraient pu provoquer un mélange de restes fauniques d'âges différents. Vu l'inconsistance apparente des datations au radiocarbone et la nature du matériel utilisé pour la datation OSL, nous concluons que les résultats OSL fournissent des âges minimum plus fiables pour l'art rupestre de Qurta.

Autres sites comparables

L'art rupestre de Qurta n'est pas un cas isolé. Quatre autres sites du même type ont été répertoriés dans la région. Tous se caractérisent par un art très similaire, aussi bien thématiquement que stylistiquement, et par un nombre de dessins restreint mais très homogène. Un de ces sites, Abu Tanqura Bahari 11 (ATB11) à el-Hosh, est situé à environ 10 km au nord de Qurta, sur la rive opposée du Nil, tandis que les trois autres, Ouadi (Chor) Abu Subeira 6 (CAS-6), 13 (CAS-13) et 14 (CAS-14), se trouvent à environ 45 km plus au sud et sur la même rive que Qurta. Nous avons découvert ATB11 en 2004, avant l'art rupestre de Qurta (en 2005), mais le site n'a pas encore été étudié

en détail (HUYGE 2005). Les quelque trente-cinq dessins répertoriés sur le site consistent essentiellement en motifs naturalistes d'aurochs. Quelques figures anthropomorphes similaires aux figures humaines stylisées de Qurta semblent, cependant, également présentes. L'art rupestre du Ouadi (Chor) Abu Subeira, découvert par le Conseil suprême des Antiquités de l'Égypte (SCA Assouan) en 2006 (CAS-6) et 2010 (CAS-13 et CAS-14), est composé de plusieurs douzaines de représentations exclusivement animalières (pour CAS-6, voir STOREMYR *et al.* 2008; pour CAS-13, voir KELANY, à paraître). Le répertoire est, une fois de plus, essentiellement composé de bovidés, mais des poissons, des hippopotames, un bouquetin (ibex) nubien et peut-être des antilopes bubales, un chien sauvage africain (*Lycaon pictus*) et un âne sauvage nubien sont également représentés. Aucun de ces sites ne fournit néanmoins les possibilités de datation qu'offre Qurta.

Conclusion

En fournissant un âge minimum pré-holocène fiable, les datations OSL de Qurta présentent la première preuve solide de l'existence d'un art rupestre pléistocène figuratif sophistiqué en Afrique du Nord. Ceci fait indéniablement de l'art rupestre de Qurta le plus ancien découvert en Afrique du Nord à ce jour. Son âge véritable demeure cependant inconnu. Il est clair que les dessins enterrés à QII étaient déjà considérablement altérés avant d'avoir été recouverts par le sédiment. Il semble donc probable que l'art rupestre soit sensiblement plus ancien que les âges minimum obtenus au moyen d'OSL. Un âge de ~19 000 à 17 000 années calendaires rendrait l'art rupestre de Qurta plus ou moins contemporain de l'art solutréen/magdalénien ancien tel qu'on le connaît au paléolithique supérieur en Europe de l'Ouest (BAHN & VERTUT 1997). Il est surprenant de constater que les pétroglyphes de Qurta et des autres sites d'art rupestre pléistocène égyptiens ont plusieurs caractéristiques thématiques et stylistiques en commun avec l'art magdalénien européen tardif. Cette similitude est particulièrement évidente pour les figures humaines dont la plupart sont très semblables aux anthropomorphes du type Lalinde/Gönnersdorf (LORBLANCHET & WELTE 1987, BOSINSKI *et al.* 2001). En outre, certains des bovidés les plus minutieusement exécutés rappellent fortement des représentations d'aurochs du magdalénien tardif, telles que celles de la grotte de la Mairie à Teyjat (Dordogne, France) (BARRIERE 1968). Aussi bien les figures du type Lalinde/Gönnersdorf que les bovidés de Teyjat sont datés de ~15 500-14 000 cal yr BP. Bien qu'il soit prématuré de spéculer sur les implications possibles de ce constat en termes d'influence à longue distance et de contacts interculturels,

il n'en est pas moins clair que l'âge pléistocène des pétroglyphes de Qurta — tel que démontré par la présente étude — ainsi que leur degré de sophistication similaire à l'art européen de l'époque glaciaire, introduisent de nouveaux défis dans la pensée archéologique.

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Nous remercions nos collègues sur le terrain (M. Aubert, H. Barnard, E. Figari, S. Ikram, A. Lebrun-Nélis, L. Lippiello, H. Riemer et I. Therasse) pour leur aide des plus efficaces. Nos remerciements vont également au Conseil suprême des Antiquités de l'Égypte (SCA) pour nous avoir autorisés à mener des recherches à Qurta. Nous sommes particulièrement reconnaissants à M. Ismail Khaled (SCA, Le Caire), M. El Ghandour (SCA, Le Caire), M. El Bialy (SCA, Assouan) et M. El Nekhaily (SCA, Kom Ombo) pour leur appui continu et leur intérêt pour notre travail. Un merci particulier à A. Kelany (SCA, Assouan) et P. Storemyr pour l'accès aux sites d'art rupestre du Ouadi Abu Subeira ainsi qu'à l'information les concernant. Le financement de cette recherche a été fourni par le *Fonds Wetenschappelijk Onderzoek – Vlaanderen* (subvention 1.5.002.03) et le *Egyptology Endowment Fund* du *Department of Near Eastern Languages and Civilizations, Yale University* (New Haven, États-Unis). En outre, le *Nederlands-Vlaams Instituut in Cairo* (NVIC) et Vodafone Égypte nous ont offert un soutien administratif et logistique. Nous sommes redevables à V. Linseele (*Center for Archaeological Sciences, Katholieke Universiteit Leuven*) pour l'identification de la faune microvertébrale et à M. Van Strydonck et M. Boudin (Institut royal du Patrimoine artistique, Bruxelles) pour la préparation des échantillons radiocarbone. L'assistance technique de G. Velghe (*Universiteit Gent*) lors de l'analyse OSL est grandement appréciée. Les recherches OSL de D. A. G. Vandenberghe sont financées par le *Fonds Wetenschappelijk Onderzoek – Vlaanderen* (en tant que boursier postdoctoral). J. Jurceka (*Universiteit Gent*) est remercié pour la préparation des lames minces.

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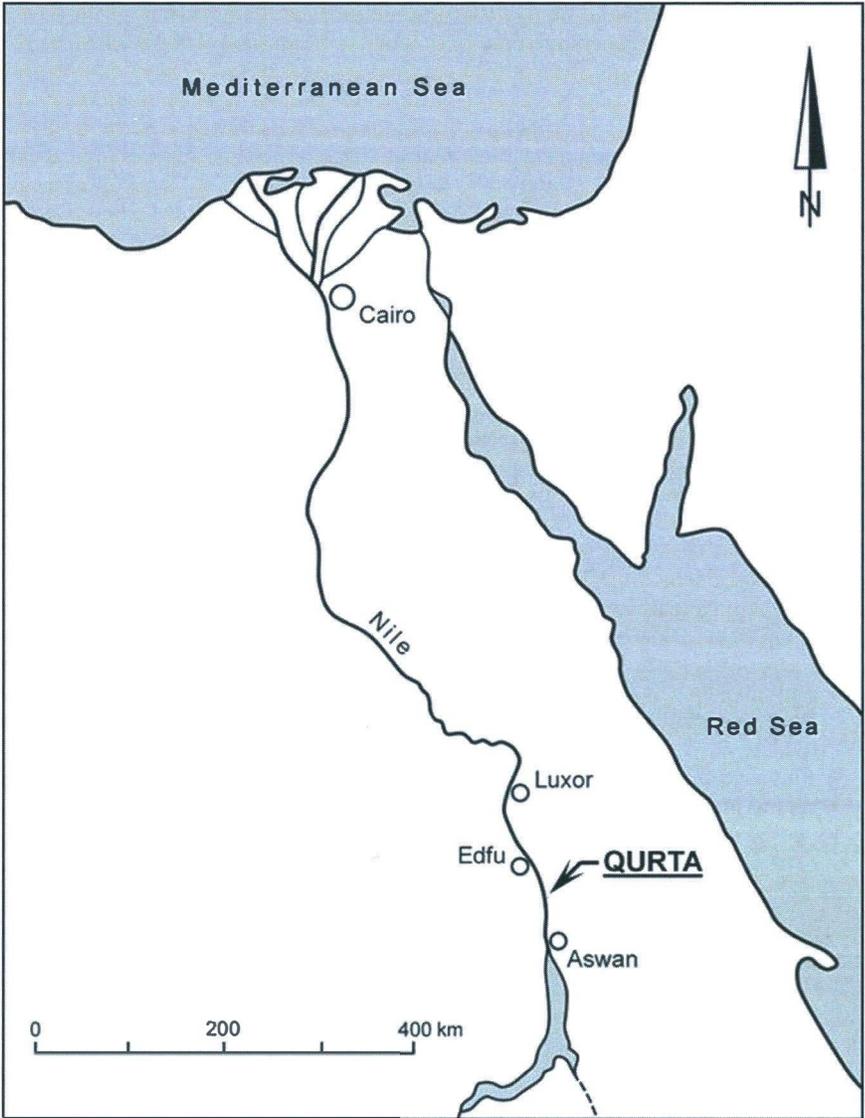


Fig. 1. — Carte de la vallée du Nil égyptienne montrant la localisation de Qurta.

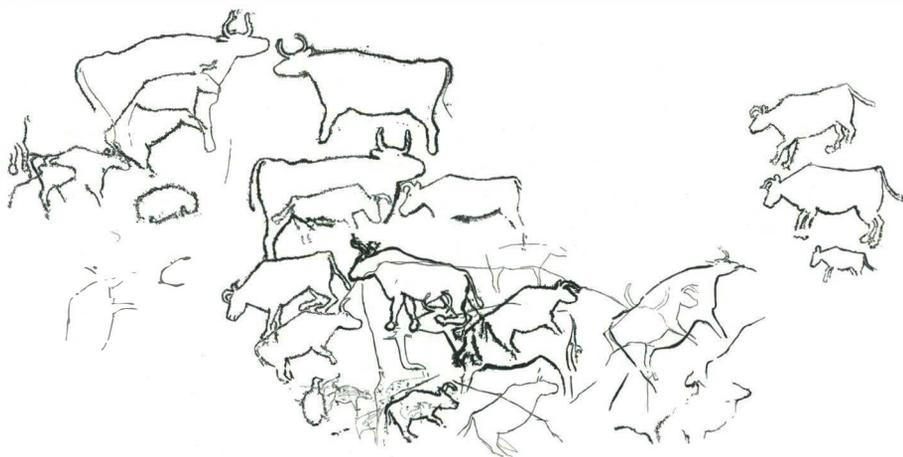


Fig. 2. — Fac-similé du panneau 1 à Qurta I, localité 1 (QI.1.1) montrant principalement des bovidés (aurochs ou *Bos primigenius*). La longueur totale du panneau est d'environ 4 m.

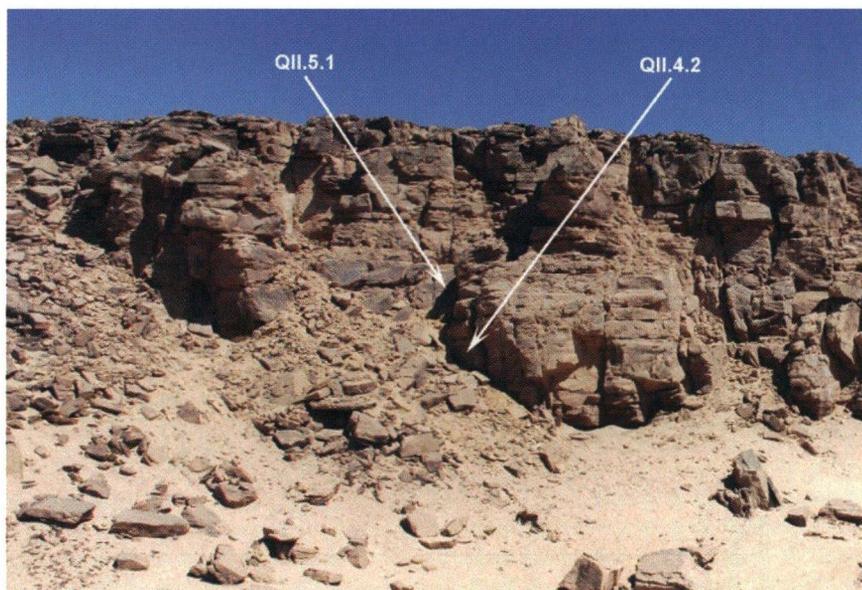


Fig. 3. — Vue de Qurta II avec l'emplacement des panneaux QII.4.2 et QII.5.1 en partie couverts par des débris de grès nubien et des accumulations de sédiments.



Fig. 4. — Panneau QII.4.2. La ligne rouge indique le sommet de la couverture sédimentaire. L'échantillon OSL *in situ* est GLL-090808 (voir tab. 1).

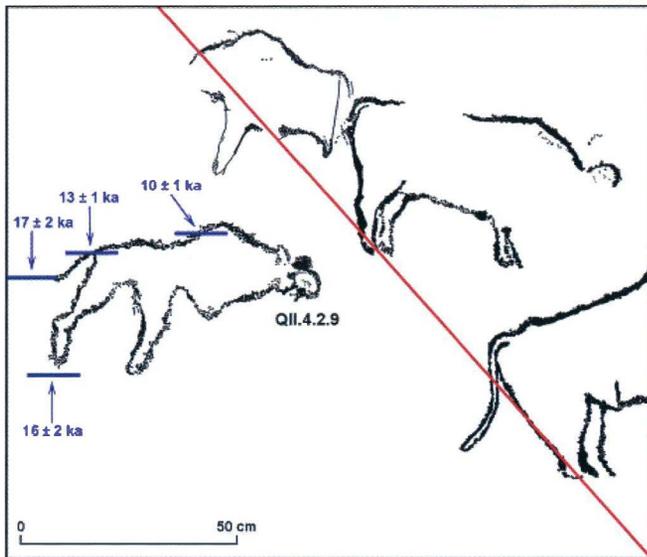


Fig. 5. — Détail du panneau QII.4.2. La ligne rouge indique le sommet de la couverture sédimentaire (voir fig. 4). Les âges OSL sont présentés pour les sédiments recouvrant complètement le dessin QII.4.2.9 représentant une créature indéterminée à deux pattes (voir tab. 1).

International Colloquium
The Signs of Which Times?
Chronological and Palaeoenvironmental Issues
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Intrasite Chronology and Palaeoenvironmental Reconstruction at Khor Abu Subeira South 1 (Aswan, Egypt)

by

Lauren LIPPIELLO* & Maria GATTO**

KEYWORDS. — Rock Art; Upper Egypt; Aswan; Patination; Boats.

SUMMARY. — The rock art site KASS1, originally discovered by G. W. Murray in 1930 and rediscovered in 2005 by the Aswan-Kom Ombo Archaeological Project, is located along a lateral branch of the main southern tributary of Wadi Abu Subeira, north-northeast of Aswan. The unique geological features associated with KASS1 make the site an excellent case study for the reconstruction of palaeoenvironmental conditions; in addition, the detail and clarity of rock art allows for the development of an intrasite chronology. The authors analyse rock art with consideration for 1) the environment, and 2) the current understanding of the socio-political system within the region during the Predynastic Period. The authors seek to provide additional insight regarding the placement of rock art sites within geographically distinctive areas as well as the internal artistic and ideological development of particular iconography.

Introduction

Predynastic and Early Dynastic Egyptian rock art is unique amongst the corpora of world rock art due to the interregionally-consistent repertoire of themes, with only slight regional stylistic variations. In addition, well-dated contemporaneous artefacts exist, such as decorated pottery and small portable artworks [1]**. These two exceptional attributes make the stylistic dating of

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*** Numbers in brackets [] refer to the notes, pp. 287-289.

Egyptian rock art relatively easy compared to rock art sites in other regions. Stylistic variability remains the most effective manner to date rock art in Egypt, despite unsupported assertions of the contrary (WENGROW 2006, pp. 111-114). In addition, stylistic variability may help to corroborate recent efforts at chronometric dating. While these dating attempts have met with varying degrees of success, patination allows further refinement to the existing rock art chronology for certain sites if the following conditions are met: 1) patination is consistent across a site for particular temporal horizons or, at the very least, within a particular tableau, and 2) patination effects are used in conjunction with both stylistic data and the palaeoclimatic record.

Site Data

Khor Abu Subeira South 1, hereafter referred to as KASS1, provides a good test site for the approach outlined above. Located within the main southern branch of Wadi Abu Subeira, approximately 10 km north of Aswan, on the east bank of the Nile River (fig. 1), KASS1 was first identified by G. W. Murray in 1930. A preliminary publication by MURRAY & MYERS (1933) includes a limited number of rock art images present at the site, and the published drawings are without scale. Chalking, still evident on two panels [2], suggests that Hans Winkler may have visited the site prior to 1939, as well. Maria Gatto and the Aswan-Kom Ombo Archaeological Project (hereafter AKAP) relocated KASS1 during spring 2005, with a preliminary investigation of the site during the 2008 field season (GATTO *et al.* 2009). In spring 2010 AKAP season, the authors had the opportunity to start full documentation of the rock art located at KASS1, utilizing a total imaging station to provide a 3D reconstruction of the wadi, stereophotography of each panel, data collection for individual images (including the condition, patination, dimensions and structural associations of every figure), and epigraphic drawings for portions of select scenes (GATTO & CURCI 2010a). Additional field seasons are necessary to complete the documentation of the site. The rock art at KASS1 is divided into eleven discrete clusters or locations, with a total of over four hundred and fifty individual figures identified thus far. Based on stylistic cross references, rock art figures apparently date from the Badarian or the Early Naqada Period through the Early Dynastic Period (EDP) (*ca.* 5000-3000 BC). As is typical for most rock art executed on sandstone surfaces, images are almost exclusively pecked, with little appearance of incised or polished lines. The type of technique used to create rock art at KASS1 supports the identification of stylistic horizons (see below) [3].

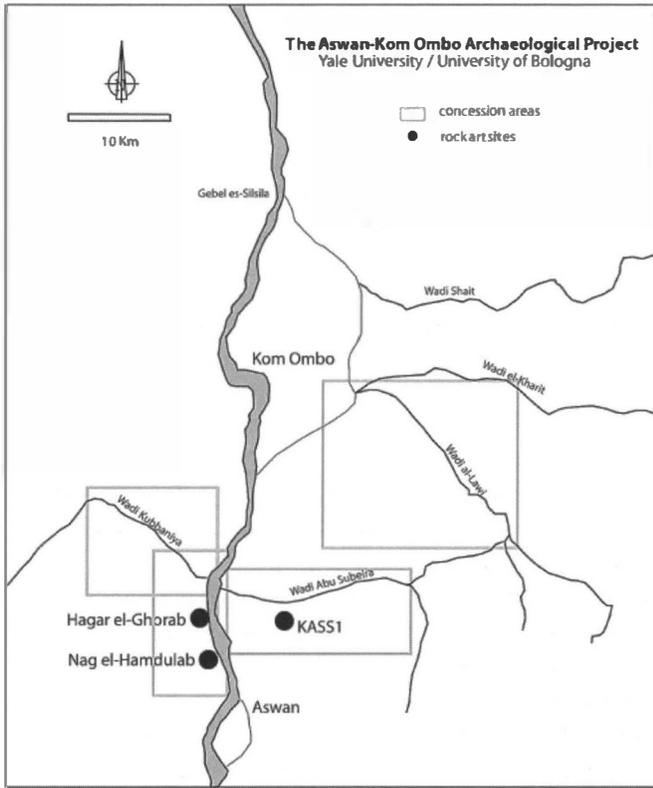


Fig. 1. — Map of the Aswan-Kom Ombo project region.

Contemporary archaeological materials associated with the site consist of a so-called “Clayton Ring” and perforated ceramic disk, discovered by Murray on top on the gebel (MURRAY & MYERS 1933, p. 132, fig. 5, pl. XX, fig. 1). In addition, a single C-group storage vessel was found during the spring 2010 season close to a sheltered area decorated with an extensive hunting tableau (GATTO & CURCI 2010b). Clayton Ring technology appears throughout the Egyptian and the Sudanese deserts, dating from the 4th millennium through the Old Kingdom, and is associated with the Oasis Sheikh Muftah culture, as well as with the desert component of the Nubian A-Group and Naqada cultures (RIEMER & KUPER 2000; RIEMER 2004; GATTO 2001-2002, in press). In the area just north of the First Cataract C-Group evidence has been found consistently, including a cemetery, a checkpoint, and rock art (GIULIANI, in press).

Site Layout and Geologic Features

The relationship between the location of the rock drawings and the surrounding environment makes KASS1 unique among rock art sites found near the Nile Valley and farther in the Western and Eastern Deserts [4]. Typically, Egyptian and Nubian rock art sites are located along or at the termini of desert routes, carved at eye level or just above, and in several circumstances functioning as declarations of political territoriality (DARNELL 2002a, pp. 108-111, 114; 2002b, pp. 10-19; 2007, pp. 30, 32, 34; 2009, p. 85 and references therein; 2011). KASS1 lies in a minor tributary, oriented northeast to southwest, adjacent to the first major southern branch of Wadi Abu Subeira. Along this main southern branch of the Wadi Abu Subeira unpublished Middle and New Kingdom depictions of cattle as well as a New Kingdom inscription indicate that a desert route was in use during the later Pharaonic Period. The cattle drawings and inscription appear at or close to eye level on rock surfaces facing the centre of the wadi. In contrast, rock art at KASS1 is hidden from the southern branch of Wadi Abu Subeira by a 30 m gebel. The first rock art panel appears approximately 100 m from the mouth of the tributary. In addition, ease of visibility does not appear to influence the placement of images, which often appear in elevated and secluded areas (potentially suggestive of more ritual function [5]).

Most likely, the site was selected by ancient peoples for the two geologic depressions located near the midpoint of the wadi (fig. 2). During the 2008 field season a drill-coring test in the larger depression and subsequent geomorphologic study of the sediments (both performed by Morgan De Dapper from the University of Ghent) confirmed the occasional presence of water in this natural pooling areas or *guelta* (GATTO *et al.* 2009, p. 160). The secluded position of the site and the occasional presence of water make the wadi an ideal hunting ground, corroborated by the proliferation of hunting imagery, dating from each temporal Horizon identified at KASS1 (GATTO *et al.* 2009, p. 165). More specifically, images surrounding the *gueltas* relate directly to royal iconography and ideology, consistent with the suggestion that elite ritual hunting activities were associated with KASS1 (GATTO *et al.* 2009, p. 165) [6].

The steep sides of the gebel create unique lighting effects that may determine the placement of specific iconography. The majority of images near the mouth of the wadi, northeast of the larger collection pool, appear on the western side of the gebel *ca.* 1-5 m above the modern ground surface. Conversely, images near the head of the wadi, south-southeast of the larger collecting pool, appear almost exclusively on the eastern cliff face *ca.* 4-20 m above the modern ground surface. Thus, the placement of rock art correlates with areas that receive the best light for the greatest amount of time per day.



Fig. 2. — The large and small hydraulic depressions at KASS1, respectively.

More detailed examination of the lighting effects and statistical analysis of the types of figures that appear in different locations are in progress (LIPPIELLO 2012, pp. 294-297, fig. 7.7).

Analysis of boat, human and animal typology, specifically elephants, reveals the presence of four stylistic horizons. Chronological horizons follow the conventions established by HUYGE (1995, 2002). Although images at the

site date to multiple time periods, the wadi is used for a singular purpose throughout its history.

Boat Typology

The development of Egyptian hull shape is conservative, changing very little from Naqada IC-IIA onward (LANDSTROM 1970, p. 35). Generally, Egyptian boats have a high length-to-beam ratio and small draft, making more recent boats easily mistaken for more ancient styles. While hull shape varies little, technological innovations serve as excellent chronological markers and often appear in watercraft depictions. The boat typology utilized here necessarily differs from previous studies that focus almost exclusively on hull shape (see ENGELMAYER 1965 and WINKLER 1938 [7]). In the present study, four criteria serve as effective indicators of temporal horizons for watercraft: 1) the superposition of figures within panels (where applicable); 2) variations in decorative elements (which may suggest the function of particular boats); 3) depictions of technological innovations; 4) comparative evidence provided by other media.

BOATS: HORIZON I, TYPE 1

At present, no representations of watercraft may be dated securely to the Badarian Period, either at KASS1 or at any other rock art site in Egypt [8]. Characteristics of NIC-IIA boats present at KASS1 include: 1) high incurved finials; 2) a single central-rounded deck cabin; and 3) apparently deep hulls. The superpositions visible within certain panels at KASS1, as well as parallels with models (SCHAFER 1896, p. 161, fig. 10) and palettes (NEEDLER & CHURCHER 1984, pp. 321-323, no. 255; CAPPOZZO 2005-2007, p. 171, no. 119; REGNER 1996, p. 21, Abb. 34) inform the dating (tab. 1) [9]. Dynastic evidence suggests that some rock art representations of NIC-IIA boats rest atop a pedestal or altar (REISNER 1913, pp. 80-81, catalog no. 4919; DREYER *et al.* 1996, p. 75; SERRANO 2002, pp. 58, 61, 63, 95, 97, figs. 23, 24, 27, 55, 57 and references therein; ROTHE *et al.* 2008, p. 124, BR 14). The pecking technique is very fine, created by shallow, closely-spaced peck marks. The outlines of the figures consist of hammered lines, less than 1 cm wide, with the interior surface closely hammered (Hellström modified classification *m-shallow*) (tab. 2).

Although not represented at KASS1, a second type of watercraft exists during NIC-IIA portrayed on C-Ware vessels and models. The second type

of NIC-IIA watercraft shares many of the characteristics common for boats dating to the subsequent period, most notably the long, shallow, spoon-shaped hull (see below).

Table 1
KASS1 typology, including watercraft, human figures, and elephants

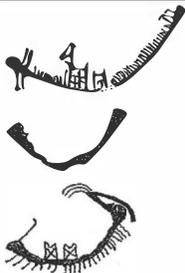
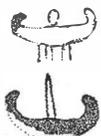
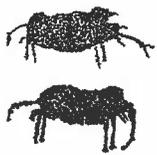
Period	Watercraft	Humans	Elephants
Horizon III Naqada IIIB-EDP			
Horizon II Naqada IIC-D			
Naqada IIC			
Horizon I Naqada IC-IIA			
Horizon 0 Badarian			

Table 2

Descriptions of rock art execution techniques for KASS1 following HELLSTROM (1970)

Horizon	Period	Watercraft	Humans	Elephants
III	NIIIA/B-EDP	<i>m-deep</i>	<i>d, k, m-deep</i>	
II	NIID	<i>l</i>	<i>l</i>	
II	NIIC-D	<i>l</i>	<i>l</i>	
II	NIIC	<i>l</i>	<i>l</i>	
I	NIC-IIA	<i>m-shallow</i>	<i>m-shallow</i>	<i>m-shallow</i>
0	Badarian	<i>e</i>	<i>e</i>	<i>e</i>

BOATS: HORIZON II, TYPE 1

Depictions of watercraft at KASS1 dating to Nagada IIC [10] and continuing into Naqada IID exhibit the following characteristics: 1) semi-elliptical or flattened stem and stern (*i.e.* a truncated stem and stern); 2) the presence of one or two cabins; 3) phytomorphic motifs located near the prow; 4) several rowing oars and one or two steering oars; 5) occasionally the presence of a girdle truss or railing; and 6) a long, shallow, spoon-shaped hull of even thickness (LANDSTROM 1970, p. 13).

Throughout the course of the NII Period certain nautical attributes undergo a reductive process [11] evidenced by widespread standardization of the most common characteristics; most notably, the shape of the stem and stern become less elliptical and more truncated. Likewise, the shape and decorative design of the deck cabins may be divided into three or four styles (possibly identifying the politico-religious function of the watercraft; LIPPIELLO 2012). In addition, the size and extravagance of the vegetation appearing near the prow diminishes [12]. By NIIIA the phytomorphic ornament is reduced to the lowest common denominator and appears as a short wavy-line projecting from the prow finial (*e.g.* the watercraft at Nag el Hamdulab; HENDRICKX *et al.* 2012).

The identical rendering of individual figures within each class of elements listed above and the frequent appearance of the classes together suggest that any representation of U-shaped boats with truncated stems and stern, dating from NIIC and continuing into NIID, illustrates the same type of watercraft despite the varying degrees of hull curvature. The medium (*i.e.* painted or carved decoration) and material (*i.e.* ceramic, limestone, or sandstone) do not affect the hull curvature of NII boats; rather artistic expression and degree of standardization most likely determine the degree of curvature.

The presence of a girdle truss or railing distinguishes rock art boats from contemporaneous depictions found in mortuary contexts. Typically identified

incorrectly as human figures (WINKLER 1938, pp. 26-27; ROHL 2000), the girde truss provides greater longitudinal stability for the hull (LANDSTROM 1970, pp. 23, 94) and appears with regularity during the EDP on ceramic and ivory models (LANDSTROM 1970, p. 23, figs. 64, 65, 67-69 and references therein; BERGE 2007, no. 378).

The superposition of Horizon II, type 1 over Horizon I, type 1 boats provides further confirmation of the typology outlined thus far (fig. 3). The boat

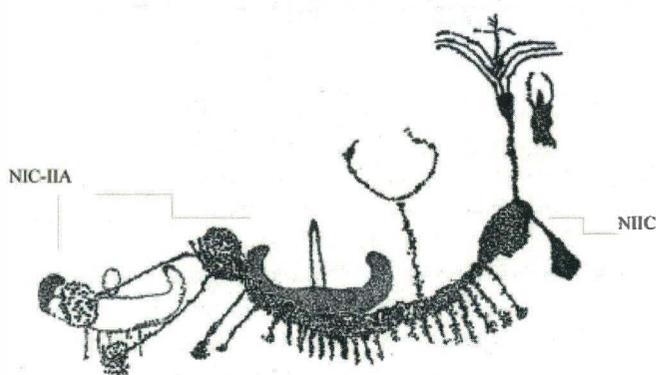
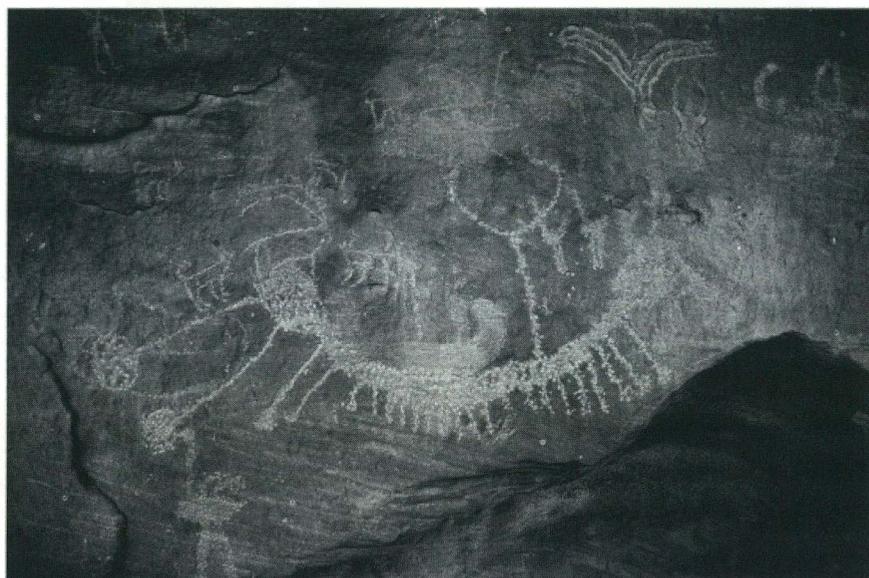


Fig. 3. — KASS1, location 6 panel 11, illustrating the superposition of a type 2 (NIIB-C) boat over type 1 (NIC-IIA).



Fig. 4. — KASS1, location 11 panel 4, illustrating structural associations between human figures and watercraft.

depicted at location 6 panel 11 likely corresponds to the earliest depictions of U-shaped boats during the NIIC Period due to the semi-elliptical shape of the finials, rounded steering oar blades, and, most importantly, the exaggerated phytomorphic prow ornament. Conversely, the boats depicted at location 11 panel 4 correspond to later, more standardized depictions based upon the flattened appearance of the stem and stern, the regular appearance of cabins,

the somewhat abbreviated appearance of the phytomorphic prow ornament (fig. 4). Comparative iconographic evidence for Horizon II type 1 boats includes depictions in Tomb 100 at Hierakonpolis (QUIBELL & GREEN 1902, pls. 75-99), a model (SCHAFER 1896, p. 159, fig. 1), and representations on D-Ware pottery (GRAFF 2009 and references therein). The rock art representing NIIC-D boats at KASSI was executed in two steps, first by delineating the shape with a pecked outline less than 1 cm wide and secondly by covering the interior surfaces with relatively widely-spaced hammer marks (large, deep pecks) (Hellström classification *I*) (*cf.* tab. 2).

BOATS: HORIZON II, TYPE 2

A second type of watercraft appears during the later NII Period. Features include: 1) a high stem and low truncated stern; 2) rectilinear deck cabins; 3) the presence of deck projections; 4) abbreviated phytomorphic decoration near the prow; and 5) the elliptical shape of steering oars. The type is distinguished by the elevated stem and low truncated stern, characteristics which are comparable to the black boat featured in Tomb 100 at Hierakonpolis (NIIC) (for dating, KAISER 1957, 1958; CASE & PAYNE 1962; PAYNE 1973). A later example, dating to the First Dynasty, complete with falcon (see below), appears on Djet's ivory comb (PETRIE 1924, p. 4, pls. II.6 and XII.5) and may be related to the Henu barque associated with the god Sokar (SERRANO 2002, p. 96 and references therein).

The standardized appearance of the deck cabins, girdle truss, and the abbreviated phytomorphic prow motif suggest a date during the later NII Period. Execution techniques are identical to those described above from Horizon II, type 1 boats (Hellström classification *I*) (*cf.* tab. 2).

BOATS: HORIZON III

Many characteristics of boats dated to Horizon III parallel traits from NIIC-D watercraft, including: 1) a long, shallow, spoon-shaped hull; 2) a single deck cabin located aft or amidships; 3) the occasional presence of rowing and steering oars; and 4) stylized phytomorphic motifs located on the prow finial. Nevertheless, three innovative characteristics indicate that a new style of boat appears during the NIIIA Period: 1) the depiction of a true sail [13]; 2) upright vertical projections for the stem and stern finials; 3) the presence of a deck cabin or seat [14] with a downward sloping top.

Named for the distinctive shape of the stern, knife-blade boats appear exclusively in royal contexts [15] and enjoy a widespread geographic distribution,

appearing throughout Egypt and Nubia beginning in Naqada IIIA (VINSON 1987, pp. 193-210; 1994, p. 18) [16]. Parallels exist on D-Ware (HUYGE & DARNELL 2010), wooden and ivory tags (GARSTANG 1905, fig. 2), and models (LANDSTROM 1970, p. 23, figs. 67, 69; CIALOWICKZ 2009, p. 123, fig. 36 (middle boat)) as well as other portable artworks, including the Qustul incense burner (KAISER 1990), Archaic Horus incense burner (WILLIAMS 1986, pl. 33), Narmer Palette (QUIBELL 1898, pp. 81-84, pls. 12, 13), and Scorpion Macehead (Ashmolean Museum, Oxford E3632). Additionally, knife-blade boats appear in rock art, most notably at Gebel Sheikh Suleiman (WILLIAMS *et al.* 1987, p. 285). Due to the widespread standardized appearance of the boats and the objects that appear in direct association with them, knife-blade boats are considered part of a formalized royal iconography. Iconography represents a form of communication in which the depictions of specific objects are necessarily abbreviations used to remind the viewer of expansive politico-religious concepts, especially when found in rock art contexts (DARNELL 2009).

Traditionally, the seated figure that appears amidships is interpreted as a prisoner, primarily based upon the depiction from the Qustul incense burner and Gebelein linen (bottom boat) (WILLIAMS *et al.* 1987, pp. 252, 256, respectively). Alternatively, the deck structure may be interpreted as a seat or throne intended for an elite royal personage or ruler [17]. Examples include, but are not limited to, the Gebelein Linen (top boat), Qustul incense burner, MET knife handle (recto), and Archaic Horus incense burner (WILLIAMS *et al.* 1987, pp. 255-256; 249; 248-249; 253, respectively). Additional evidence suggesting the king may be the occupant of the seat comes from KASS1. The watercraft depicted at location 6 panel 19 (Horizon II, type 2) (*cf.* tab. 1) has a falcon standard adjacent to the central cabin. Falcons appear with regularity during the NIIC Period as indicators of elite or royal personages (HENDRICKX *et al.* 2011). Hovering above the cabin, the falcon signifies the elite status of the location on the watercraft.

The pecking technique is very fine, deep hammering with an outline consisting of a line less than 1 cm. Indeed, the exterior line appears incised in some places due to the close, deep pecking. Close, deep hammering of the internal surface removed the entire rock cortex (Hellström modified classification *m-deep*) (*cf.* tab. 2).

Human Typology

In conjunction with boat typology, distinctions between human figures provide another chronological marker. Establishing a typology for human

figures proves slightly more challenging due to consistent appearance of particular features, namely the tail or exaggerated phallus and head adornments (most likely feathers); however, definite changes in style provide the following criteria that prove effective indicators of temporal horizons for humans: 1) body shape, width, and position; 2) head shape; 3) structural association between figures within a panel; and 4) comparative evidence provided by other media.

HUMANS: HORIZON 0

The earliest horizon of human figures is identified tentatively as Badarian (approximately the second half of the 5th millennium BC) based upon patination, climate data (see below), and superposition. Characteristics include: 1) a long, narrow head (possibly representative of a cap) [18]; 2) decorative shoulder protrusions [19]; and 3) a tail or exaggerated phallus. Comparative images may be found in the Rayayna region in the western desert (see note 19), the Wadi Umm Salam in the eastern desert, albeit of slightly later date (MORROW & MORROW 2002, p. 84, fig. B), Gebelt Yussef near el-Hôsh (Huyge, personal communication), and the second cataract region near Abka village (HELLSTROM 1970, vol. 1:1, p. 90; vol. 1:2, corpus no. A17, A18, A19). Execution techniques include deep blows, removing the entire rock cortex with no apparent figural outline (Hellström classification *e*) (*cf.* tab. 2).

HUMANS: HORIZON I, TYPE 1

Depicted in conjunction with watercraft of NIC-IIA date, human figures display the following characteristics: 1) small oval-shaped heads; 2) elongated bodies; and 3) arms that occasionally are raised above the head. Depictions of male figures often include decorative feathers attached to the head, along with tails and penis sheaths. Comparative material includes images on C-Ware pottery (HENDRICKX 1998, p. 204, figs. 1-4, 6). Hammered-outline drawings consisting of a line less than 1 cm wide with the interior surface closely hammered by fine shallow peck marks describe the execution technique (Hellström modified classification *m-shallow*) (*cf.* fig. 4).

HUMANS: HORIZON II, TYPES 1, 2 AND 3

During the Naqada IIC-D Period human figures have: 1) large, round heads (seemingly disproportionate to body size); and 2) one or both arms curved to touch the waist/hip. Type 1 and type 2 figures possess relatively slender bodies, depicted with or without penis sheaths. Type 1 figures have no cephalic

adornments, as opposed to type 2 figures that wear extravagant headdresses, most likely consisting of feathers. A broader body and undefined lower limbs suggest type 3 figures wear additional garments indicated. Penis sheaths appear with some regularity and at least one figure is depicted with headgear.

Although no superpositions are apparent for any of the figures with elaborate headdresses at KASS1, the composition of location 11 panel 4 suggests that the human figures there are contemporaneous with watercraft (*cf.* fig. 4). The boat and cabins as well as the figures with elaborate headdresses date to the NIIC-D Period based on comparisons with D-Ware (GRAFF 2009, p. 352, no. 476 (human); p. 301, no. 323; p. 314, no. 362; p. 364, no. 513 (cabin) and references therein). A similar figure with elaborate multiplumed cephalic ornamentation also appears north of KASS1 in the eastern desert (*i.e.* Wadi Miya; MORROW & MORROW 2002, p. 162, fig. E). Additional figures with less elaborate ornamentation (double or tripled plumes) appear at multiple eastern desert sites, including but not limited to the Wadi Abbad (ROHL 2000, p. 19, fig. 11), Wadi Mineh (south) (ROHL 2000, pp. 77-78, fig. 7) and Wadi Abu Markab el-Nes (ROHL 2000, p. 103, figs. 1, 2, 3).

Likewise, depictions of humans, types 1 and 3, appear in the most impressive panel at KASS1 both in size and composition (location 6 panel 15). Located to the north of the larger depression, the panel features three boats in procession — dated firmly to the Naqada IID Period — with standardized decorative phytomorphic motifs, truncated stems and sterns, deck projections, and cabins. The boat highest in the panel has eight occupants (six of which are type 3) towed by thirty-two figures [20] (type 1). On top of the flat-topped deck cabin, with two upright roof projections, a man in a long garment points left, in the direction of the towers. The figure wears a triangular headpiece, an intriguingly item reminiscent of the White Crown, a piece of the royal regalia associated with Upper Egypt [21]. The appearance of the falcon, a royal icon, atop a similar cabin of the high-prowed boat (location 6 panel 19) suggests that this style of cabin is associated with the king. The falcon associated with the boat cabin (or shrine/ritual architecture) recalls the later motif of falcon atop serekh (palace or temple façade).

Comparisons with similar compositions dating to the NIIC Period suggest the tableau at KASS1 represents elements of the Jubilee festival, signifying the rejuvenation of the king, including boat processions (SERRANO 2002, p. 51) and ritualized hunting of both Nilotic and desert game (WILLIAMS *et al.* 1987). Numerous parallels exist within the corpus of Egyptian rock art (ROHL 2000, figs. 33.11, 105.13; MORROW & MORROW 2002, figs. 91.A, 169.A, 226; WINKLER 1938, pl. XII.1 26 M 241a, 119; pl. XIV 18 M 141a; DARNELL 2009, pp. 97-99), as well as the painted tomb (Tomb 100) at Hierakonpolis and the

Gebelein linen (DONADONI ROVERI *et al.* 1994, pp. 21-22, figs. 4-7) [22]. The appearance of ceremonial iconography provides further confirmation that the rock art elements at KASS1 served as markers for creating a ritual landscape, proper decoration for a sacred area focused around a specific environmental feature.

Pecking technique for human figures type 1, 2 and 3 consists of a hammered-outline drawing with a line less than 1 cm and wider-spaced, deep peck marks on the interior surface (Hellström classification *l*) (*cf.* tab. 2).

HUMANS: HORIZON III

At KASS1, a final type of human figure appears with the following characteristics: 1) a round head, proportional to body size, that may include a pointed beard; 2) bent elbows depicted with right angles; and 3) prominent musculature of the buttocks and quadriceps. Although pointed beards may be identified as early as NIC-IIB at Hierakonpolis in the form of clay masks (ADAMS 2004, pp. 37, 40, fig. 4a, b, pl. 1a) and NIC-IIA on an oarsmen and captive depicted on the Gebelein linen (DONADONI ROVERI *et al.* 1994, pp. 21-22, figs. 4-7), the figures at KASS1 are securely dated to the NIII Period due to their structural relationship with knife-blade boats (see above). Likewise, similar depictions are found on a palette from the Tarkhan tomb 1579 and at the Wadi Nag el-Birka in the Theban western desert dating to the late Naqada III Period (DARNELL 2011, and references therein). The execution techniques slightly vary among the figures included within the type; however, at least two of the three different execution techniques represented confirm a later date for the rock art at KASS1. Execution techniques of figures include: 1) hammered-outline drawings with a line less than 1 cm wide and an untouched interior surface (*k*); 2) hammered-outline drawings with a line less than 1 cm wide where the interior surface is closely hammered with deep blows (Hellström modified classification *m-deep*); and 3) hammered linear design consisting of a deep line less than 1 cm wide (*d*). The change in execution technique during Horizon III (specifically *d* and *k*) presents the figures in a more hieroglyphic manner; no other figures at the site are executed with similar techniques [23].

Animal Typology

The final typology relevant to KASS1 applies to animals, specifically elephants. Characteristics considered temporally significant include: 1) the

shape and placement of the ears; 2) the shape and placement of the trunk and tusks; 3) the placement of the phallus; 4) the shape of the feet; 5) structural association between figures within a panel; and 6) comparative evidence provided by other media. The typology presented here follows that of FRIEDMAN (2004).

ANIMALS: HORIZON 0

Elephants dating to the Badarian Period display the following characteristics: 1) a horizontally-projecting trunk, with tusks to either side or protruding below the trunk; 2) a bulbous head with a single bump for the ears; 3) pronounced hind-quarters (specifically the rump); 4) a short horizontal tail directly below which a phallus is depicted; and 5) relatively linear feet. Only one possible parallel exists in the Wadi Abu Wasil, eastern desert (MORROW & MORROW 2002, p. 175, fig. M). Dating is based on patination and climate data (see below). The execution techniques are comparable to the human figure from the same panel (see above under the heading “Humans: Horizon 0”). Deep blows removed the entire rock cortex with no apparent figural outline (Hellström classification *e*) (*cf.* tab. 2).

ANIMALS: HORIZON I

Representations of elephants dating to NIC-IIA typically show: 1) two upright ears protruding from the top of the head; 2) a long, exaggerated trunk; 3) a phallus that extends from the belly line; and 4) rounded feet. Numerous examples of comparable elephants exist in the eastern desert (MORROW & MORROW 2002, p. 162, figs. D, F; p. 198, fig. F; p. 208, fig. C; etc.) and a single example drawn on pottery. The depiction on the C-Ware vessel comes from a securely dated context — Mahasna tomb H97, dating to NIC (GRAFF 2009, p. 228, no. 103 and references therein). The pecking technique is consistent with other figures dating to the same horizon; shallow pecks create an outline consisting of a line less than 1 cm wide and very fine shallow pecks leave the interior surface closely hammered (Hellström modified classification, *m-shallow*) (*cf.* tab. 2). Although not represented at KASS1, depictions of elephants exist from the next two horizons and are defined, in large part, by the shape and disposition of the ears (FRIEDMAN 2004, pp. 153-157).

Patination

Although other tableaux at KASS1 are executed impressively and add significantly to the understanding of ancient Egyptian politico-religious development, location 5 panel 7 proves to be the most interesting regarding chronology. The representations of the bull, elephants, and two (of three) humans are completely patinated, while the Naqada III or Early Dynastic additions of the dogs and the third human are only moderately patinated (fig. 5). The additions to the tableau, including attacking dogs, are dated using comparative evidence from the Wadi of the Horus Qa-a (DARNELL 2009, p. 98 and references therein [24]). Due to the degree of patination and superpositions, one of the human figures dates to the same time period as the attacking dogs. The representation and distribution of the completely patinated figures are closer to those

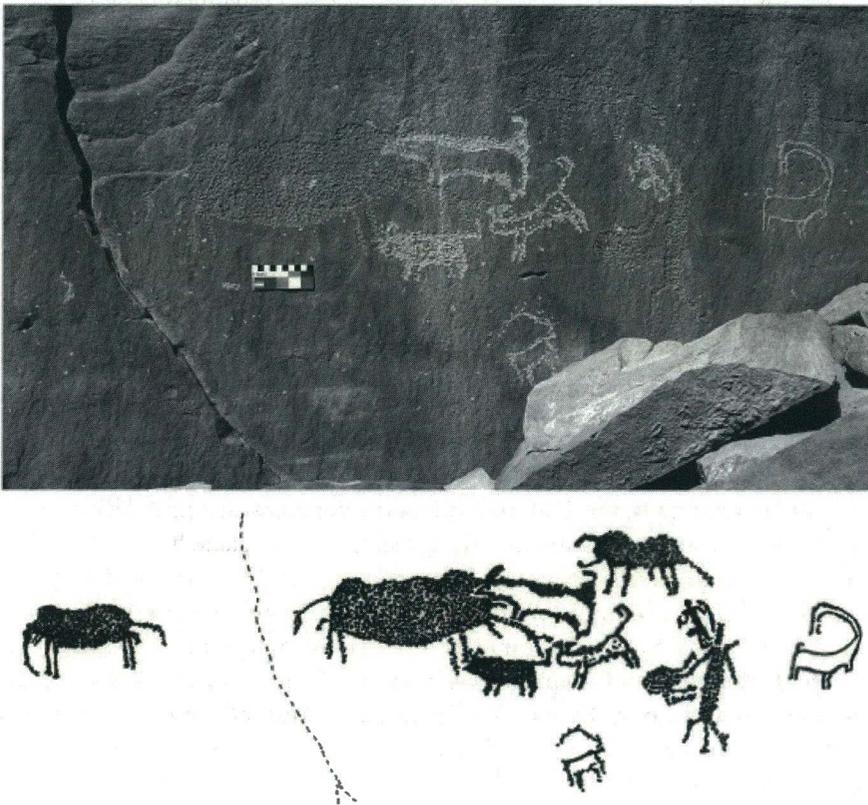


Fig. 5. — KASS1, location 5 panel 7, illustrating patination and superpositions.

of Predynastic rock art as opposed to the more naturalistic style of the Palaeolithic and typically geometric style of the Epi-palaeolithic Period, particularly with reference to the representation of the body from two perspectives, plan view of the head and section view of the body. Therefore, extreme differences in the patination exist for images that are created within a relatively short amount of time of each other.

Climate

As suggested by varnish microstratigraphy or lamination analysis, patination rates may be linked with climatic variability [25]. The deposition of bacteria and inorganic particulates, predominantly clay laced with manganese and iron, creates patina on rock surfaces (DORN 1998, p. 429). While no patination analysis exists for Egyptian rock art sites, the deposition of black desert varnish (iron and manganese-rich) analysed in the Sahara provides a good physical parallel. CREMASCHI (1996, p. 419) described the process of deposition, stating “Comparison with the local pollen record suggests that the black varnish was formed in a dry steppe environment, and therefore in conditions of moderate dryness”. During the Mid-Holocene Regionalization (approximately 5300-3500 BC) (KUPER & KROPELIN 2006, p. 806), Egyptian climate underwent a similar transformation, encouraging the build-up of manganese-rich layers and creating a darker patina on rock surfaces (LIU & BROECKER 2007); after 3500 BC the climate became too dry to create such an effect. The patination visible at location 5 panel 7 requires a developing time of approximately 1,000 years (Zerboni, personal communication). Coupled with the stylistic evidence (see above) the authors conservatively suggest a possible date for the fully-patinated images in the tableau between the second half of the 5th millennium and the very beginning of the 4th millennium BCE (*i.e.* the beginning of the Badarian Period or the Nubian Late Neolithic).

Conclusion

The authors present a new perspective on the chronological analysis of rock art with the marriage of stylistic variability, patination, and palaeoclimatic records. Egyptian rock art studies would benefit significantly from more detailed climate studies in order to provide a better understanding of the factors that affect North-African climate change and to help explain the seemingly abrupt climatic shifts that illicit specific human responses during

the Egyptian Neolithic and Predynastic Periods. Based on hydraulic features and degrees of patination, the authors suggest that KASS1 was initially used as a hunting area beginning during the second half of the 5th millennium BC. The appearance of standardized royal iconography over the next fifteen hundred years suggests the wadi served as a space for ritualized hunting that corresponds to the formation of the Dynastic Egyptian Culture. Future studies will focus on interregional comparisons of rock art from Upper Egypt and Lower Nubia in order to identify a zone of cultural interface and, more importantly, fluid group affiliations.

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NOTES

- [1] Decorated objects and painted depictions on pottery are used with caution, since few pieces of C-Ware exist and (along with most D-Ware vessels and decorated objects from the subsequent period) function almost exclusively in mortuary contexts (DARNELL 2009, pp. 83-84).
- [2] KASS1, location 6 panel 11 and location 11 panel 1.
- [3] Descriptions of execution techniques as well as the degree of patination follow HELLSTROM (1970, pp. 60-62).
- [4] Possible exceptions include the 'Cave of the Hands' in the Rayayna Desert west of Luxor (DARNELL 2009, pp. 85-87) and site SAL14 discovered by Morrow and Morrow, 25 km north of the Wadi Barramiya (MORROW & MORROW 2002, pp. 61-63). In both cases rock art functions as landscape augmenters that interact with geologic and topographic features as opposed to rock art that functions as route markers. SAL14 is suggested with significant caution; according to researchers the site surrounds a "natural pool" *ca.* 3 m deep (MORROW & MORROW 2002, p. 61). However, no geomorphological studies were conducted to confirm the validity of the description. Analogous features found in the desert regions closer to the Nile Valley are the product of modern activity.

- [5] The Pahu Site, a New Kingdom rock art site located close to a set of tracks in the Naqada hinterlands, exemplifies the relationship between relative seclusion and religious significance of rock sites from the Dynastic Period (DARNELL 2010, pp. 39-40).
- [6] In addition, the Wadi of the Horus Qa-a, discovered by J. C. Darnell in the Theban Western Desert on a branch of the 'Alamat Tal Road' (DARNELL 2006, 2011), may be compared to KASS1 with regard to function, even though the topographic and geographic landscapes are dissimilar.
- [7] HELLSTROM (1970) and CERVICEK (1974) advance the classification of watercraft significantly; however, neither author provides explanations regarding the ultimate function of the watercraft within Egyptian culture.
- [8] MERRIMAN (2010) identifies four Badarian boat models, although only one is from a secure context. See catalogue entries 29-31 and references therein.
- [9] Based on REGNER's (1996, p. 21) typology, palettes representing deep-hulled watercraft appear in the NIC Period and continue through NIID; however, the best parallels for the rock art at KASS1 correspond to the end of NIC and the beginning of NIIA. PETRIE (1920, p. 37) is the first to associate this type of palette with watercrafts, identifying the shape as a pelta, defined by CIALOWICZ (1991, p. 37) as *barques de papyrus aux extrémités relevées, et elles seraient à l'origine des palettes magiques, datées de Nagada I et II*. See additional discussion in CIALOWICZ (1991, pp. 37-38) and HENDRICKX (2002, pp. 289-291).
- [10] While D-Ware vessels first appear during the Naqada IIB Period, decoration is limited to "spirals, undulating lines and 'scales'" (HENDRICKX 2006, p. 77). The above typology does not date any watercraft to the NIIB Period; however, boats may appear in rock art contexts independent from (and earlier than) watercraft designs on D-Ware.
- [11] For a more detailed discussion of iconographic syntax, see DARNELL (2009, p. 93; 2011).
- [12] For examples of phytomorphic motifs appearing near or on the prow of watercraft depicted on D-Ware vessels, see BASCH (1987, p. 49) and GRAFF (2009, p. 174).
- [13] New evidence from the western desert suggests the appearance of the sail slightly earlier, during the Naqada IIC Period (DARNELL 2006; 2009, pp. 98-99 and references therein; 2011, pp. 1169-1171, fig. 12).
- [14] When the top of the structure slopes downward, it points toward the prow (HUYGE & DARNELL 2010), with the exception of the middle boat depicted on the Qustul incense burner. For at least one published model, the deck structure appears to have an internal depression, suggesting a seat (QUIBELL 1904, pl. 64; see also LANDSTROM 1970, p. 23, nos. 67, 68; and description in MERRIMAN 2010, p. 325, no. 54). Likewise, an ivory model from the main deposit at Hierakonpolis depicts a figure seated upon a damaged structure located close to the vessel's deckline (QUIBELL *et al.* 1900, pl. v).
- [15] While knife-blade boats do not appear outside royal contexts, they are not the only type of royal watercraft present during the EDP. See LANDSTROM (1970, pp. 24-25) for a discussion on papyriform boats. For yet another type of royal watercraft (upright stem and stern), albeit later, see LANDSTROM (1970, p. 59).
- [16] Dimensions of the Abydos boat graves in VINSON (1994, p. 18) are incorrect. See WARD (2000, p. 40) for correct measurements.

- [17] The authors express their thanks to S. Hendrickx for his insights and observations on the possible occupants of knife-blade boats.
- [18] For later comparisons, see rock art from the Theban Western Desert (DARNELL 2002, p. 145-146, fig. 17; DARNELL 2009, p. 88, fig. 7) and painted pottery (GRAFF 2009, p. 389, no. 587 and reference therein).
- [19] A painted figure from the 'Cave of the Hands' in the Rayayna Desert displays similar shoulder projections and may date to roughly the same time period (DARNELL 2009, p. 87, fig. 4.4). For later comparative material, see the two prominent figures in the Scorpion Tableau (DARNELL *et al.* 2002, pp. 10-19).
- [20] Contra MURRAY & MYERS (1933, p. 129) who count thirty-three figures. Current damage to the far left side of the panel may explain the discrepancy in number of towers if that portion of rock cortex was present in December 1930.
- [21] Compare with similar scenes from Nag el Hamdulab (GATTO 2009, p. 15).
- [22] See also the discussion of Jubilee scenes in DARNELL (2009, pp. 94-95 and in press) and LEBLANC (2011).
- [23] As Damell suggests, "The addition of iconographic syntax to a formalized iconographic attraction transforms the grammar of ornament into an ornamental grammar of symbolism. Rock art follows apace — if it does not lead — this development and stands a tip-toe at the threshold of writing. The step from iconographic syntax to hieroglyphic writing is conceptually small..." (DARNELL 2011, p. 1159).
- [24] See also DARNELL (2006, 2011).
- [25] Varnish microstratigraphy proved to be a reliable dating tool, when compared with cosmogenic Cl dating in a series of blind tests (MARSTON 2003, p. 197).

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Iconographic and Palaeographic Elements Dating a Late Dynasty 0 Rock Art Site at Nag el-Hamdulab (Aswan, Egypt)

by

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KEYWORDS. — Egypt; Nag el-Hamdulab; Rock Art; Dynasty 0.

SUMMARY. — The recently relocated and newly-discovered rock art sites at Nag el-Hamdulab allow to investigate the chronological relation between late Predynastic rock art and the developing Egyptian iconography of Dynasties 0 and 1. At present, five sites are known at short distance from each other, on the rocks surrounding the sandy plain west of the village of Nag el-Hamdulab. However, the location of the individual sites differs and reflects the conceptualization of the landscape. The exceptional character of the Nag el-Hamdulab sites allows for new perspectives on the interpretation of (late) Predynastic rock art and the reasons for its presence both close to the Nile and in remote desert areas.

Introduction

The rock art sites of Nag el-Hamdulab are located on rock outcrops surrounding the sandy plain west of the village of Nag el-Hamdulab, on the west bank of the Nile, about 6 km north of Aswan. Unfortunately, several sites have been heavily damaged during the last decades. At present, five sites are known at short distance from each other, while two further sites, now lost, were identified on the basis of photographic documentation from the Labib Habachi Archive (now housed in the archives of the Epigraphic Survey of the University of Chicago in Luxor) (fig. 1)***; the Habachi Archive has also allowed the reconstruction of recently damaged areas at the other sites.

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*** Cf. figures at the end of the text (pp. 321-326).

In February 2009, all of the tableaux were copied at 1:1 scale; due to the considerable aeolian abrasion, only the contours of the lines of drawings could be traced, not the individual chisel marks [1]*.

Both the relocated and the newly-discovered rock art sites at Nag el-Hamdulab represent the most extensive iconographic ensemble thus far known for late Predynastic – Early Dynastic times. The main themes of the tableaux are boat processions, images of military victory, and hunting. An anonymous king wearing the White Crown appears in three tableaux and defines the context for all the sites. Images of royalty are only one aspect correlating the tableaux of the different sites; boats are the second important recurring element. Stylistic peculiarities suggest that all the main tableaux with human figures are the work of only one or two hands, although this requires further research before final conclusions can be reached. As of yet the question remains whether or not all the tableaux are part of a premeditated “grand scheme” or the consequence of adding scene upon scene. However, the setting of the individual sites differs and reflects the conceptualization of the landscape, and the thematic continuities confirm the unity of the sites.

Description of the Rock Art Tableaux at Nag el-Hamdulab Site 7

The present article will discuss only site 7, located south of the Nag el-Hamdulab sandy bay, in a narrow gulch in the rock cliff at several metres above the wadi floor (fig. 2). The site consists of several tableaux (7a-d), among which two are particularly large. The first of these (7a) is visible with some difficulty from the wadi and is not really in a “hidden” position. This is, however, certainly so for the second large tableau (7b) which can only be seen from inside the gulch. Tableau 7d, located to the left of 7a but at a lower level, in a section where the rock forms a kind of overhang, consists of three parts, between which no direct correlation seems to exist and which may also be considered as individual scenes. Finally, a large giraffe (7c) is located on a rock face nearby the main tableaux.

The tableaux have fairly recently been the object of deliberate vandalism. The human figures and the cabins of the boats particularly attracted the attention of vandals, who, in some cases, employed a chisel for removing entire elements of the scene. A number of screws and other pieces of iron — probably the tools of the vandals — were found on a rock opposite tableau 7a. A deep hole was dug below tableau 7b, destroying the original walking surface.

* Numbers in brackets [] refer to the notes, pp. 313-315.

Originally, the drawings of tableau 7b must have been in reach of someone standing in front of it.

When going up the dune towards the site, a large giraffe (tableau 7c) (fig. 3) is visible on the rock face to the left of the gulch in which the main tableaux are located. The giraffe shows no resemblance with the earlier Predynastic representations of the animal, examples of which occur nearby at site 7. The giraffe has an elongated, horizontal body, with the neck at an angle of almost 90°, a long depending tail and a small head with four vertical lines on top as indications of ears and “horns” (ossicones) [2]. The rendering of both ears and “horns” is rare for Predynastic rock art scenes, but regularly occurs for late Predynastic – Early Dynastic representations of giraffes, as can be seen for example on several decorated palettes (CIAŁOWICZ 1992). For all these reasons, there can be no doubt that the giraffe belongs to the rest of the tableaux of site 7; the presence of another giraffe as part of tableau 7a (fig. 4) further supports such a conclusion.

Tableau 7a (fig. 4) is the largest at Nag el-Hamdulab, and already for that reason of primary importance. The scene is organized around five boats, four of which are grouped in a row, slightly slanting upwards to the right, while the fifth is placed at a higher position. The slanting line reflects the original walking surface below the tableau still visible in the archival photos (fig. 1) but which has been disturbed more recently [3]. The composition is strongly influenced by cracks and irregularities of the rock surface the artist had to take into consideration during the execution of the tableau. All elements of the tableau are directed to the left, looking out of the gulch towards the wadi, except for the giraffe above the uppermost boat, facing to the right, into the gulch.

Despite the size and the importance of the boats, the focal element of the tableau is the representation of a ruler, followed by a fan bearer and preceded by a dog and two standard bearers, situated above the only boat with an elaborately-decorated cabin. The king wears the White Crown and holds a long *heqa*-sceptre. The fan bearer wears a penis sheath and holds the fan with his two hands in front of him, with the fantail immediately behind the head of the king [4]. The two standard bearers have the same pose, each holding the high pole of his standard before him. The identification of the object on the first standard causes some difficulty; although untouched by the recent damage, it is rather eroded. Most probably, the asymmetric alveolar shape is the enigmatic emblem known as royal placenta or cushion, despite a triangular gap in the normally round front portion of the emblem [5]. This understanding of the image finds support in the identification of the second standard as that of Wepwawet, the combination of the “placenta” and Wepwawet

standards occurring also on the Scorpion mace head, and together with two falcon standards on both the Narmer palette and the Narmer mace head. Alternatively, the first standard could show a scorpion, with the triangular gap as an indication for the claws of the scorpion, but in that case the legs of the animal would be missing, and these are always emphasized in late Predynastic – Early Dynastic representations (HENDRICKX *et al.* 2003). The lack of scorpion standards in Early Dynastic iconography suggests that the first option is the more plausible.

The dog takes a remarkably prominent place in the scene with the king. He is in between the king and the standard bearers, but slightly lower, which places him in the middle of the semicircle formed by the boat. The symbolic importance of dogs in hunting scenes is well known (BAINES 1993; HENDRICKX 1992, 2006; GRANSARD-DESMOND 2004). In these scenes, the hunters are almost always absent and “replaced” by the dogs. Although dogs occur as a symbol of power on a number of Late Predynastic ivories, where they appear as a controlling element at the end of animal rows (HENDRICKX 2006, pp. 736-739), a dog never accompanies Early Dynastic representations of a ruler. During Predynastic times, the symbolic importance of dogs can be compared with that of bulls and falcons, animals that were royal symbols before the commencement of the First Dynasty (HENDRICKX 2002; HENDRICKX *et al.* 2011) (note also the Qa-a Wadi tableau, in which dogs, bulls, and a falcon standard appear to represent human — royal — authority; see DARNELL 2010, 2011). Contrary to the bull and the falcon, the dog did not continue to enjoy this status in the Early Dynastic period, although actual dogs in the royal entourage could be highly honoured [6].

Four of the five boats are nearly identical in shape and details. Their high prows and sterns are rounded and they have two cabins, the roofs of which are slightly slanting in opposed directions, with the highest points towards the middle of the boat. The interlacing pattern on the front cabin of the boat below the royal scene is an imitation of plaiting, indicating that the cabins are made of light materials. For three of the four boats, a standard with bull’s horns (?) appears on top of the front cabin, at the front side. The fourth boat has a pole with slightly outwards-curving end in the same place.

A band of rectangles lines the upper side of the hull and continues into the cabins but not between them. Despite the interruption, the band of rectangles most probably indicates the reinforced side of the boat, a feature appearing on boat models (CHLONICKI & CIALOWICZ 2004, fig. 7; CIALOWICZ 2007, fig. 27; GRIMM & SCHOSKE 2000, p. 27; NIBBI 1993, pls. I, III-IV; BUSSMANN 2010, Abb. 5.51-57) or representations of boats (QUIBELL 1900, pl. V.3-4). On two boat models from Hierakonpolis (BUSSMANN 2010, figs. 5.52, 5.602),

the beam's ends seem to protrude upwards from the hull, and the lines of rectangles may alternatively represent construction elements of the boats. The hulls are entirely pecked except for a carefully excluded square below the space between the two cabins. The meaning of the rectangular elements remains unknown; the same detail appears on the boats from the "Decorated tomb" at Hierakonpolis, and occurs exceptionally in rock art [7]. Although certainty on the point is impossible, the artist probably intended to represent wooden hulls, actual examples of which are known from Abydos, dating to the time of Aha (WARD 2006; O'CONNOR 2009, pp. 185-194).

From the prow of each of the four boats under discussion hangs a short rope; atop the prows is a curved branch split in two with an offshoot, followed by three straight branches. The second boat from the left shows a few additional details. Behind the three straight branches and at the front of the band of rectangles is a standard, most probably with a falcon on top. Unfortunately, the detail is now completely destroyed, but the archival photos show a shape very similar to that of the frequently attested falcon amulets and other falcon images of late Predynastic – Early Dynastic times (HENDRICKX *et al.* 2011). The presence of a falcon standard would agree very well with the depiction of the king above the boat. On the right side of the stern cabin is another standard, which may very well represent bull's horns, but as opposed to those on the front cabin, the pole of the standard does not continue between the "horns". Unfortunately, the connection point between the emblem and the pole was already damaged due to flaking of the rock when the archival photos were made. These earlier photographs reveal a faint indication for two small elements setting off from the pole at the same point as the "horns", apparently representing ears and confirming the identification of the object as a bull horn emblem, similar to the emblems known on different types of objects (HENDRICKX 2002, pp. 314-315). The opposing sides of the cabins are continued above the roof and decorated with a circle. If these circles, not present on any of the other Nag el-Hamdulab boats, are not mere decoration, they could be large-scale representations of mace heads [8]. As for the falcon standard, this would be a clear reference to the power of the king depicted above, partially paralleled by the more certain depictions of maces on rulers' vessels in the Gebelein Linen scene and on the tableau near the mouth of the Wadi of the Horus Qa-a (DARNELL 2009, p. 99; 2011, pp. 1171-1174). For all these reasons, the identification of this boat as royal can hardly be doubted.

The fifth boat is placed rather awkwardly at the bottom of the tableau, beneath the "royal boat". Although the prow and stern are as high as those on the other boats, they are not broad and rounded, but the prow is narrow

and makes a hook while the stern ends in a straight top line. This boat has only one cabin and the band of rectangles is missing; nothing else appears on the boat, no branches, leaves, or standards. The hull is fully pecked, without the rectangular “blank” space occurring on all other boats of the tableau. Since it is the first boat encountered when coming from the wadi, it seems to represent an “introduction” to the tableau as a whole. However, this does not imply that the boat is an unimportant detail; on the contrary, the single, doomed or vaulted cabin is of utmost importance. The decoration of the cabin shows what can only represent a door with the rolled-up door curtain, identical to the false doors on Old Kingdom funerary monuments. Also of importance is the position of the door, slightly to the left of the centre. A vaulted building with the door to the left of the centre occurs for example on the Hunters’ palette, where it figures next to a “double bull”, and can therefore be identified as a shrine. A vaulted building with asymmetrically-placed doors as shrine of the Neith temple on a label from the reign of Aha (PETRIE 1901, pl. X.2) confirms the identification of the deck structure on the fifth Hamdulab vessel as a shrine. A bone inlay fragment of a box from the tomb of Narmer at Umm el-Qaab may also depict a similar shrine (DREYER 2005, Abb. 4g) [9]. A few rectangular temple models from Tell Ibrahim Awad show a vaulted roof on their short side and an asymmetrically-placed door on their long side (VAN HAARLEM 1998; 2009, cat. n° 287-292), and an important series of model vaulted shrines are known from the early temple deposits at Abydos (MULLER 1964, cat. A31; BUSSMANN 2010, Abb. 5.827-830), Hierakonpolis (BUSSMANN 2010, Abb. 5.127) and Tell Ibrahim Awad (VAN HAARLEM 2009, cat. n° 294-296). Finally, the asymmetrical position of the entrance of the deck structure also occurs on the dummy shrines of the Djoser complex. All this documentation clearly indicates that the cabin on the boat under discussion represents a shrine, transforming the vessel into a “divine boat” and placing the tableau in a religious context.

The Hamdulab “divine boat” appears to be parallel with the “black boat” figuring as central element in the painted wall of the “Decorated tomb” at Hierakonpolis (QUIBELL & GREEN 1902, pl. LXXVII), of at least three centuries earlier. The chronological difference most probably accounts for differences between the vessels, such as the prow of the Hierakonpolis boat curving inwards and the stern being less steep. But the Hierakonpolis “black boat” is also dominated by a doomed or vaulted cabin, and in both cases, the main theme is a boat procession (*cf. infra*).

In front of the “royal boat” are four bearded persons, their arms beside their bodies, holding a horizontal line that probably represents a rope. Although the first man is very close to the edge of the rock, which moreover

is damaged in the area, the fact that the rope ends in front of the first man suggests that nothing has disappeared. The rope does not continue between the second and the third man, perhaps due to an omission by the artist, unless it is an indication that they are to be seen as standing two by two. Although the rope does not touch the boat, the men most likely represent boat towers, a theme that regularly occurs in rock art (WINKLER 1938, p. 36, pls. XII.1, XIV, XLI.94-95, XLI.101; DARNELL 2009, pp. 91-92). The chests of the men are emphasized by their broadness, indicating that a frontal view is intended, and for three of them by the central part that has not been pecked. This emphasis on physical strength is consistent with their identification as boat haulers.

Immediately behind the “royal boat” follows the next vessel, above which are two persons. Although they are now almost entirely destroyed, the archival photos allow for their reconstruction. Although separated from the king and his fan bearer by the upwards pointing prow of the boat, the two persons are the continuation of the royal procession. Both men are bearded, and the first one raises his arms above his head, holding a circular object on his head. A very close parallel appears on a fragmentary knife handle from cemetery U at Abydos, on which two men in an identical attitude hold globular jars on their heads (DREYER 1999, fig. 10a). A faience figurine from the early temple at Abydos (BUSSMANN 2010, Abb. 5.685) is an exact parallel in three dimensions. The second man has his arms beside his body and holds an object in front of his waist that looks like an irregular, oblique line with a curve at one end. Although the object does not show enough detail to allow identification, it may correspond to the objects held by the two tribute bearers on the above-mentioned fragmentary knife handle from Abydos, considered by DREYER (1999, p. 205) as respectively a string of fruits or beads and an animal skin. One may also compare the inlay fragments of a box, on which tribute bearers presenting a globular jar occur (DREYER 2005, Abb. 4h) alongside others who hold vertical objects (DREYER 2005, Abb. 4f-g) identified as reed panicles and a branch (DREYER 2005, p. 256). The identification of the reed panicles is suspect, however, if only for the fact that they are held from the top, which seems rather implausible. An identification as animal skins, parallel to the knife-handle fragment, seems more logical, and in better agreement with the actual representations. Although the horizontal object in the Nag el-Hamdulab scene might also symbolize wood, the identification of the two persons as tribute bearers seems certain.

The largest boat of the tableau is above and partially behind the royal scene. Above this boat is a remarkably large giraffe — especially when compared to the king — oriented in the opposite direction to the king. The

patination and execution technique for the image of the giraffe are the same as for the rest of the tableaux at Hamdulab, suggesting that the giraffe belongs to the other images of the scene, rather than being an earlier drawing incorporated into the later group. Furthermore, the hind legs of the giraffe are integrated into the cabins of the boat, suggesting more logically that the rock artist carved the giraffe after the boat had been drawn and not vice versa. Also, the hips of the giraffe are drawn as triangular shapes, a characteristic of the animal representations in tableau 7b (*cf. infra*) [10]. The giraffes above the largest boat and in tableau 7c are of comparable size and design; both also face in the same direction, opposite to that of the boats and the royal scene. One can easily accept a link between the two representations, although the interpretation thereof is far from obvious. The apparent juxtaposition of the giraffe and the royal figure recalls the heraldic opposition of giraffes with a palm tree at the centre on decorated palettes, and in depictions at a rock art site in the Theban Western Desert (DARNELL 2009, fig. 10). The interpretation of this motif has received considerable attention (HUYGE 2002, pp. 199-201; HENDRICKX & FORSTER 2010, pp. 833-835; DARNELL 2009, pp. 89-90). WESTENDORF (1978, p. 207) considers the palm tree to be a heavenly tree and seat of the sun, with the giraffes acting as solar bearers. Although CIALOWICZ (1992) favours a purely political meaning for the group, promoting the idea of the unification of Egypt based on symbolism from an Upper Egyptian-Nubian context and specific historical events, the latter are largely hypothetical. Whereas the palm tree is a royal — rather than overtly solar — symbol (HENDRICKX & FORSTER 2010, pp. 833-834), the giraffe is of clear solar significance, ultimately becoming the *w3s*-scepter of pharaonic Egypt (WESTENDORF 1966a, pp. 37, 84-85; 1966b, pp. 207-208). HUYGE (2002, pp. 199-201) demonstrated the relation between the giraffe and the sun during the Predynastic Period through the orientation of giraffe depictions towards the north, indicating the sense of the apparent rotation of the sun. The Nag el-Hamdulab giraffes have the same orientation and may therefore indeed refer to solar symbolism. The giraffe as highest-placed element of tableau 7a might also have referred to the sun. The apparent juxtaposition of giraffe and royal figure may therefore correspond to the juxtaposition of giraffe and palm so well attested in Predynastic iconography. The giraffe over the boat in the Hamdulab scene corresponds to other images of earlier zoomorphic solar carriers — including giraffes — appearing above or as though sailing in boats (DARNELL 2009, pp. 90-91).

Continuing from tableau 7a into the gulch, the rock surface slopes backwards and shows too many irregularities to be decorated. After this comes another flat surface, bearing tableau 7b (fig. 5), which consists of six animals,

to which an 18th Dynasty text was added afterwards [11]. Four out of the six animals, as well as the hieroglyphic inscription, are now heavily damaged but can be entirely reconstructed thanks to the archival photos. Starting in the lower left corner are two ostriches close to each other with a large ibex above them; to the right of the ostriches is a large bull, next to which are two enigmatic animals, one above the other. The animals face into the gulch, contrary to the orientation of tableau 7a, with the exception of the bull.

A large bovine, characterized by a square muzzle, makes up the central element of tableau 7b. Although the sex of the animal is not indicated, the impressive horns make clear that the image is intended to represent a bull. Very little detail is indicated, the legs for example having been reduced to single lines, without the triangular hips characteristic of the other animals. The triangle made by the front as well as the back legs also differs from the parallel legs seen for all the other animals [12]. Two almost identical parallels for this bull are found at “Giraffe Hill”, a rock art site in the desert south-west of the Nag el-Hamdulab plain, at about 1 km from site 7 (fig. 6) (STOREMYR 2009, pp. 126-127). The rock art at this site mainly consists of giraffes of the “Predynastic type”, but these are not directly associated with the bulls of interest for us. STOREMYR (2009, p. 127) considers the bulls as “younger”, but without further argumentation or chronological interpretation. Although the documentation from “Giraffe Hill” shows that this type of bull also occurs outside the characteristic iconography of the Nag el-Hamdulab sites, it does not allow a more precise date. Finally, the contour line of the bull of tableau 7b is pecked somewhat more thickly than the rest of tableau 7b. Although no difference in patination can be observed, it nevertheless seems most plausible that the bull was drawn before anything else at site 7 and subsequently integrated into tableau 7b. One might even suppose that the bull “attracted” the rest of the tableau (DARNELL 2009). The detail of the ears and the tips of the horns deserve particular attention. The manner in which the ears are indicated, one on each side of the base of the horns in combination with the strongly-curved tips of the horns, is identical to numerous Predynastic amulets in which bulls horns are combined with bird heads (HENDRICKX 2002, pp. 315-317, app. M). The combination of a bull with this type of amulet is also attested for a palette from Khor Bahan, cemetery 17, tomb 56 (Elephantine museum, REISNER 1910, pl. 63b.10) [13]. This type of amulet and all of the related iconography disappears towards the end of the Naqada II period, with the very last examples occurring during Naqada IIIA2 (HENDRICKX 2002, p. 292), before the earliest-known royal representations. This confirms the early chronological position of the bull. In our opinion, the bull is to be considered as a royal animal, similar to examples on the Narmer

palette (Cairo JdE 32169) and the Bull palette (Louvre E.11255) but also already on a Naqada I White Cross-lined vessel from tomb U-415 at Abydos (DREYER *et al.* 2003, Abb. 5, U-415/1; see also HENDRICKX 2010). The bull also appears several times in the Predynastic tableau in the Wadi of the Horus Qa-a in the Theban Western Desert, functioning as a royal symbol (and apparently in one example there labelled by the image of a falcon standard, see DARNELL 2009, pp. 97-99; 2011, p. 1176).

The two ostriches are highly stylized, their heads being reduced to crooks. The body of the right one has additional pecked dots, presumably imitating the speckled appearance of the feathers of the animal; the tail of the same ostrich touches the chest of the left bird, similar to the rows of ostriches featuring frequently on decorated pottery (GRAFF 2009, p. 164). Both ostriches have raised wings, pointing outwards, for which a single parallel can also be found on decorated pottery, but with a different body shape of the ostrich (GRAFF 2009, no. 463). A closer parallel is in a rock drawing from Winkler's site 10 on the Qena-Qoseir road (WINKLER 1938, pl. XIX.3).

The ibex above the ostriches has an elongated body, two large curved horns, and a short, raised tail. Although distinguishing between representations of ibex (*Capra ibex nubiana*) and oryx (*Oryx dammah*) is often difficult for rock art sites, the strong curve of the horns in this case already hints at the ibex, an identification confirmed by the short, upright tail.

Finally come two most peculiar animals to the right of the bull. Their bodies look rather like those of dogs or lions but their "heads" bear no comparison to that of any known animal. Each head consists of five lines, the upper one of which is shorter and parallel with a similar "sixth line" formed by the backline of the animal; there is no indication at all of mouth, eyes, or nose, although the two short lines may be intended to represent ears. Furthermore, the animals have extremely long tails, making an elongated "S" above their back. The images appear definitely to depict a non-existent, "mythological" animal, a well-known aspect of late Predynastic iconography, of which the "serpopards" — considered to be a combination of a leopard and a serpent — on decorated palettes (and rock art, see DARNELL 2009, p. 89) are the most obvious example (KUHN 2011). Of special interest is the combination of a gazelle with the dorsal fin and tail of the Nile perch on the Abu Zeidan knife handle and a few other objects (HUYGE 2004) showing the possibility for a combination of a mammal and a fish for the creation of a "mythological" animal. The tails of the animals allow comparison with a few representations of dogs, especially one on a decorated staff of unknown provenance (München SMAK AS 1520, GRIMM & SCHOSKE 2000, p. 35), although the tail is in that case far less long. The barbells of the catfish may be the

inspiration for the peculiar heads of the creatures — the manner in which these are rendered on the Narmer palette, as parallel lines (QUIBELL 1898), corresponds well with the strange Nag el-Hamdulab animals. If the latter identification is correct, the animals would be a combination of a heavily-built dog with the head of a catfish, additional examples of a mammal/fish hybrid. The only possible parallel is an animal with a similar “head”, but lacking the curved tail, at a rock art site in the Theban Western Desert (fig. 7).

In tableau 7b, the orientation is of primary importance. The animals face to the right, into the gulch, with the exception of the bull. It is the only animal that looks in the same direction as the king in tableau 7a. As the bull is a royal symbol, this allows one to consider the animal in tableau 7b as a parallel for the king in tableau 7a and as “dominating” the animals around it. As desert animals, the ibex and ostriches are chaotic elements (KEMP 2006, pp. 93-94). This is confirmed by the two mythological animals which are even more explicit aspects of chaos and which furthermore occur at the end of the gulch, which as the most remote/hidden location also refers to chaos. The position of the mythical creatures at the pictorial edge of the tableau and the conceptual edge of the universe corresponds to the appearance of griffins and other mythical creatures, representing the edges of the known world, in Middle Kingdom hunting scenes at Beni Hassan (DARNELL 1995, pp. 85-85, 91; RABEHL 2006, pp. 141-142, 159-160, 187, 207-209, 237-238; MORENZ & SCHORCH 1997, pp. 365-386; MORENZ 2002, pp. 20-32; KAMRIN 1999, pp. 83-89 *et passim*).

Tableau 7d is located to the left of 7a, but at a lower level, below a rock overhang. On the left side is a “sickle-shaped” boat with a number of vertical strokes above it (fig. 8); to the right of this are two persons preceded by a hunting scene (fig. 9). The boat is directed to the left as is shown by the short rope hanging from its prow. The two persons and the hunting scene on the other hand are facing left, indicating that the tableau consists of two parts, between which no direct correlation seems to exist.

The boat is much smaller than those from tableau 7a and although similar, its prow and stern show far less of an upward curve. Furthermore, the hull is delineated only in pecked contour line, unlike the boats of tableau 7a. On the other hand, the boat has two cabins with poles slightly projecting above their roofs and rows of rectangles continuing in the cabins but not between them, as is the case for the boats of tableau 7a. The row of rectangles between the prow and the forward cabin has higher rectangles compared to the stern row, a characteristic also appearing in tableau 7a. Above the boat is a long row of small vertical lines —approximately fifty-six — that appear to be counting strokes.

At some distance to the right of the boat, about halfway to the hunting scene, are two persons, each holding in one hand a short, curving object before him. Although the figures have suffered only modestly from modern vandalism, they are nevertheless difficult to describe in detail because of heavy aeolian abrasion. Probable beards and clearly-delineated penises indicate that the figures are male. The sticks might be throwing sticks because of the slight curve, although they seem rather long for this. Alternatively, they could be sticks for controlling (captured) desert animals when leading them up, as can be seen exceptionally on decorated pottery [14]. Both of the possible interpretations for the two persons allow a direct link with the hunting scene to the right of them and toward which they are oriented.

Although the hunting scene is eroded, heavily damaged, and not recorded in any known archival photographs, a reconstruction of the complete lay-out of the scene is possible. Starting from the right is a quadruped with two long, curved horns — because of the long neck the animal is most probably a gazelle. A dog jumps from below at the hind legs of the gazelle. The details of the rump of the dog are largely beyond recognition, but no doubt the animal is drawn in a manner that occurs frequently in rock art, with vertical hind legs and front legs outstretched toward the chased animal (FUCHS 1989, fig. 8; GATTO *et al.* 2009, fig. 14; HENDRICKX *et al.* 2009, figs. 6-11). Behind the gazelle and the dogs stands a hunter with his lower arm down beside his body, his upper arm raised; he holds a bow in one hand — towards the gazelle — and a bundle of arrows in the other. The latter are difficult to recognize due to erosion and damage but many parallels are known: such a bundle of arrows appears already on a White Cross-lined plate (Moskow, Museum of Fine Arts 2947; GRAFF 2009, no. 9), on a decorated bolder from the Rayayna Desert (DARNELL 2009, p. 86, fig. 3), and a more recent example is on the Louvre fragment of the Hunters palette (Louvre E.11254; SPENCER 1980, no. 575) [15]. This manner of depicting hunters continues into the Old Kingdom [16].

Interpretation

The four tableaux of site 7 are closely interrelated. Tableau 7a depicts a boat procession, with human towers, the principal and initial element of which is a vessel with deck shrine — a “divine bark”. At the same time, the falcon and possible maces associated with the vessel indicate a royal association, suggesting that the boat may ultimately be a nautical manifestation of divine kingship, a bark both divine and royal. The ritual event is under the

direct supervision of the king and his retinue. The general idea is that of a display of royal power in the religious context of a boat procession. The boats and the king with his retinue face towards Elephantine, perhaps — given the site's importance during the Early Dynastic Period — the ultimate destination of the procession.

The presence of a hunting scene in tableau 7d, close to the boat procession, is most interesting. Hunting in the ritual context of tableau 7 probably belongs to the constellation of images depicting the hunting and capturing of animals for socio-religious events, being at the same time a display of social status (LINSEELE *et al.* 2009, HENDRICKX *et al.* 2009, HENDRICKX & EYCKERMAN 2010, HENDRICKX 2010). In this respect, the combination with the boat procession is perfectly logical, and reveals two of the major elements of the Jubilee cycle of Predynastic iconography (WILLIAMS & LOGAN 1987, pp. 245-285; ADAMS & CIALOWICZ 1997, pp. 33-48; DARNELL 2009, pp. 94-102; 2010; 2011). The two persons with sticks between the small boat and the hunting scene may be additional hunters, and allude to the bringing of captured animals.

The last section of the decoration in the gulch, tableau 7b, is hidden from sight when the viewer is not standing in the gulch itself. The meaning of 7b is more purely symbolic, as the presence of the two mythical animals indicates. The desert animals as symbols of chaos are facing the desert, the liminal aspect of which the two mythological animals at the very edge of the tableau/cosmos emphasize. The lowest of the beasts “faces” upwards, towards the gap in the rock, directed to the desert, and links the scene visually to the chaos of the desert. The bull as symbol of the king, facing the same direction as the king in tableau 7a, dominates the real and mythological animals. The ultimate meaning of the tableau is the royal, human assurance of control, the triumph of order over chaos on a cosmic level.

The giraffe forming tableau 7c by itself is paralleled with the giraffe above the boat in tableau 7a. Since both giraffes face in the opposite direction to that of the royal scene, but parallel to the “chaotic” animals in tableau 7b, they could here represent elements of chaos, in keeping with their identity as “desert” animals. However, in Predynastic iconography the giraffe appears to have a positive, solar symbolism, and their position within the totality of the imagery at Hamdulab site 7 may be in keeping with this positive imagery. The tableau 7c giraffe functions as a visible “introduction” to the main tableaux 7a-b; the giraffe is at the opposite end of the scene to the mythical chaos-beasts, and may represent a “positive force” in counterbalance thereto. The presence of the second giraffe as part of the boat procession appears to confirm the positive aspect of the giraffes in the iconography of the

Hamdulab tableaux. Tableau 7b appears therefore to be an elaboration on a cosmic level of the royal power apparent in tableau 7a.

The combination of a boat procession, hunting, solar symbolism, and the general theme of order over chaos fits very well with the concept of the “Greater Pharaonic Cycle” as defined by WILLIAMS & LOGAN (1987), especially when considering that the theme of military victory occurs at other Nag el-Hamdulab rock art sites. In the Hamdulab cycle also appears the image of a prostrate man with feather, arms stretched before him, an apparent visual reference to royal domination of potentially chaotic humans, a ritual manifestation of the more bellicose and physical expression of the same domination of human disorder appearing elsewhere at Hamdulab in the scene of two bowmen with a prisoner between them. The theme of military domination of human chaos, parallel to hunting as the ordering of the potentially chaotic, natural world, is very much part of the overall scheme of the Hamdulab imagery.

The Nag el-Hamdulab Cycle bridges the iconographic worlds of the Predynastic and Dynastic Jubilee images; it is a hybrid of the two. Whereas Predynastic scenes are either one long illustration, a fluid blending of the events, or represent individual vignettes from the cycle (DARNELL 2009), the dynastic scenes — from Narmer forward — are more often broken up by the key events, divided into registers, just as the Hamdulab tableaux appear to separate certain events, and assign particular symbolism and meaning to each tableau of the greater cycle. The Nag el-Hamdulab scenes stress the nautical aspect, the Predynastic focus of the event, but divide the event into distinct sequences. The Nag el-Hamdulab Cycle is also the earliest group of complex images of religious activity incorporating the king wearing a recognizable crown of pharaonic regalia, and the last of the large, nautical Jubilee cycles of the Naqada II period. Whereas earlier the concept of kingship was an important element — like the bulls and falcon in the Qa-a Wadi Jubilee cycle — beginning with the Nag el-Hamdulab Cycle, the presence of the physical king presiding over the events takes precedence over symbolism alluding to royalty.

The Early Hieroglyphic Annotation

The final element of tableau 7a is a four-sign hieroglyphic inscription immediately behind the stern of the uppermost boat and above the prow of final vessel (figs. 10, 11). The hieroglyphs are fully pecked in the style of the images of the tableaux, have the same degree of patination, and are

certainly elements of the tableau. The signs face toward the right, and are a feline head over a circular sign; a crescent-shaped sign with domed, central element; and a vertical sign, the upper portion angled up to the left, with a rounded protuberance to the centre-left.

The correct reading of the annotation hinges on the identity of the rightmost sign. At first glance — since the slanting upper portion follows a natural fold of the rock — the sign has roughly the appearance of a curve-bladed axe. That sign, however, is usually horizontal in orientation (REGULSKI 2010, p. 640, cites only one as essentially upright, from Wadi Maghara, reign of Netjerikhet), and is employed almost exclusively as a title related to wood working (KAHL 2003, pp. 206-207). The extension of the sign into the irregularity above the central protuberance is pecked like the rest of the sign (fig. 10); taking into account the slant of the inscription upwards towards the right, the added upper portion of the sign being necessary to give the right end of the inscription the same height as that of the leftmost portion. The sign most closely corresponding to the rightmost element of the Hamdulab annotation is Gardiner T18, the *šms*-sign (REGULSKI 2010, p. 642 — the examples from the reigns of Djer and Den are particularly similar).

The reference to *šms* in a Protodynastic/Early Dynastic context immediately recalls the *šms-H'r*, the “Following of Horus”, the biennial progress of the royal court on a perambulating judicial and tax-collecting visit to demonstrate royal authority throughout the land (WILKINSON 1999, pp. 220-221). The term is often determined by the sign of a ritual vessel (ERMAN & GRAPOW 1930, p. 485; KAHL 1994, p. 732; WILKINSON 2000, pp. 90-91), and the sign in the Nag el-Hamdulab inscription immediately to the left of the *šms*-sign resembles to some extent the boats appearing on certain First-Dynasty labels (VANDIER 1952, p. 837, fig. 560 and p. 841, fig. 562). The inscription appears to read in retrograde fashion (KAHL 1994, pp. 42-47), the initial *šms*-sign and following boat referring to the nautical peregrination of the court.

The feline head is apparently Gardiner F9 (similar to versions from the reign of Qa-a in REGULSKI 2010, p. 395), appearing most often with the value *b3*, “panther hide”, in Early Dynastic inscriptions (KAHL 1994, p. 493; 2003, pp. 134-135). The sign below the animal’s head is circular, with two internal marks, and probably represents Gardiner O49 or O50 (REGULSKI 2010, pp. 566-568). Reading the lower sign as a version of O49, the best parallels for the group are the toponyms on the Gebel Sheikh Suleiman tableau (WILLIAMS & LOGAN 1987, pp. 283, 285). A similarly-written toponym is known from late pharaonic sources (YOYOTTE 1962, pp. 93-101, 110-111; HABACHI 1963 [17]), but that place is in the Delta and is unlikely to be related. A “city

of the panther skin” would not, however, be out of place in the area of Aswan, emporium of goods from the south; as specific designation of the leopard skin of the *Sem*-priest (ERMAN & GRAPOW 1926, p. 415; HELCK 1984), the toponym could have cultic significance as well.

The annotation appears to label the imagery as ultimately related to the “Following of Horus”, that royal and ritual event further related to a toponym somehow related — phonetically or directly — to the term for leopard hide. Palaeographically the signs are entirely in keeping with what one would expect for an early hieroglyphic inscription, certainly acceptable for a First-Dynasty date, and not impossibly as early as late Dynasty 0. The absence of a royal name suggests a late Dynasty 0 date for the Hamdulab Cycle, although in Early-Dynastic records the royal name and the image of the king can both equate and alternate, as often during the New Kingdom the name can stand for the king (SPIESER 2000). On First-Dynasty labels the royal name may appear in the first register, with the unlabelled image of the king present in the subsequent registers. On the Aha label Cairo JdE 31773, a serekh with boat suggests the presence of the king on the boat (SPIESER 2000, p. 7), a parallel to the Nag el-Hamdulab images of the king without name on a vessel.

The Nag Hamdulab Cycle is the earliest depiction of a Jubilee cycle or vignette with accompanying hieroglyphic annotation. The brief text is consistent with known archaic hieroglyphic inscriptions, and the closest parallels are the twin annotated rock inscription images of a boat carrying a smaller vessel in the Wadi of the Horus Qa-a, northwest of Luxor, probably dating to the reign of Qa-a at the end of the First Dynasty (DARNELL 2009, pp. 102-103; 2011, pp. 1181-1187).

Chronological Position

The chronological position of the Nag el-Hamdulab rock art is of fundamental importance for its understanding and has already received some discussion (HENDRICKX *et al.* 2009, HENDRICKX & GATTO 2009).

The royal scene of tableau 7a offers interesting possibilities for chronological comparisons. The two standard bearers preceding the king show many similarities to those on the Scorpion mace head (Oxford AM E.3632; CIALOWICZ 1987, pp. 32-38; 1997; GAUTIER & MIDANT-REYNES 1995), the Narmer mace head (Oxford AM E.3631; CIALOWICZ 1987, pp. 38-41) and the Narmer palette (Cairo JdE 32169). For stylistic reasons the Scorpion mace head is most probably to be attributed to the very beginning of the

reign of Narmer, or to one of his immediate predecessors, which seems the most likely.

On the Scorpion mace head, the king is preceded by two standard bearers and followed by two fan bearers [18]. On the Narmer mace head, two fan bearers stand beside the high podium on which the king sits enthroned, while four standard bearers advance towards the king. On the Narmer palette, four standard bearers are present but the fan bearers are lacking.

When comparing the Scorpion and Narmer monuments to the Nag el-Hamdulab royal scene, a striking difference is the equal scale at which the king and the fan bearer appear in the Hamdulab images, and the limited difference in size with the standard bearers. The Scorpion mace head provides a close parallel for tableau 7a. In both cases, two standard bearers are present, although only one fan bearer appears at Nag el-Hamdulab. The standards are probably also the same in the Hamdulab and Scorpion mace head scenes, although the order is reversed. On the Narmer monuments, these two standards are accompanied by two falcon standards. These points of comparison suggest that the Nag el-Hamdulab tableaux should be placed in a chronological position before the Scorpion mace head because of the doubling of the fan bearers and the difference in scale between the king and his retinue on the Scorpion mace head, and before the Narmer monuments [19]. The shape and position of the White Crown in the royal representations corroborate the chronological sequence Nag el-Hamdulab – Scorpion mace head – Narmer monuments. At Nag el-Hamdulab, the tip of the White Crown points straight upward, while that of king Scorpion tilts slightly towards the back. On the Narmer palette, the crown is still slightly further tilted, and worn in the oblique position that will be standard throughout the rest of Egyptian history. Also, the bulbous upper part of the white crown is entirely missing at Nag el-Hamdulab; the element is present but less marked on the Scorpion mace head when compared to the fully-developed appearance of the White Crown on the Narmer monuments. Another possible chronological element is present in the shape of the standards. The front of the support on which the Wepwawet image rests curves up well above the head of the animal at Nag el-Hamdulab, but is considerably lower on the Scorpion mace head, and still slightly lower for the Narmer monuments. Finally, the presence of the dog in the royal scene also has chronological consequences. As already discussed (*cf. supra*), the Predynastic tradition of dogs as royal power symbols did not continue into Early-Dynastic times, and must already have been abandoned by the time of the Scorpion mace head and the Narmer monuments, confirming again the anteriority of the Nag el-Hamdulab tableau.

Boats are among the most interesting elements for dating during late Predynastic and Early-Dynastic times. The “sickle-shaped” boat with slightly “clubbed” ends, so characteristic of Nag el-Hamdulab, is closely related to type I of Červiček’s boat typology (CERVÍČEK 1974, pp. 98-138). “Sickle-shaped” boats are most frequent on decorated pottery, dating to Naqada IIC-D (GRAFF 2009, p. 171), and for rock art they are characteristic of the Naqada I and II periods (HUYGE 2002, p. 197). But the prows and sterns of the Nag el-Hamdulab boats turn up higher compared both to those on decorated pottery, and the vast majority of the Naqada I-II rock art boats. Boats with high prow, but without the “clubbed” ends, occur during the Naqada III period (HUYGE 2002, p. 198), and the Nag el-Hamdulab boats seem to be at an intermediate position. An interesting parallel is on a fragment of label from tomb U-j at Abydos (DREYER 1998, p. 132, no. 159), dating Naqada IIIA1 — only the prow of a boat is preserved, but it has a depending rope, and on top of the prow are two strokes that must correspond to the branches on the Nag el-Hamdulab boats. The second type of boat attested at Nag el-Hamdulab has a very thin, high prow. Such vessels are far less frequently present on Predynastic documents, but can be found, for example, on the recto of the Narmer palette, as an element in a victory scene. A related — though not identical — example appears on a jar in the British Museum (EA 35324), probably from Qustul (HUYGE & DARNELL 2010), dating to the (early?) Naqada III period. But, as already mentioned, the earliest example known is the “black boat” from the decorated tomb at Hierakonpolis (QUIBELL & GREEN 1902, pl. LXXVII), dating to Naqada IIC. The decorated tomb is at the same time a parallel for the combination of the two types of boats. Another combination of the two types of boats occurs in a late Predynastic rock art panel from Wadi Magar, in the Theban Western Desert (DARNELL 2009, fig. 21). Although drawn in less detail compared to Nag el-Hamdulab, the first boat at Wadi Magar has a very high prow and a single, rounded cabin. Furthermore, their position in the tableaux is identical, as first and lowest-placed boat of a row, followed immediately above by a boat with two cabins. Above one of the boats at Wadi Magar, a falcon occupies the horizontal position characteristic of the Naqada III period up to the reign of Djer (MULLER 1938, pp. 21-23; HENDRICKX *et al.* 2011, p. 143). Although different in details, the general layout of these two Naqada III boat processions is similar, but the example at Wadi Magar must predate that at Nag el-Hamdulab.

Also of chronological importance is the comparison to be made between the Nag el-Hamdulab rock art and a fragmentary knife handle from tomb U-127 at Abydos (DREYER 1999, fig. 10), dating to Naqada IID. Several details of this handle can be compared with elements from the Nag el-Hamdulab sites,

but for site 7 it concerns only the already mentioned man holding a globular vessel with two hands on his head (*cf. supra*). A date in Naqada IID is certainly too early for Nag el-Hamdulab, but the shared iconographic elements with the knife handle from tomb U-127 indicates the importance of iconographic elements that may very well have developed at Abydos.

All in all, there can be no doubt that the Nag el-Hamdulab tableaux predate the Scorpion mace head and the Narmer monuments. Defining a terminus *post quem* is more difficult. The boats indicate a chronological position definitely after Naqada IIC because of the differences with the boats on decorated pottery. Comparison with the knife-handle fragment from tomb U-127 — dating to Naqada IID — and the presence of writing at least during Naqada IIIA1 allow a date for the Hamdulab tableaux already at the very beginning of the Naqada III period. However, for that period representations of a ruler wearing a recognizable crown of pharaonic pedigree (as opposed to the “derby”-like hat of the Gebelein Linen ruler and the “bald” head of the Scorpion Tableau conqueror) are not yet known. Remarkably, not even from tomb U-j at Abydos, where the royal crook was physically interred, neither for the kings of Dynasty 0 before Narmer, is a developed crown of pharaonic iconography present. Considering the important parallels between the Hamdulab tableaux and the Scorpion and Narmer documents, a late Dynasty 0 or very early First Dynasty date for the Hamdulab Cycle is most probable.

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NOTES

- [1] The tracings were made by Hannah Joris, Giandaniele Castangia, Stefano Caruso and Stan Hendrickx. In the final inkings by Merel Eyckerman, the damaged areas were completed — as far as possible — after the Labib Habachi photos. Final checking at the site took place in the spring of 2011.
- [2] The rather unrealistic rendering of the body of the giraffe, as compared to the more realistic depiction of the animal during earlier Predynastic times, could indicate that the artist working at Nag el-Hamdulab was not very familiar with

- the animal, which is not a surprise because by the end of the 4th millennium BC, the animal must have become extremely rare, even in southern Upper Egypt (*cf.* LINSEELE & VAN NEER 2009, p. 61), if it had not disappeared at all by that time and had to be imported from further south. The schematization of the depiction is also in keeping with the increasingly symbolic, as opposed to representational, significance of Upper Egyptian iconography.
- [3] The difference in patina between the rock surface on which the tableau is made and the recently exposed surface is very marked and indicates that the surface visible in the archival photos must have been more or less the same as when the drawings were made.
 - [4] Besides the fan bearer, the hunter in tableau 7d also seems to wear a penis sheath, although this cannot be confirmed for some of them because of heavy damage. Penis sheaths are, however, attested several times at the other Nag el-Hamdulab sites.
 - [5] The identification of the object as the royal placenta was first made by SELIGMAN & MURRAY (1911) (see also FRANKFORT 1948). This identification has never gained general acceptance (KAISER 1960, p. 127; HELCK 1954, p. 27; POSENER 1965) but nevertheless seems plausible to some scholars (MEEKS 1992, pp. 425, 430-431; CERVELLO AUTUORI 1996, pp. 89-91; WILKINSON 1999, pp. 198-199, 299).
 - [6] Compare the Early-Dynastic stela of a dog, *cf.* AMELINEAU 1899, pl. 37; REISNER 1936.
 - [7] The only rock art parallels known are from Winkler's site 10 on the Qena-Qoseir road (WINKLER 1938, pl. XIX.3) and Wadi Chor Abu Subeira (north of Aswan) (MAYER 1981, Tf. 81c).
 - [8] Large-scale maces atop poles appear on a decorated ivory from the main deposit at Hierakonpolis (WHITEHOUSE 1992).
 - [9] Although DREYER (2005, p. 256) considers the buildings as the houses of the conquered people bringing tribute represented in combination with the buildings, the structures more likely indicate the destination of the tribute.
 - [10] Most of these observations had not yet been made when in a preliminary report (HENDRICKX & GATTO 2009, p. 9, no. 1) the giraffe was considered older than the rest of the tableau.
 - [11] The 18th Dynasty text had already been copied by Sayce (DE MORGAN *et al.* 1894, p. 203) and is made in a different technique compared to all the other drawings.
 - [12] The bull is also very different from the bovine representations at sites 3 and 6.
 - [13] Another, unpublished, example is on display in the *Kunsthistorisches Museum* at Vienna.
 - [14] The most obvious example is from tomb E.340 at Abydos. For more extensive discussion, see GRAFF *et al.* 2011; HENDRICKX 2010. At one of the other Nag el-Hamdulab sites, two men holding sticks appear behind bovines which are most probably wild.
 - [15] See also BORCHARDT 1931, Tf. 1; Resch 1967, Tf. 12b.
 - [16] Rock drawings at Wadi Abu Wasil site 28 (WINKLER 1938, pl. XVIII.2) and Abu Ballas (KUPER 1989, p. 20); 6th Dynasty painted bowls from Qubet el-Hawa (mentioned by KUPER 2003, p. 373, one example on display in the Nubia Museum at Aswan).

- [17] References courtesy D. Klotz.
- [18] The Scorpion mace head is damaged in the area just in front of the two standards bearers, but a remaining trace of decoration shows that there was not another standard bearer (*cf.* CIALOWICZ 1997, pp. 14-15, fig. 7; GAUTIER & MIDANT-REYNES 1995, p. 88, fig. 1; *contra* WILKINSON 1999, p. 199; MENU 2003, p. 321).
- [19] These observations and the following are confirmed by two additional royal representations at other Nag el-Hamdulab rock art sites, which fall beyond the aims of the present article.

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Fig. 1. — Archival photo of Nag el-Hamdulab, site 7, tableau 7a (Labib Habachi Archive 335).

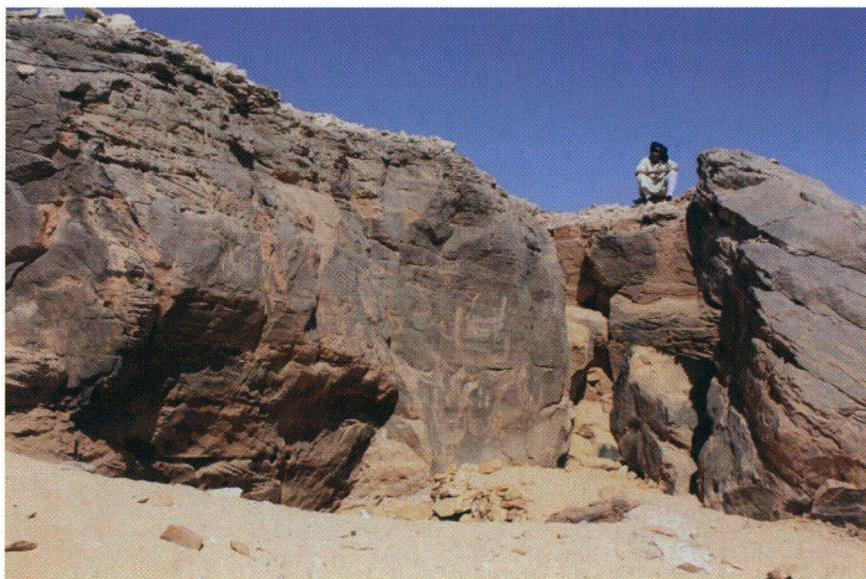


Fig. 2. — Nag el-Hamdulab, site 7.

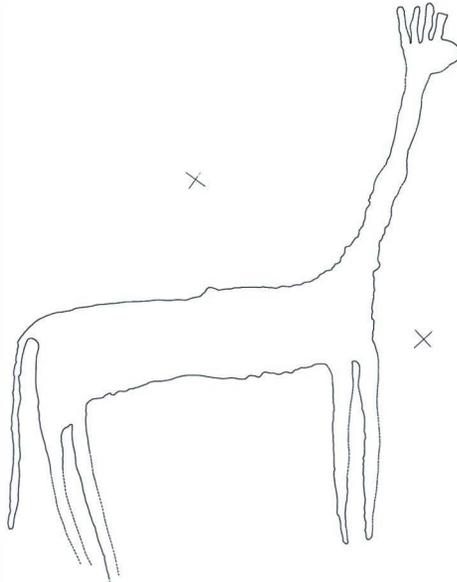


Fig. 3. — Nag el-Hamdulab, site 7, tableau 7c.

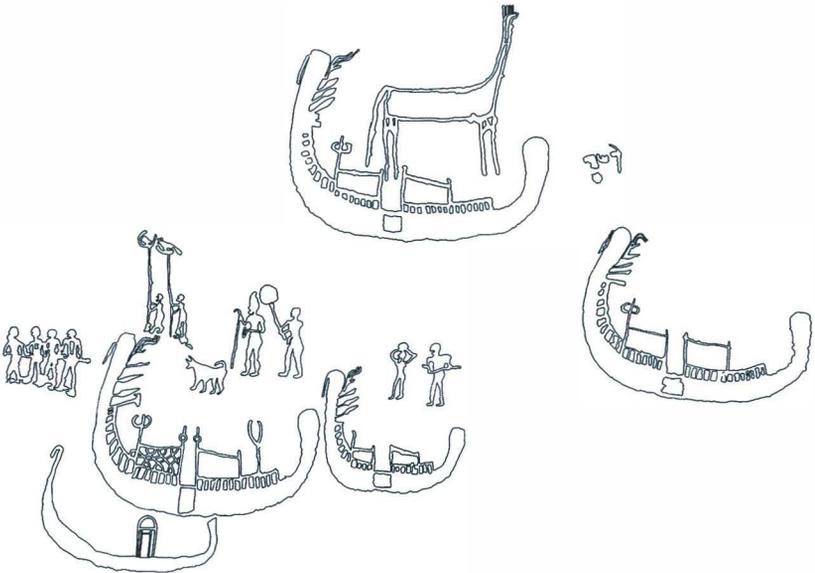


Fig. 4. — Nag el-Hamdulab, site 7, tableau 7a.



Fig. 5. — Nag el-Hamdulab, site 7, tableau 7b.

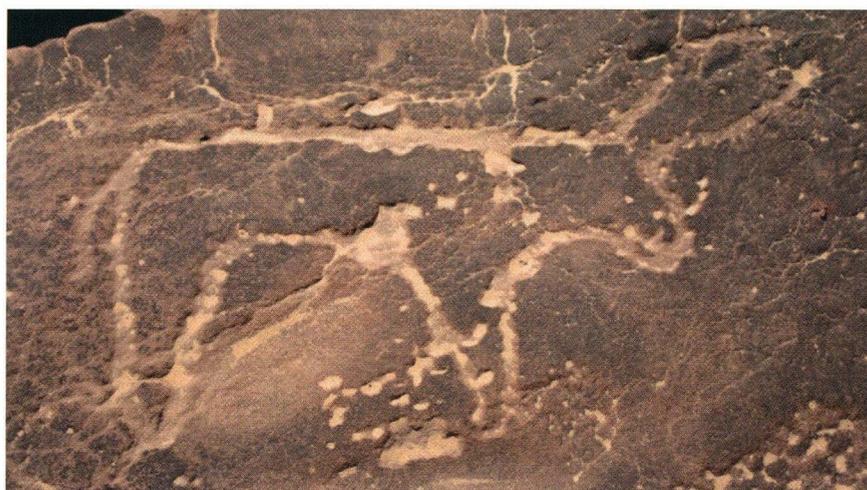


Fig. 6. — “Giraffe Hill”, bull.

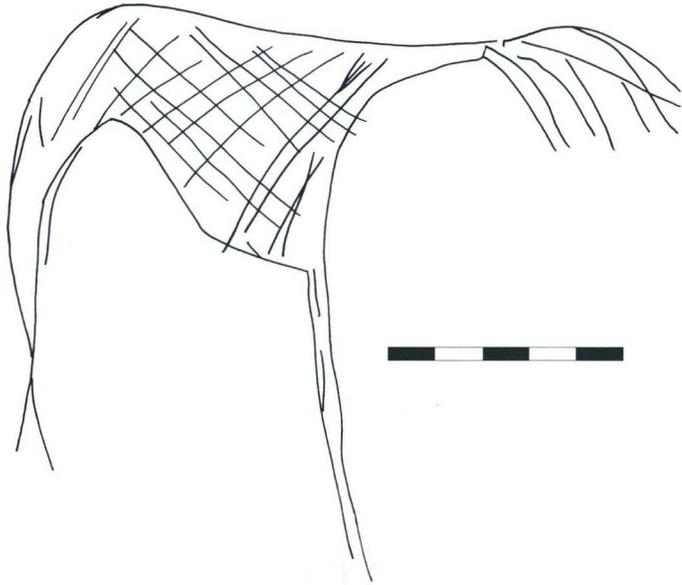


Fig. 7. — “Mythological” animal from the Middle Site in the Wadi Nag el-Birka (in Darnell, forthcoming).

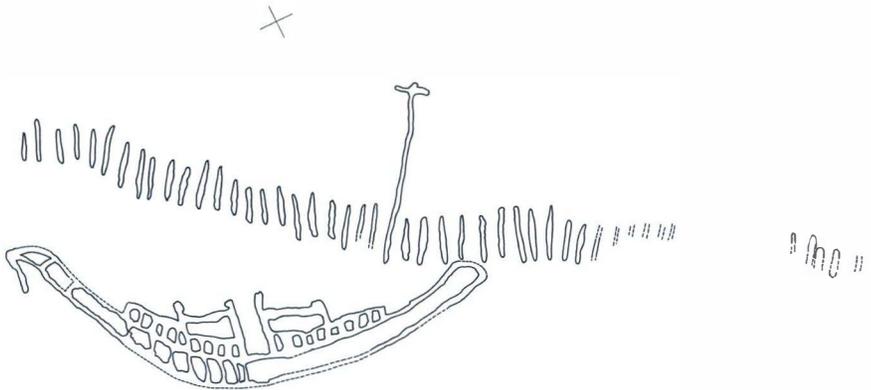


Fig. 8. — Nag el-Hamdulab, site 7, tableau 7d (left).

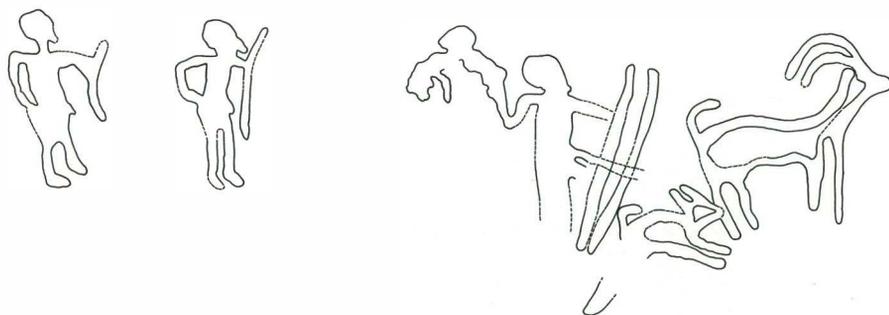


Fig. 9. — Nag el-Hamdulab, site 7, tableau 7d (right).



Fig. 10. — Nag el-Hamdulab, site 7, tableau 7a, hieroglyphic annotation.

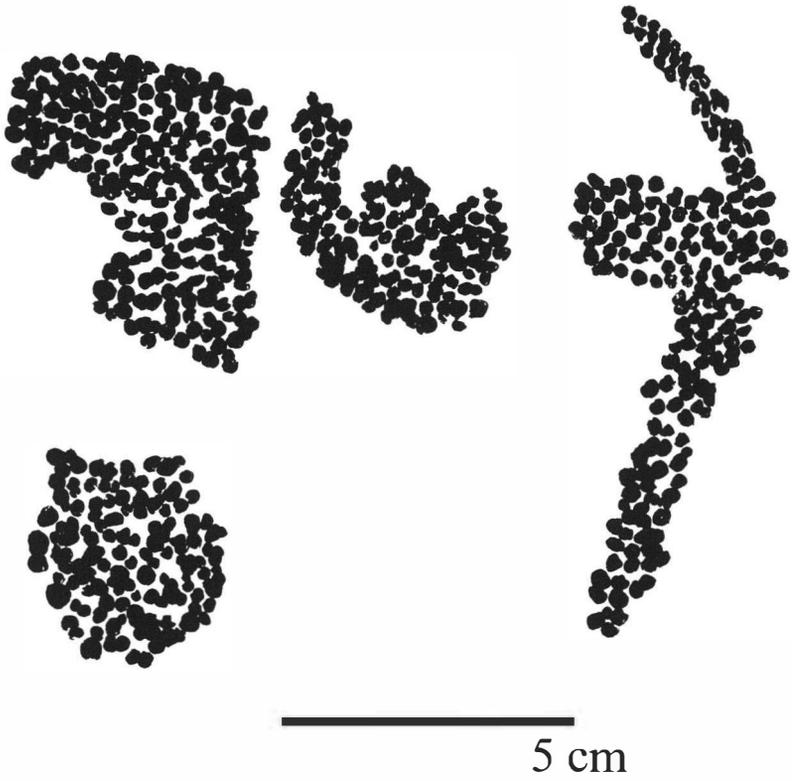


Fig. 11. — Nag el-Hamdulab, site 7, tableau 7a, hieroglyphic annotation.

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Rock Art around Settlements: The Boats & Fauna at Hierakonpolis, Egypt

by

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KEYWORDS. — Hierakonpolis; Cemeteries; Boats; Donkeys; Bulls.

SUMMARY. — Hierakonpolis (ancient Nekhen) near Edfu, in Upper Egypt, is well known for its late Predynastic and Early Dynastic archaeological localities, which have been excavated and researched over many decades. Several of these localities lie adjacent to rock beds and hills that show rock art and inscriptions representing a broad span of time. This paper will present the results of two seasons of intensive survey of the site's rock art. While much of the rock art is in proximity to areas that saw permanent settlements or funerary sites in the Predynastic period, there are also a number of natural and man-made shelters incorporating petroglyphs portraying abstract compositions as well as figural designs. The themes depicted in the rock art and its close proximity to occupation areas of known function offer unique research opportunities for associating the two and add to an understanding of habitation patterns and activities at Hierakonpolis.

The Hierakonpolis Rock Art Survey

The Hierakonpolis rock art survey focuses on the study of rock art in and around the low desert concession of the Hierakonpolis Expedition (British Museum; see fig. 1)**. The survey is intensive and includes all locations that incorporate any marks on rock created by human agency which are not part of a known dedicated construction, such as a tomb. The aim is to record and analyse rock art in such a way that it contributes to the understanding of past activities at Hierakonpolis. This analysis includes, where possible, the establishment of links to evidence produced by other types of fieldwork.

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** Cf. figures at the end of the text (pp. 344-348).

Only a limited amount of rock art at Hierakonpolis has previously been recorded and published (BERGER 1982, 1992; FRIEDMAN 1992, 2000; FRIEDMAN *et al.* 1999; ADAMS 2000), but its incidence is far higher than this record suggests. The survey also collects this data to determine whether further analysis or recording might be required to consolidate the broader picture as it is built up through the survey.

The site's proximity to the cultivation and its accessible sandstone, gravel and phosphate outcrops, unfortunately, have made the area attractive to miners with a view to remove useful materials, and their activities have had a detrimental impact on rock art bearing locations. The survey, therefore, puts a priority on protecting and recording those sites that are in immediate danger. A number of known sites have already demonstrated disturbance and there is an additional concern that sites currently unknown could be destroyed.

Site Overview

At Hierakonpolis, rock art is predominantly found on the south-western quadrants of the concession. Although suitable stone is available throughout the rocky ridge forming the south-western part of the site, the only notable concentration of presumably Predynastic rock art has been observed around and especially on the eastern (river south) side of the Wadi Abu Suffian, and thus proximal to the Predynastic archaeological localities within it (*e.g.*, HK11 and HK6; HOFFMAN 1982). The concentration of rock art at Locality HK64, isolated at the north-eastern boundary of the concession, will not be discussed here as its date range and associations have not been fully determined (FRIEDMAN 1992, 2000; FRIEDMAN *et al.* 1999).

Of the rock art recorded to date (excluding HK64), approximately 80 % are composed of abstract designs and the remaining 20% are figural, including fauna and boats as well as limited anthropoid depictions. What distinguishes Hierakonpolis from other sites with rock drawings is the proximity of settlement and funerary localities, which may allow chronological and cultural associations to be made.

In the following sections, some of the key rock art locations around the Wadi Abu Suffian will be described and discussed.

Sites of Particular Interest

LOCATION 10-21: DONKEY HILL

This location is on the east side of an inselberg situated in the centre of the mouth of the Wadi Abu Suffian and adjacent to the HK11 occupation area (see fig. 1). The inselberg's location in the wadi parallels that of the 'Rock of the Vultures' across the Nile at Elkab, which is situated in the middle of the Wadi Hilal (HUYGE 2002, p. 196). Both are flat-topped and provide good views of the surrounding areas from their summits. The focal point for rock art at location 10-21, however, is a rock overhang situated about half way up the gradient of the hill on the west side (see fig. 2). Surrounding this overhang is a number of boulders forming a sort of forecourt in front of it. These boulders feature petroglyphs on their horizontal surfaces that are not visible until one stands behind them and include simple forms, composite designs and complex compositions.

Boat depictions of various types dominate here, in both complete and partial execution. One shows a sickle-shaped boat with numerous lines incised below the craft representing oars and it is the first-oared boat of Predynastic type attested at Hierakonpolis to date.

Both the boulders and the frontage of the overhang are covered with dense layers of scree and sediment. It is likely that clearance of the debris will reveal further petroglyphs and perhaps other material evidence for the nature and purpose of the occupation. The method of execution of many of the petroglyphs is unusual in that many have been incised on the horizontal planes of the hard but heavily-patinated sandstone (in contrast to boats such as HK 61A where execution took place on the sides of the boulders, in the vertical plane). In some instances the dark patina was first removed and the surface smoothed before the motifs were incised. However, in at least one instance the motif (a boat) was made by direct pecking on an unprepared surface.

Unfortunately displaced, probably in modern times, down slope of the overhang, is a small sandstone boulder featuring a finely incised donkey, possibly with its progeny directly beneath it. The larger donkey incorporates a chevron decoration across its body, while the smaller one does not, but it is otherwise very similar in appearance (see fig. 9). The animals are accompanied by a number of other simple forms (single and cross lines, superimposed incisions), a possible boat, a lightly-incised quadruped, possibly a canid, hieroglyphic characters and a scratched, modern depiction of a bird, apparently a hoopoe. The incised lines of the donkey and foal have a dark

patination as do some of the deeper incisions (some of them piercing the rump of the donkey), while others are lighter and evidently more recent. The panel has been deliberately smoothed to provide a surface for the composition. It is presumed that the block originates from the area of the overhang, but it may have come from further up the gradient, near the top of the inselberg where the stone is of similar quality.

HK11 HILL

HK11 hill, a large prominent hill directly adjacent to the HK11 archaeological locality, forms the centre of the area with the densest concentration of petroglyphs on the site.

The east side of the hill includes at its base the primary locality of HK61A, known for its elaborate boat and faunal depictions (BERGER 1982, 1992), as well as further locations of rock art at HK61B and C. These locations are accessed via a side wadi, and on the terrace immediately below them is the HK11E cemetery, which has been heavily plundered but appears to date to Naqada II (FRIEDMAN 2008a).

The petroglyphs at HK61A occur on the interior faces of a large fallen boulder that has split in two. Adjacent is an arrangement of sandstone boulders forming a roofed shelter. At any time of the day it provides complete cover and would have been an attractive place of rest. The two main rock art panels face each other with a narrow corridor between. The north panel comprises the two elaborate boats documented previously (BERGER 1982, figs. 1.18-19; 1992, figs. 1-2). The face of the south panel consists of a giraffe and another boat, previously believed to be unfinished (BERGER 1982, p. 63). It was actually executed in the fine pecked fashion of the others, but has suffered from extensive erosion. As with both boats on the north panel, the south boat incorporates a rectangular structure amidships and at the prow has a “head” with the same triangular face and twin horns. The vertical protrusion at the stern with the possible rudder and anchor objects are also similar. Like the famous northwest boat, the south boat features an animal, probably a bull, floating above the cabin, but on a smaller scale (see fig. 3).

Another set of fallen boulders at nearby HK61B is also the location of rock art, all of which has been pecked into the patina on the interior faces. The motifs are on a much smaller scale than at HK61A, but include a number of similarly elaborated boats, in some cases superimposed, and compositions of horned quadrupeds. These complex tableaux are difficult to see and have been damaged by rock miners. Further collation of the designs is required (FRIEDMAN 2008c). Further to the west, an outcrop of rock features

a small incised elephant and other animal depictions (FRIEDMAN 2004, fig. 18), and isolated geometric motifs are found at various points along this side of the hill.

The west side of the hill features locations including Giraffe Cave (09-02) and Scoop-Mark Place (09-01). Giraffe Cave is a large shelter facing north and into the Wadi Abu Suffian. On the façade of the cave is a collection of four panels composed primarily of faunal motifs, mainly giraffes with a crosshatched-body decoration (HARDTKE 2009). Some are possibly shown tethered. As opposed to many other rock art representations of giraffes in Egypt, these are lightly incised rather than pecked (*cf.* HK61A, BERGER 1982, fig. I.19). This cave may be equivalent to Lansing's 'High Place', which was found to contain a selection of early Predynastic pottery now in New York (LANSING 1935).

Scoop-Mark Place (09-01) is situated on a small terrace on the southwestern edge of HK11 hill overlooking the main wadi with a good view of the elite Predynastic cemetery at HK6. It consists of a number of adjacent oval to round depressions ("scoop marks"), together with many deeply-incised lines all executed on the horizontal sandstone surface. All scoop marks have pecking and pitting at the centre of the depression. Seventeen individual scoop marks are attested overall, many arranged in groups of two or three. A rock overhang slightly to the northwest also includes simple and composite series of light and deep incisions and is likely associated with the scoop-mark area.

LOCATION 10-09: HIPPO RISE

This location is situated immediately to the south of the HK11 "Glyph Hill", upon a rise bounded by gullies of water run-off emptying into the Wadi Abu Suffian. Central to this area is a circle of standing slabs of stones which are the remains of an ancient stone construction (see fig. 4). Only half of the structure, approximately 8 m in diameter, remains. In size it is similar to a better-preserved construction of stone slabs located on the east side of the HK11 hill. The circles are separated by approximately 120 m and are likely associated, but are not intervisible. A number of smaller stone circles and tumuli were also observed here. Polish marks, deep incisions and notch rows surround the site. A small vertical panel incised with a schematic hippopotamus featuring crosshatched body markings (see fig. 7 and *cf.* location 10-17 below) was found in close proximity to the circle. The variety of petroglyphs in this area raises the possibility that they are to be associated with the stone circle here. Rock art was also observed to a lesser extent

around the eastern stone circle, and includes a small incised boat (location 10-03).

LOCATION 10-17: ROCK HUT HILL

This location lies far back in the desert on the plateau on the east side of the Wadi Abu Suffian. Rock art appears in the saddle between two small hills (“west” and “east”, see fig. 5). The summit of the west hill incorporates an ancient stone hut circle composed of upstanding sandstone slabs as at location 10-09. At the west hill, a mixture of rock art occurs predominantly on the east side, near the base. Here a flat expanse of exposed laminated sandstone features large-scale depictions of a boat, donkey and bull (see fig. 6). Between and around them are areas where the stone has been smoothed and ‘polished’ by some activity. The nature of this activity is unknown, but it does not appear to pertain to the preparation for, or the erasure of rock art.

The donkey and boat were executed by outline pecking followed by incision while the bull was executed entirely in a pecked-sunken relief. The donkey was portrayed with a distinctive curve of the muzzle. The mane along the neck and the tuft at the tail was also included in incision. A line crosses the body at the shoulder, and an incised line also touches the back leg. All incisions appear to be contemporary. The manufacturing method and patination also suggest that the incurved sickle-shaped boat was made at the same time and both seem to point in the same direction.

The bull appears to be facing toward the donkey, possibly symbolizing the confrontation between these two symbolic beasts (see below), but the distance between them is rather large and contemporaneity cannot be assured, especially in light of the different method used to make the bull. The bull is depicted with body in profile and large crescent horns similar to the bull accompanying the HK61A boat.

A short distance to the east, further exposed rock features a small, but highly detailed hippopotamus. It is executed entirely by incision and includes a crosshatched decoration across the body, little ears and tusks as well as a line extending from the nose to a crack in the rock, presumably representing the harpoon line (see fig. 8). The rock adjacent to the hippopotamus bears a polished surface with a number of peck marks nearby. The crosshatching is similar to that employed on other fauna, such as the hippopotamus at location 10-09, and giraffes at Giraffe Cave (location 09-02). It and the harpoon line are also paralleled in pottery drawings on white cross-lined ware (see below).

Simple forms and composite designs occur in various places around the west hill, but they are the only type found on the east hill and in the

sandstone beds just to the south of it. These include notch rows, peck marks, incisions and a deeply-incised grid design not attested previously at the Hierakonpolis and possibly modern.

There seems to be a clear dichotomy with figural art occurring around the west hill while only abstract motifs appear around the east hill. The location is situated in an area that is relatively inconspicuous, with no other rock art anywhere in the vicinity. It is possible that the hut circle is associated with rock art, as it is situated approximately 40 m west of the panels featuring bull, donkey and boat. Some predynastic red-polished pottery was found within the hut circle as well as in the cracks between the rock art panels.

There are no functional reasons for this area to be inhabited or frequented that can be noted today. The location of the hut circle on the top of the west hill affords views of the surrounding area; however, there are other hills nearby that would provide a similar view. The area does not lie directly adjacent to a wadi or wadi feeder and no pathways seem obvious (apart from a modern track created for quarrying). The exposed rock shows, however, that there had been some water run-off at some point in time, so proximity to some sort of water drainage may be significant. The lack of obvious incentives to inhabit or pass this area presents the possibility that the majority of compositions here were created within the same episode, but by different hands. In contrast to other locations where boats and fauna are executed on vertical faces, this one features rock art exclusively on horizontal surfaces. This horizontal orientation allowed other activities to take place that resulted in the aforementioned polish marks and pecks near the motifs. Furthermore, the large scale of the boat, bull and donkey here is significant, the only locality approaching a similar level being HK61A.

Typology and Motifs

Overall, the typological composition of the rock art currently known from Hierakonpolis (excluding HK64) is:

- Simple forms: 20 %;
- Composite designs: 60 %;
- Complex compositions: 18 %;
- Unknown: 2 %.

The abstract “simple forms” and “composite designs” are manifest mainly as series of straight lines and notches in varying patterns ranging from simple

parallel lines and straight rows of notches to more detailed superimposed, curved and ellipsoid designs of notches and small cupules. These abstract designs are frequent across the site and are being addressed specifically to ascertain what patterns and trends might be observed from their associations and distribution. They will not be discussed further here. What follows is focused on a selection of the figural motifs within the “complex compositions”.

FAUNA

Bulls and Bovids

What appear to be bovids are found at a number of locations around Hierakonpolis, but explicit bulls are found only at HK61A and 10-17 (those from HK64 are not included) and are executed in a distinct style, having thick, robust bodies with heads lowered in an attitude as if charging. An example in the eastern desert that displays many similar features also in sunken relief is found at Resch’s locality 3 (RESCH 1963, p. 93). Bulls with similar horns are also found in the Wadi Abu Subeira (GATTO *et al.* 2009, p. 165) and Elkab (HUYGE 2002, p. 195). In attitude and horn shape, the Hierakonpolis bulls (see fig. 6 for the 10-17 bull) bear a strong resemblance to the bulls as symbols of royal power depicted on the Narmer and Bull palettes among others (CIALOWICZ 1991).

Raging wild bulls, along with vultures and scorpions, are recognized as theriomorphic representations of kingship (HENDRICKX 2002), with bulls and cattle having predominance in Huyge’s Horizon III at Elkab (*i.e.*, Naqada III and Early Dynastic) (HUYGE 2002, p. 201). Examples further afield include bulls from the vicinity of the Kharga Oasis which are considered to represent the virility of leadership (IKRAM 2009, p. 273). The status and significance of cattle at even an earlier period is exemplified by their burial in the elite cemetery at Hierakonpolis, HK6 (VAN NEER *et al.* 2004). This is especially clear in tomb 43, a subsidiary grave within the mortuary complex surrounding the large and rich tomb 16. Measuring 3.10 m long, 2.20 m wide and over 1.20 m deep, tomb 43 contained the interment of an entire adult bull covered with matting and linen and possibly endowed with a rare white cross-line bowl (FRIEDMAN *et al.* 2011).

Bulls are often depicted together with boats at Hierakonpolis and other sites including, for example, one in the Wadi el-Barramiya (FUCHS 1989, p. 133), where the bull acts as a figurehead at the prow and at another where it floats above a large elaborate boat (FUCHS 1989, p. 138). A bull above a

boat is also depicted in a late Predynastic tableau in the Wadi Magar and is also attributed with divine/royal significance (DARNELL 2009, p. 100).

Hippopotami

To date, the hippopotamus is attested at two locations at Hierakonpolis (10-09 and 10-17; see fig. 1). In both locations, the animals are executed with a crosshatched decoration across their bodies which is very similar to the representations found on early predynastic white cross-lined (C) ware (WENGROW 2006, p. 112) and strongly suggests that all of these depictions may be dated to the same period.

Indeed, the popularity of the hippopotamus in the Naqada I-IIA period is without question. The rendering of the hippopotamus at location 10-17 is especially close to C-ware examples (GRAFF 2009, nos. 41, 93, 109, 160; that from 10-09 can be compared to GRAFF 2009, no. 171, the box from el-Amrah). In contrast to other rock art representations of the hippopotamus where the hunt is more explicitly rendered (*e.g.* Wadi Gash, HENDRICKX *et al.* 2009), the examples from Hierakonpolis appear in isolation, with the harpoon line as the only evidence of activity, again similar to many of the pottery depictions.

Although C-ware decorated with hippopotami appear to concentrate in the Abydos region (FINKENSTAEDT 1980), the animal is well attested at Hierakonpolis in other media (stone, ivory and flint) as well as by its skeletal remains. Three young hippopotami were buried in the HK6 cemetery (VAN NEER *et al.* 2004, FRIEDMAN *et al.* 2011) and the bones of adults are known from the ceremonial centre at HK29A and in refuse at HK11C (LINSEELE *et al.* 2009).

Donkeys

Donkeys are found in possibly three different locations at Hierakonpolis (10-21, 10-17 and 09-10; see fig. 1). The most detailed are the ones at location 10-21 (Donkey hill), depicting a large donkey with a smaller one below. The large animal has a deep double outline around its body head and ears and incorporates a chevron design on its body, which can again be compared with C-wares (GRAFF 2009, nos. 27, 30 and 112). The mane and tuft of the tail are done with a slightly lighter line. The smaller animal copies the form of the large one almost exactly, although with only a single outline and no internal markings. The inclusion of a smaller donkey beneath and between the legs of the larger possibly indicates that it is the progeny of the larger animal.

In the wadi to the east of HK11 hill, at location 09-10 is a small rock shelter featuring the depiction of a quadruped with its young, but on a very small scale (see fig. 10). The adult in this instance is unfortunately headless but the delicate rendering of its long slender legs and neck suggests that it may also represent donkeys. This depiction of the young adds a new dimension to the symbology of the donkey. Similar depictions of parent with offspring have been observed by the author in other parts of Egypt but to date these have been of bovids (CERVICEK 1974, abb. 213, 343 and 347), not donkeys (but see perhaps CERVICEK 1974, abb. 126). These representations may symbolize a desire for the ongoing regeneration of these important beasts of burden (see also IKRAM 2009, p. 277, where their role as a means of transport is emphasized). The frequent co-occurrence of donkeys with boats as seen at location 10-17, Elkab (HUYGE 2002, pl. 111) and other parts of the eastern desert (RESCH 1963, p. 91) could also suggest they are a mode of transport. Morphological analysis of donkeys from burials at Abydos indicates that they were beasts of burden used for transport as early as the First Dynasty (ROSSEL *et al.* 2008). Although donkey bones have been recovered from the HK6 cemetery, none have a tight provenance, so evidence for the site itself is mute on this topic (VAN NEER *et al.* 2004).

Alternatively, a more symbolic explanation proposed by other researchers is that the donkey, especially in its wild form, is a manifestation of chaos and Seth, and stands in opposition to the solar character of the boat (HUYGE 2002, p. 201). Furthermore, as several depictions of donkeys show a shaft issuing from the neck indicating their killing, HUYGE (2009, p. 302) sees the donkeys as waylayers of the sun, which were ritually destroyed as part of the solar cult. The line running from the back legs of the donkey at 10-17 suggests it has been bound or attacked and in context with the boat and bull seemingly faces in opposition to the bull and away from the boat (see fig. 6). The three motifs together might again allude to a solar theme, with the donkey being the opposing element, assuming that all of the elements are related. Similarly at 10-21, the lines around the head of the adult suggest spears or arrows, but the contemporaneity of these lines cannot be assured.

BOATS

Boats occur at several locations around Hierakonpolis (HK61A, Hk61B, 09-36 (New Kingdom Hill), 10-03, 10-17 and 10-21). The vast majority of them have an 'in-curve' of the aft section of the boat and conform most closely to Winkler's (WINKLER 1938, pls. 34-35) 'Incurved Sickle Boat'

type and CERVICEK's (1974) Type 4. Only the example from 10-21 has multiple oars and conforms to Winkler's 'Sickle Boat' category (WINKLER 1938, pl. 33). None of the boats incorporate human figures; however, at least two have associated bulls (the HK61B boats need further collation). The in-curved aft section generally has a single protuberance facing upward and the fore section has a more elaborate arrangement of two to three "horns" with or without "heads". In most cases a rectangular hut is found amidships.

The closest parallels for this type of boat are found in the Wadi Abbad/Kanais (WEIGALL 1913, pl. 29) and have been discussed by BERGER (1992). It is noteworthy that the Wadi Abbad leaves Edfu for the Red Sea just to the south of Hierakonpolis and is also accessible via the Wadi Barramiya at Elkab. This is an example of a rock-drawing style that has continuity from Hierakonpolis across the Nile.

While some of the boats at Hierakonpolis have been described as "animal-headed", it is the author's opinion that this should be reviewed on an individual basis. Much of the argument behind the "animal-headed" description is based on the horn or antler-like protrusions issuing from the "heads". These protrusions could also be explained in other ways, such as by branches or palm fronds as shown on some Naqada II vessel (BOWEN 1960). Further work is required here.

A giraffe appears in conjunction with the boats at HK61A. DARNELL (2009, p. 90) proposed that boats might have been added at sites already containing giraffes in order to provide this earlier solar carriers with a modernized indication of mobility. It remains to be seen if this explanation fits HK61A, especially as the giraffe appears to be hunted (BERGER 1982, p. 63). No boats were observed at Giraffe Cave.

Distribution and Relationship of Occupation Sites to Rock Art Sites

The map in figure 1 shows that the rock art locations known to date are distributed at a number of specific points near the Wadi Abu Suffian with particular concentrations around HK11 hill, Donkey hill (10-21) and the HK6 cave (ADAMS 2000), seemingly forming a boundary line. Moving into the main wadi itself, the survey has so far found no predynastic rock art past the point marked by the confluence of side wadis with the main drainage. In examining the motivations for the observed distribution of rock art, the following factors will be reviewed: accessibility of shelter and resources, use as a thoroughfare and the presence of places of special significance.

SHELTER

Rock art is often located in areas providing protection from the elements. While 46 % of rock art at Hierakonpolis occurs in association with rock shelters of some type, there are also many areas that would provide excellent shelter but are devoid of rock art. At certain locations, such as 10-21 (Donkey hill), there is a preference to execute rock art on the southeast side, when good shelter was also available on the opposite side, but this may reflect a desire to be protected from the north wind. However, at exposed areas like Scoop-Mark Place and Hippo rise, there is no protection from the wind. While this may reflect a different season of usage of these sites, similar formations on the opposite side of the wadi, which would provide shelter from the wind, were not as extensively employed. In addition, there are instances where rock art has been produced deliberately in open areas and the man-made shelters nearby have no rock art in direct association. It is unlikely, therefore, that shelter was a primary reason for the observed distribution.

RESOURCES

It is unlikely that access to resources is a contributing factor in the distribution. There are no specific water sources here apart from periodic run-off from the hills during rain and, unlike the deep desert, the water of the river was at maximum only 2 km away. There does, however, appear to be a certain correlation of rock art locations (and the stone circles) with water run-off gullies, but not necessarily where the water would have pooled, making it unlikely that rock art areas would be places where herds could be watered or game might congregate (GATTO *et al.* 2009, pp. 159-161). Although the area is mined today for stone, gravel and phosphates, these resources were not valued in antiquity and could have been gathered from many other locations in the desert hill. Chert resources to the east were mined in antiquity, but no predynastic rock art is present in their vicinity.

THOROUGHFARE

The Wadi Abu Suffian might seem like a potential thoroughfare, but unlike Wadi Khamsini to the southeast and Wadi Tarifa to the northwest, it does not give access to the deep desert. It ends in steep cliffs roughly one kilometre beyond HK6. The side wadi running past HK61 and to the east of HK11 hill does provide access to the plateau on a gradual gradient and connects with a minor through wadi further to the east. This might account

for the presence of some of the rock art here, but does not explain the notable concentration around the HK11 hill and the lack of rock art along the path despite that there are many surfaces that would have provided opportunities. It is therefore unlikely that rock art was left by people passing through using these wadis as a thoroughfare.

Proximity to Areas of Special Significance

Hierakonpolis is unique for the fact that rock art occurs in proximity to occupational features of known function, the HK6 cemetery in the Wadi Abu Suffian being the most prominent. This cemetery was used for elite burials and above-ground funerary structures from at least Naqada IC. The choice of this secluded location by the elite suggests that the wadi had already had special significance, perhaps in the same way as the wadi behind the Umm el Qaab at Abydos (pathway to the west), or owing to its qualities as an aquifer, retaining water near the surface for long periods after rains. However, predynastic rock art is notably absent in direct proximity to this elite cemetery. While the HK6 cave just beyond the edge of the cemetery, known for the inscriptions of the New Kingdom priests, features some potentially early figural rock art (not illustrated in ADAMS 2000, pls. 3-4, the supposed serekh is not convincing), no other locations along the wadi have been detected. Thus, despite the royal/elite connotations attributed to some rock art at other sites as well as the funerary associations of boat depictions (HUYGE 2002, p. 203), the elite at Hierakonpolis had no need for it. Possibly because the salient imagery was already portrayed on the plastered and painted walls and structures of their mortuary compounds (FRIEDMAN 2008b, p. 1187, fig. 15).

On the northeast side of the wadi is the occupation at HK11, with settlement and industrial activities possibly in support of the elite cemetery (HARLAN 1992). Although the cemetery, presumably of those who lived here (HK11E), is located close to the HK61 rock art site with its many depictions of boats, a cemetery association would not explain the boats on Donkey hill or behind New Kingdom hill. As rock art has not been found in direct association with other predynastic cemeteries (only one burial at Hosh, HUYGE 2005), a funerary connotation is unlikely. It is also unlikely that it was only those living at HK11 who were responsible for rock art. If the function of this settlement was to service the mortuary cult, one would expect such rock art to focus on themes related to this cult, for example, the acquisition of animals, as has been suggested to explain hunting scenes elsewhere. With

the exception of the hippopotamus at 10-17, there is no correlation between the animals shown hunted and those buried in the cemetery. One may presume that the urge to create rock art was more widespread in the general population, yet it remains concentrated in the area surrounding the HK11 hill.

This leaves us with the possibility that the area surrounding HK11 hill and/or the main wadi held a special ritual or symbolic significance which has yet to be fully determined. The various natural features such as rock grottos, split boulders and minor waterfalls may have attracted attention as locations for interaction with the powers of nature (WILLIAMS 1989, pp. 9-12). Alternatively, it may be something in the wadi itself that was of significance, and the later inscriptions of priest and officials along with dynastic depictions of barques on stands (HK57), suggests this might be the case (*cf.* also Elkab, VANDEKERCKHOVE & MULLER-WOLLERMANN 2001). Although some of the earlier rock art at Hierakopolis is of high quality, its absence from the HK6 cemetery environs suggests that it is the creation of non-elites using imagery that had resonance for all classes of society. The concentration of locations at the lower reaches of the wadi may indicate restricted access to its upper reaches either due to perceived sacredness or owing to the presence of the elite burials. Either reason may have led to the creation of rock art and its links with the symbolism also seen in the elite cemetery. The execution of the boats and other motifs might be seen as acts of personal piety by the artists, whether invoking the elite as mediators with the cosmic powers, or dealing with them directly as innate within natural features.

ACKNOWLEDGEMENTS

My thanks go to the Hierakonpolis Expedition and Renée Friedman for her enthusiasm and support in allowing me the privilege of working on the etchings of millennia past, in the wonderful stillness, and under the gaze of desert foxes and the feint whoop of migrating cranes.

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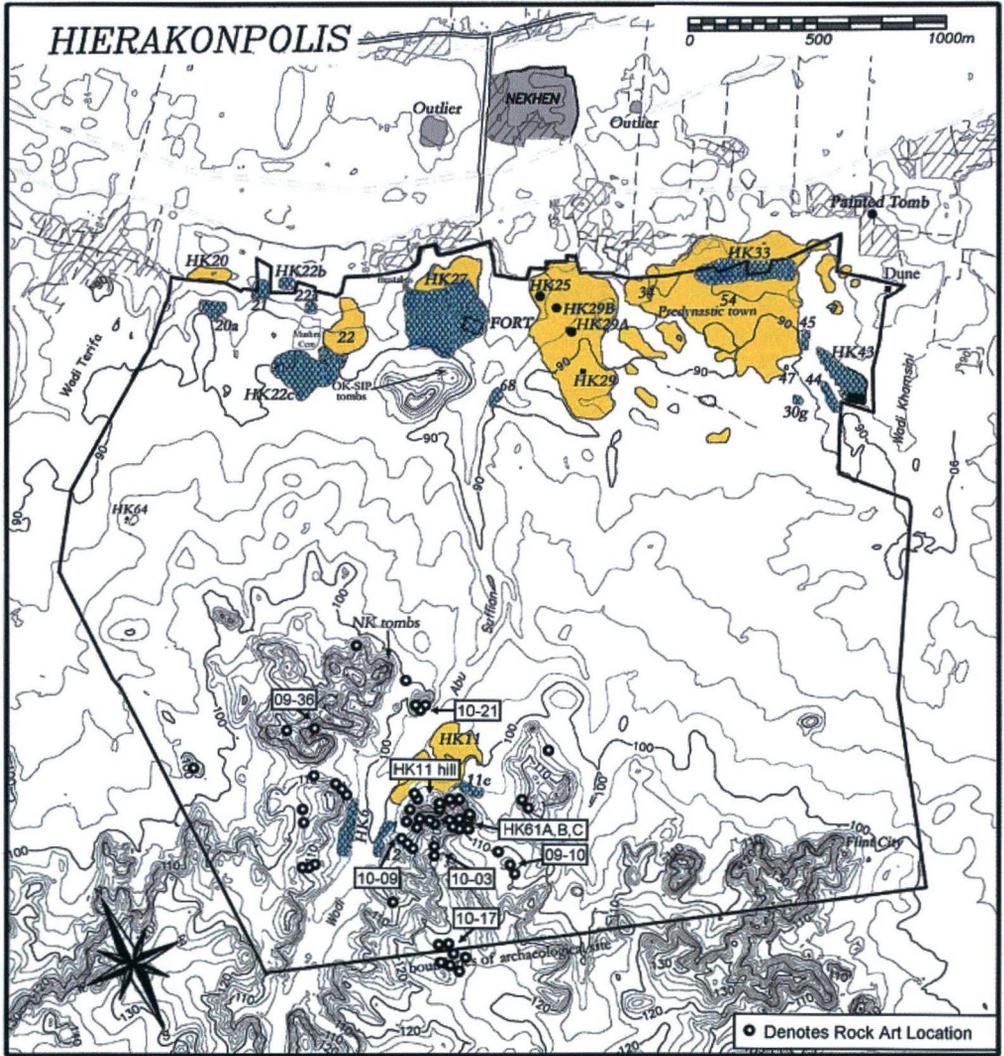


Fig. 1. — Hierakonpolis rock art locations.

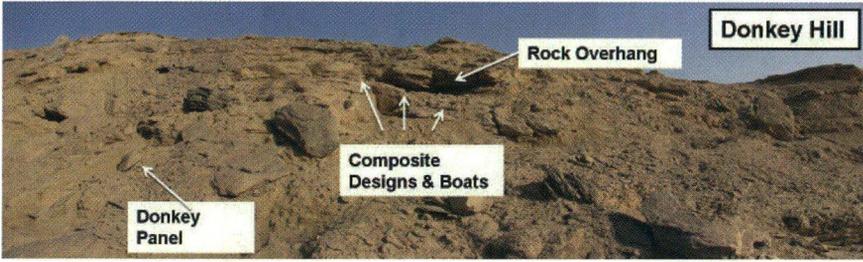


Fig. 2. — Donkey hill, location 10-21.

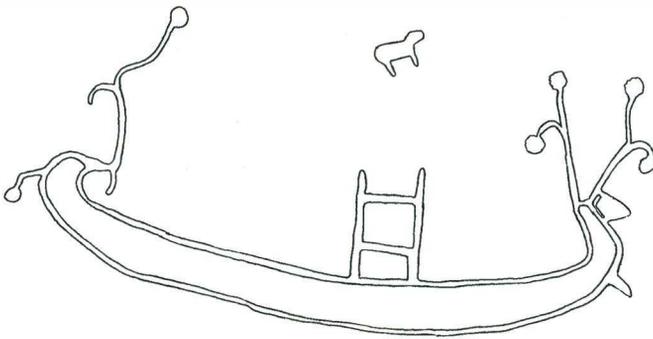


Fig. 3. — HK61A south boat.



Fig. 4. — Hippo-rise ancient stone construction.

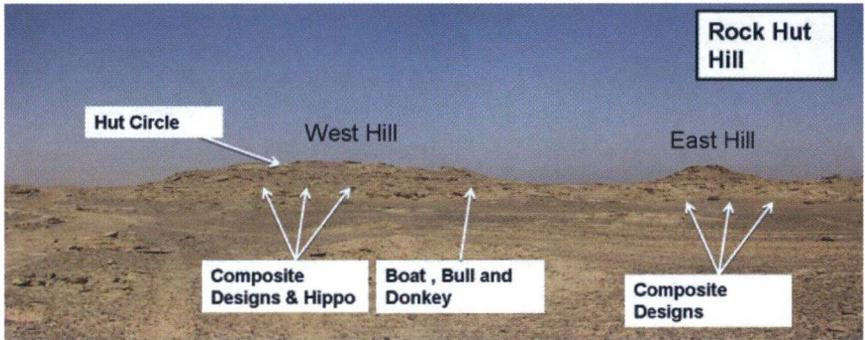


Fig. 5. — Rock hut hill location.

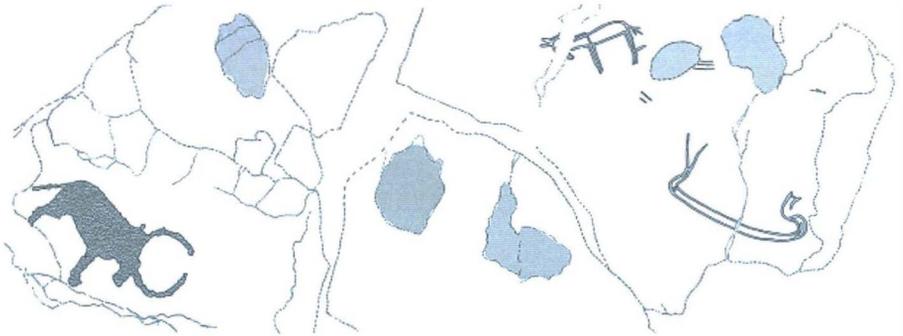


Fig. 6. — Location 10-17: bull, boat and donkey.

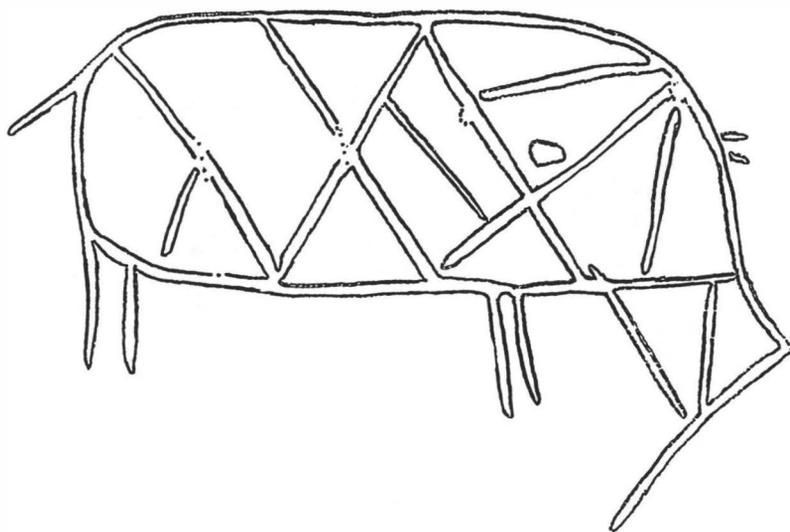


Fig. 7. — Hippopotamus from location 10-09.

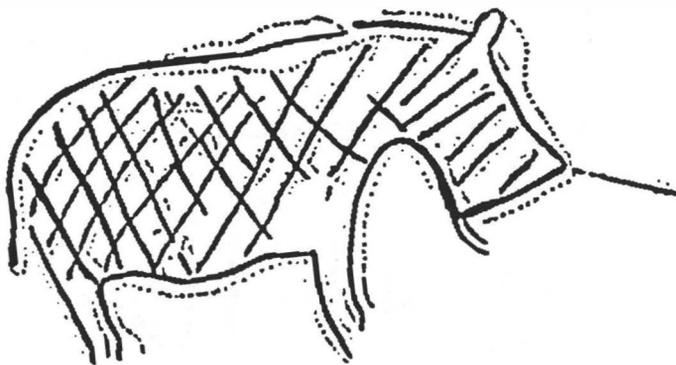


Fig. 8. — Hippopotamus from location 10-17.

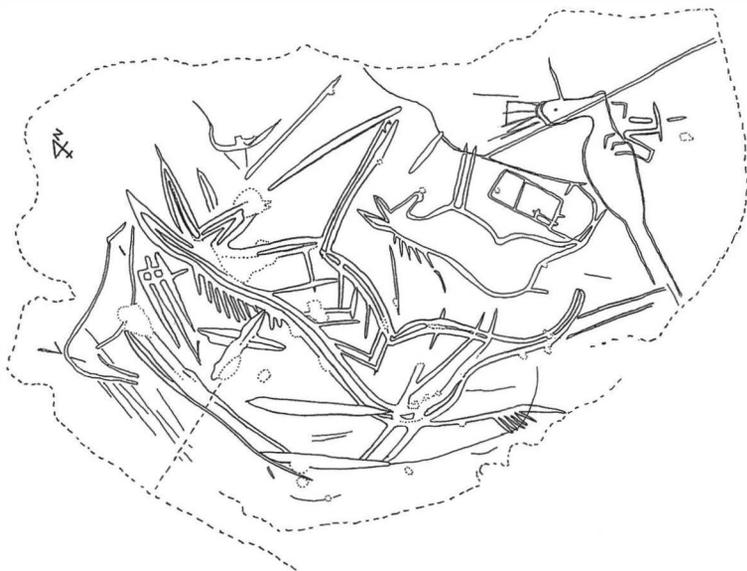


Fig. 9. — Donkey with progeny, location 10-21.

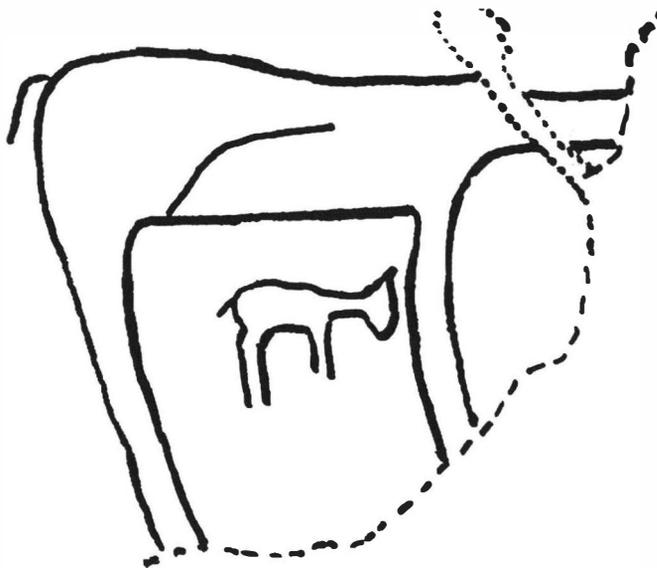


Fig. 10. — Possible donkey with young, location 09-10.

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Dating the Petroglyphs of Egypt's Central Eastern Desert

by

Francis LANKESTER*

KEYWORDS. — Rock Art; Central Eastern Desert; Chronology.

SUMMARY. — This chapter outlines a suggested method to date the petroglyphs of Egypt's Central Eastern Desert. Some information about their geographical context and the history of their discovery is provided first to serve as a context in the construction of the corpus examined here. Methodological challenges of dating rock art are considered. The inability to use scientific dating methods, the rarity of useful superimpositions and the problematic nature of using relative patination except on a rock surface open to the same influences mean that using stylistic dating is unavoidable. This paper suggests that by comparison with Nile Valley's cultural examples found on mobiliary art, especially on pottery and in tomb paintings, a considerable number of petroglyphs can be dated and their distribution outlined.

The petroglyphs of the Egyptian Central Eastern Desert are mainly found within an area bounded by the wadi Hammamat-Quseir road in the north, the Red Sea hills in the east, and the wadi Baramiya-Marsa Alam road in the south. Survey reports by WINKLER (1938), ROHL (2002) and MORROW & MORROW (2002) covered fifteen wadis and resulted in a corpus of over eleven hundred human figure petroglyphs, eight hundred boats and two thousand animals. Many of these are from the pre-dynastic era when a moister climate pertained until around 3,500 BCE, after which aridification took place.

1. Introduction

The rock art of Egypt's Eastern Desert has hitherto proved difficult to date, and without a chronology we cannot place the petroglyphs in the context of the Nile Valley cultures which created them. This paper suggests that stylistic dating is the only method which can be usefully employed, and outlines a broad chronology of the petroglyph sites in the wadi system. First, the survey area is described and how the corpus has been put together from the

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various survey teams' efforts. Next, the methodological issues surrounding the surveys and the difficulties regarding means of establishing a chronology are looked into. It is clear that problems using scientific methods, patination, stratigraphy and superimpositions render these impossible to use in most cases. It is then proposed that by identifying comparable motifs in the Nile Valley and desert, wider scenes of images associated with these can be dated successfully. Finally, the southern, central northern regions of the Central Eastern desert are compared in terms of the differences in distribution of predynastic and pharaonic/later sites. Routes through the wadis to the mines, quarries and hunting grounds are suggested for these differences.

2. The Central Eastern Desert Survey Area

2.1. DEFINING THE SURVEY AREA

The term 'Central Eastern Desert' is used here to cover fifteen wadis of the Egyptian Eastern Desert, mainly between Wadi Hammamat (the modern Quft to Quseir road) in the north and Wadis Kanais/Baramiya (the Edfu to Marsa Alam road) in the south, in order to identify the survey area within Egypt's eastern desert. Two wadis, el Atwani and Hajalij (south), are located to the north and south respectively (fig. 1). The use of 'central' distinguishes the survey area from the wider Eastern Desert. The survey area itself comprises only 3 % of that desert. The two hundred and forty-six sites in the corpus comprise the work of four projects. Two hundred and twenty-two sites, representing the bulk of those in the corpus, come from the Eastern Desert Survey (ROHL 2000) and the Rock Art Topographical Survey (MORROW & MORROW 2002). These sites include the two wadi Hammamat schist quarry sites Hsq 1 and 2 from RATS. Beginning in 1997, D. Rohl started the Eastern Desert Survey (EDS) mostly investigating the southern valleys Wadi Hajalij (south), Wadi Kanais, Wadi Baramiya, and Wadi Umm Salam and re-recording a number of Winkler's sites in Wadi Abu Wasil, Wadi Hammamat, and Wadi el Atwani. The Eastern Desert Survey comprised three to four-day fieldwork expeditions in two of which this author participated (ROHL 2000).

The three subsequent 'Rock Art Topographical Survey' (RATS) expeditions covered an expanded area compared to the Eastern Desert Survey, completing the surveying of wadi Umm Salam and locating many new sites in Wadis Abu Mu Awad, Umm Hajalij (North), and the central Wadis Abu Iqaydi, Dahabiya and Shalul (MORROW & MORROW 2002). Both teams used similar methods and shared some of their members. Continuity in recording

techniques was maintained by P. Cherry, a leading participant in the Eastern Desert Survey as well as the Rock Art Topographical Survey, who prepared and standardized the recording sheets used by both expeditions. Co-ordinates provided by a hand-held global positioning system receiver and site descriptions were recorded by both teams, as were the number and types of boats, and the presence and description of figures and animals. Sketches of the petroglyphs and individual components, especially boats, were made. The data from the Robert Mond Expedition, the Eastern Desert Survey and the Rock Art Topographical Survey were all plotted on satellite imagery of the area in the publication to make it easy to recover data for publication. Each of the teams produced a substantial photographic archive. The fifteen wadis (valleys) in the survey area are, from north to south: Wadi Atwani, Wadi Hammamat, Wadi Qash, Wadi Mineh, Wadi Abu Wasil, Wadi Dahabiya, Wadi Abu Iqaydi, Wadi Shalul, Wadi Abu Mu Awad, Wadi Umm Salam, Wadi Umm Hajalij (North), Wadi Miya, Wadi Baramiya, Wadi Kanais, and Wadi Umm Hajalij (South) (see fig. 1). Wadi Hajalij(s), Wadi Dahabiya, Wadi Abu Iqaydi and Wadi Shalul run north-south, the rest are orientated approximately east-west, except for el Atwani which curves round to the north-east. The survey area is divided up here into three regions. Northern wadis considered include Atwani, Hammamat and Qash (three wadis – thirty-seven sites, 15 % of all sites), central wadis: Mineh, Abu Wasil, Dahabiya, Iqaydi and Shalul (five wadis – eighty sites, 32.5 %), and southern ones: Abu

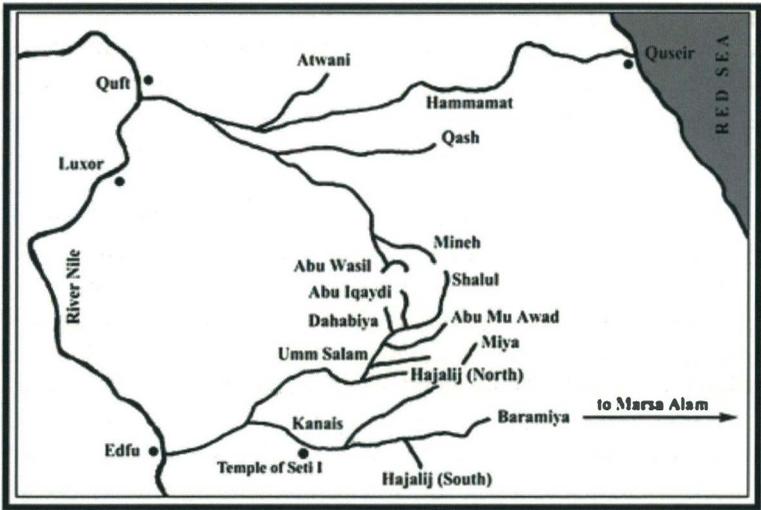


Fig. 1. — The fifteen wadis of the Central Eastern Desert survey area.

Mu Awad, Umm Salam, Umm Hajalij North and South, Miya and Kanais (seven wadis – one hundred and twenty-nine sites, 52.5 %) for a total of two hundred and forty-six sites.

2.2. OTHER SURVEYS USED IN THE STUDY

Both the EDS and RATS teams re-recorded many of the RME Winkler sites. Four Winkler sites: one in wadi Hammamat and three in wadi Qash were not re-recorded and are included from the photographs held in the Egyptian Exploration Society Archive in London. An important addition is the work done by A. Van Craeynest in the wadi Baramiya for her 2004 MA dissertation. She valuably added twenty-one sites to the eighteen contained in the EDS and RATS publications. Without this, there would have been a significant gap in the corpus, since Van Craeynest's survey takes the wadi Baramiya to second in the number of sites (thirty-nine) only to wadi Umm Salam (forty-six), whereas previously it had been behind wadis Mineh (twenty-four) and Abu Wasil (twenty-six). Any Winkler RME site, which only consists of hieroglyphs, *wusum* (marks by the nomadic desert inhabitants often delineating tribal territory or the presence of water) and arabic writing, is excluded from the corpus.

Further surveying was done in the Kom Ombo drainage basin south of Wadi Baramiya in Wadis Midriq, Dunqash, Muweilhat, Sibrit and Shait, although not this time with the active leadership of Rohl. JUDD (2009) included details regarding forty-eight sites from his participation in the EDS surveys after 2001 carried out in this area. He also wrote the reports on this work required for the SCA. However, the work remains largely unpublished and he did not visit Wadi Midriq. It is clear, however, that much of the rock art there is similar to that of the Central Eastern Desert.

3. Technical and Methodological Problems of the Surveys

3.1. SURVEY PROBLEMS

The EDS and RATS survey teams faced a number of obstacles. First, the Central Eastern Desert is a gold mining and military zone where special permits are required for entry from Egyptian Military Intelligence, as well as from the Supreme Council of Antiquities. The logistics and 'amateur' financing of surveying in the desert in addition to these restrictions led to each expedition spending a limited time of four days on each occasion in the

survey area. This meant that recording was sometimes hurried, and details on measurement and patination could be sketchy. These issues also restricted the area in which the survey teams operated. Positively, fifteen wadis in the sandstone block were covered quite thoroughly by the EDS and RATS teams. However, it is possible that some petroglyphs, especially pharaonic ones which did not interest the teams as much as apparently early images, were missed. The area east of the sandstone escarpment, for example the well and mining area around Bir Dagbag, was not surveyed. In addition, the restraint on time spent in the desert led to the teams speeding to the sandstone block wadis without paying detailed attention to the routes which predynastic and pharaonic Egyptians would have taken to reach them. Therefore, there is incomplete information regarding the topography of the area in the EDS/RATS survey reports.

The EDS and RATS research became subject to some criticisms. It was, for example, argued that the inventories were incomplete, lacked details on technique, had too few dimensions and lacked scale in the photographs (HUYGE 2002). In particular, it is usually only boat images which have an indication of scale. It should be said, however, that many of these details are in the original recording sheets and that omissions were probably caused by the desire for a relatively fast turnaround, of less than two years from work to publication. This haste is evident from the publications. Moreover, both the EDS and RATS reports have details of site orientation and height, which are not rigorously included in every 'professional' publication. Nonetheless, some problems have been created by the nature of the publications in counting the number of petroglyphs reported and in identifying images. Overall, there is also a challenge in dating animal, human and boat petroglyphs.

3.2. CONTRIBUTION OF THE UNIVERSITY OF MINNESOTA SURVEY

Fortunately, the University of Minnesota had a concession to record inscriptions in both the Central Eastern Desert and the Kom Ombo drainage basin areas (ROTHE *et al.* 2008). Although this team concentrated on pharaonic inscriptions and generally ignored predynastic motifs, the publication of its work has not only provided additional inscriptions with translations but much additional useful information about topography. The professional university team was able to spend longer in the survey areas on each expedition and to walk rather than drive through the wadis. Therefore, the project report contains details of the topography and vegetation over a wide area from the Nile to the Red Sea. It also covered the Bir Dagbag area and reported pharaonic inscriptions, but not evidently predynastic images (ROTHE *et al.* 2008).

The presence of professional egyptologists in the team gave a wider historical context to the work. In particular, the ability of the University of Minnesota team to translate the hieroglyphic inscriptions allows understanding of who went into the desert in pharaonic times, and from their titles and description of what they did, to determine some of the motives as to why they went. For example, there are several references to ‘ship’s captain’, suggesting the presence of crew on the Red Sea journey to Punt (ROTHE *et al.* 2008). In addition, one of the strengths of the RATS publication is the plotting of sites from the RME, EDS and RATS expeditions together on Nasa satellite maps. This clearly shows the distribution of the majority of petroglyph sites in the Central Eastern Desert, only missing those by Van Craeynest carried out later (2004) in Wadi Baramiya. It is clear that overwhelmingly rock art is located on the sandstone ridge running NNW.

4. Problems in Dating Petroglyphs

4.1. IMPOSSIBILITY OF USING ARCHAEOLOGICAL CONTEXT AND SCIENTIFIC METHODS

In attempting to date the Central Eastern Desert petroglyphs, one faces a number of serious obstacles. No definitely dateable artefacts have been found in associated contexts with any of the petroglyphs. The value of obtaining absolute dates for ancient rock art, by radiometric dating techniques (radio-carbon methods or uranium-thorium series) or optically-stimulated luminescence (OSL), is still hotly debated (BECK *et al.* 1998, MALAKOFF 1998, HUYGE *et al.* 2001, WHITLEY & SIMON 2002, HUYGE 2005, JACOBS & ROBERTS 2007, VAFIADOU *et al.* 2007). Even if one of these methods could be shown to be reliable, scientific dating of the central eastern desert petroglyphs has never been feasible due to the lack of finance, institutional support and official permission.

4.2. PROBLEMS IN USING PATINATION

Using relative patination has been suggested and utilized as a means of dating the petroglyphs. WINKLER (1938) employed a series of coloured cards in the RME survey. From this he constructed a rating scheme from 1 (darkest and closest to the original colour of the rock) to 10 (lightest). However, when he applied this scale it conflicted with his four-fold interpretive scheme.

For example, he divided the main face at Abu Wasil-10 (RME-26) between eastern invaders and autochthonous cattle herders, despite there being no discernable difference in patination between the images (WINKLER 1938). Winkler himself noted that ideal, stable conditions regarding atmospheric conditions such as rain, dew and light over the millennia have never existed. None of these factors have been constant and the mineralogical composition of the rock varies over even a small area (WINKLER 1938). Even the same rock surface may start with a mix of colours and this will affect the hue of the patina formed. An illustrative situation is Qash-3 where a serekh of the first dynasty I king Narmer (*ca.* 3050 BCE) and an empty serekh, which ought to be earlier, low down at the front of the site have a patination the same as that of the rock surface (fig. 2). Boat and animal images on top of this cave site, which have been more exposed to sunlight and arguably ought to be darker, have various lighter hues (fig. 3). The effect of sunlight is shown at SAL-12 (MORROW & MORROW 2002) noted by WILKINSON (2003) where one half of a line of ibex is darkly patinated and the other half lightly due to an overhanging ledge keeping half the scene in shade all day. A further example can be seen at Hammamat-13. On the front surface a boat has rigging and a central mast, indicating at least a new kingdom (*ca.* 1500 BCE) date, while on the rear surface another boat has an 'arms-raised' figure on board, which suggests a predynastic date. At least two thousand years therefore separate these images, but while the patination of the former is lighter than the latter, the difference is quite small (fig. 4). This means that patination can only be used when images are on the same rock surface, open to the same atmospheric conditions and not over the course of a wadi or the whole survey area. It is useful to determine which images comprise a contemporaneous scene, but not beyond that. Even where a clear difference in patination exists and tells us that one image is later than another, this is often all it is possible to learn. Figure 5 from Umm Salam-9 shows a boat depiction so darkly patinated that it has returned to the colour of the rock. The light scene of a figure, dogs and ibex, is much lighter and therefore clearly later. However, unless the depression above the boat represents a sail, this does not help to date either image.

4.3. PROBLEMS IN USING STRATIGRAPHY AND SUPERIMPOSITIONS

Stratigraphy and superimpositions were usefully employed by HUYGE (1995) and, combined with relative patination, used to produce a seriation of images at el Kab. In particular, the Belgian team found examples where a giraffe with darker patination was overlaid by a sickle boat stylistically dateable to



Fig. 2. — Narmer & empty serekhs, Qash-3 (RME-18)
(author's photo).

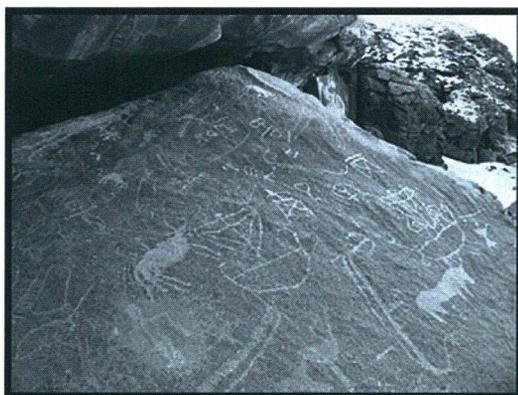


Fig. 3. — Top of ledge, Qash-3 (author's photo).



Fig. 4. — Hammamat-13, showing predynastic vessel left and pharaonic boat with mast right (author's photo).



Fig. 5 — Salam-9 darkly patinated boat and light hunting scene (right) (author's photo).

Naqada II (HUYGE 1995). However, there are several reasons why this approach is not applicable to the Central Eastern Desert. The petroglyphs at el Kab are mainly situated at two restricted locations, the 'rock of the vultures' and the 'rock of the pigeons' and there are evident and useful superimpositions. Moreover, using relative patination on the same rock surface is easier over this constricted area. This is not the case in the desert, where there are few superimpositions. Even where there are, as at Umm Salam-14 (fig. 6),



Fig. 6. — Salam-14 (author's photo).

there is a mass of images, it is often not clear which overlays which, and dateable motifs are lacking. The one image which is easily dateable is the sickle boat with triangular steering oar and therefore is new kingdom or later. It can be dated by its features without reference to superimpositions, and the few images it overlaps, which are difficult in any case to ascertain, will only be earlier than *ca.* 1500 BCE. A rare clear superimposition at Umm Hajalij (N)-8 shows two giraffes overlaid by a boat, but the vessel is not easily dateable. Other images at this site suggest a probably predynastic date, but alone this superimposition tells us only that the giraffes are earlier than the boat. The rarity of clear superimpositions in the survey area means that using stratigraphy as a dating method is not feasible.

4.4. EFFECT ON DATING EFFORTS OF THE WIDESPREAD PRESENCE OF HUNTING

Hunting is clearly a major activity in the Central Eastern Desert petroglyphs, as two hundred and fifty-six figures (29.5 %) at one hundred and six sites (42.5 %) are engaged in hunting. This is defined as where a figure is accompanied by a dog, has a bow and/or is in close association with animals, or stands among animals. Interestingly, at twenty-seven additional sites (11 %) dogs are shown chasing down prey but no human hunters are indicated. Thus, some form of hunting is indicated at a hundred and thirty-three sites (53.5 %) in the Central Eastern Desert. Adding those involved in the 'control' of bovinds and other animals, since most of these are likely to be hunting, there are two hundred and ninety-two (34 %) human figures engaged in hunting. Two hundred and thirty-seven human figures (27.5 %) standing in boats at ninety-one sites (41 % of boat sites) constitute the second-largest element considered here. These two categories therefore constitute a considerable proportion of all representations of people, indicating how prevalent hunting is.

Hunting is clearly the main activity shown in the survey area. This presents a problem as the presence of game animals in modern times means that this activity can have taken place over thousands of years. Indeed, it was only in the last twenty years that hunters with modern weapons have all but wiped out the gazelle, antelope and ibex populations of the Eastern Desert. Unless there is a dateable motif in association with a depiction of hunting, this scene could date from any time over six thousand years or more. For example, figures with feathers cannot automatically be assigned a predynastic date as modern African hunters wear plumes. Fortunately, a considerable number of hunting scenes are associated or integrated with dateable motifs such as a boat or an 'arms-raised' figure.

5. Dating the Petroglyphs

5.1. USING STYLISTIC COMPARISON

The most reliable way to date the petroglyphs is to use stylistic analysis to compare rock art images with mobiliary art in the context of a better understood history. Since there are boat depictions among the Nile Valley's predynastic and pharaonic artefacts, comparable to a number of petroglyphs, it will be these examples which are most useful in dating the desert images. Other associated images and scenes can then be dated by association with known examples. Patination will only be useful where the images compared are on the same rock surface subject to the same environmental influences. In order to date the boat images in the Central Eastern Desert stylistically, it is necessary to study them within the overall context of comparable material with known dates, mostly found in the Nile Valley. Naqada I-III and pharaonic motifs are available for comparison.

The boat petroglyphs are here dated according to comparison with evidence from the Nile Valley's predynastic and Pharaonic/Graeco-Roman cultures. Mobiliary art of the predynastic era (5000-3100 BCE) includes pottery, palettes, models, knife handles, ivory and bone labels, the painting in tomb 100 in Hierakonpolis, and the Gebelein linen. Our main sources of information for the dynastic period comprise papyri, tomb paintings, and boat models. There are also a small number of simple clay boat models from excavated contexts dating to the Badarian period (before 3900 BCE). These are canoe-like models, perhaps representing a papyrus boat with built-up sides rather than a raft with a flat deck. They are so simple that it is not possible to recognize a comparable type among the petroglyphs. There are no representations of boats on Badarian artefacts. It is in the Naqada-I period that such evidence is first found. There are fifteen drawings which may be identified as boats: nine on pottery, four on the Gebelein linen, one on a stone palette, and one on a clay box in the Ashmolean Museum. Although the majority seems to represent sickle-shaped boats, there are two examples of square-hulled boats, and one contested example with a very high prow on a ceramic sherd, also in the Ashmolean Museum.

5.1.1. *Naqada-I Boat Motifs*

A large variety of boat forms is found in the Naqada-I period, which suggests that a wide variety of boats, 'sickle' and 'square,' was actually used in Egypt as early as the fourth millennium BCE. As a consequence, simply

comparing apparently similar shapes in mobiliary art from the Nile Valley and in the desert rock art corpus will be unproductive. Naqada-I boats on mobiliary art show multiple oars or none, sometimes there is also a long steering oar towards the stern, and most boats are shown with cabins. A Naqada-I boat on a C-ware bowl in the Egyptian museum in Cairo, is often shown without its complete context, which includes images of ostrich, crocodile, antelope, hunting dog, hippopotamus, scorpion and fish (fig. 7). The first five of these are also represented in several of the petroglyphs. Caution should be used, however, when trying to date the petroglyphs on the basis of the images on pottery. The creators of the petroglyphs could have seen the represented fauna over a long period of Egyptian predynastic and dynastic history. Nor are there any exact parallels in the petroglyphs to the boat on the bowl in the Egyptian museum in Cairo. There are representations of hippopotami on several C-ware bowls, including animals being harpooned. There is a comparable harpooning scene in wadi Mineh (ROHL 2000), but while there are a number of bowls with hippopotamus motifs, the petroglyph example is unique. Hippopotamus hunts are a feature of royal activity in the dynastic period, but the presence of a hippopotamus hunting scene among the petroglyphs does not necessarily constitute a dating marker.

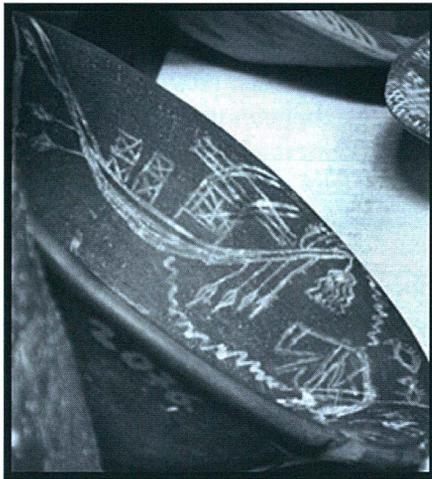


Fig. 7. — Image of a boat surrounded by ostrich, crocodile, antelope, hunting dog, hippopotamus, scorpion and fish on a C-ware bowl (Naqada-I period, 3900-3600 BCE), now in the Egyptian museum, Cairo (author's photo).

There is one useful boat image. The clay box in the Ashmolean Museum in Oxford has an incurved sickle boat with an s-shaped prow and a double 'frond' at the stern. It does come from a dateable context from the end of the Naqada-I period (fig. 8), or perhaps the beginning of Naqada II (GRAFF 2009). This drawing is different from the four sickle boats on the gebelein linen, which is also dated to the end of Naqada-I or the beginning of Naqada-II period (ADAMS & CIALOWICZ 1997). In addition to the s-shaped prow and double feature at the stern, there are several lines projecting inwards from the stern, whereas on incurved boat drawings in the central eastern desert there is only one, usually projecting from the often triangular object at the top of the stern (fig. 9).



Fig. 8. — A clay box from the end of the Naqada-I period (3900-3600 BCE) with a decoration showing an incurved sickle boat with an s-shaped prow and a double 'frond' at the stern, now in the Ashmolean Museum, Oxford, UK.



Fig. 9. — Example of a petroglyph of an incurved boat with a single line or 'frond' projecting inward from a triangular object at the top of the stern, BAR-9 (author's photo).

As there is only one image on mobiliary art that is even somewhat comparable in style, there is no dateable range from the Nile Valley that can be applied to the survey area petroglyphs. However, several pertinent observations can be made. The motif does not appear at all on any D-ware pots (GRAFF 2009). While there are examples of boat representations with upward-bending ends, there is only one with the triangular element and none with the three ‘fronds’. The ‘arms-raised’ figure is found on both Naqada-I and II pottery and in the form of figurines. It may even date from Badarian times as there are figurines attributed to that period in a similar position. The motif does not continue into the Naqada-III period in a Nile Valley context, nor is it associated with any petroglyph assigned to this period.

5.1.2. *Naqada-II Boat Motifs*

The largest number of boat representations that are commonly assigned to the Naqada-II period is found on D-ware pottery (GRAFF 2009). There are similar boats in the painting in tomb 100 at Hierakonpolis (WILKINSON 2003). A total of fifty-nine boat petroglyphs, identified as type I (fig. 10) and dated to the Naqada-II period by the different investigators, were found in Upper Egypt and Lower Nubia (DUNBAR 1941, ENGELMAYER 1965, HELLSTROM & LANGBALLE 1970, CERVICEK 1986, HUYGE 1995, VAHALA & CERVICEK 1999). Thus, the representations in the petroglyphs are heavily outnumbered by those on the D-ware pottery. The latter are shown with various ‘standards’, while the petroglyphs in the Nile Valley very rarely possess this feature.

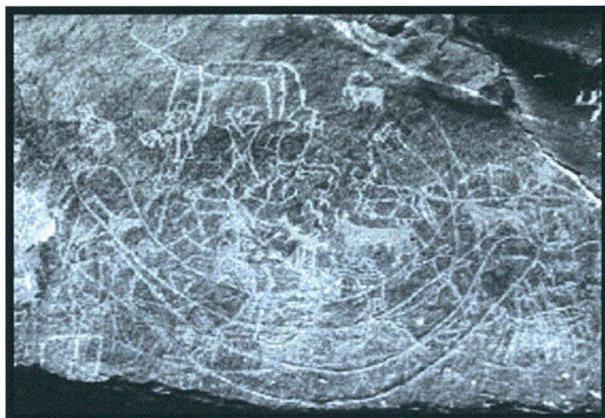


Fig. 10. — Examples of type I sickle boat, BAR-1, RATS: 154.

Indeed, the three examples are confined to wadis Hammamat and Qash in the northern area of the Central Eastern Desert. This suggests that the representations on pottery are special in some way. It is noteworthy in this context that the vast majority of D-ware vessels were retrieved from graves.

5.1.3. *Naqada-III Boat Motifs*

In the Naqada-III period boat models, knife handles, ivory and bone labels, the Qustul incense burner, and drawings on pottery (rarely) display a wider range of boat forms compared to the mobiliary art of the Naqada-I and II periods. While the carved ivory knife handles in the Metropolitan Museum of Art (New York) and in the Louvre (Paris) are not provenanced, bone labels show similarly shaped boats. Boat models, the Qustul incense burner and a vase in the British Museum (London) display a new kind of boat design with a very high prow and a triangular stern. The same design is seen in forty-eight petroglyphs in Lower Nubia and Upper Egypt (DUNBAR 1941, ENGELMAYER 1965, ALMAGRO BASCH & ALMAGRO GORBEA 1968, HELLSTROM & LANGBALLE 1970, CERVICEK 1986, HUYGE 1995, VAHALA & CERVICEK 1999). A similarly-shaped boat with a more sloping prow and without the triangular stern is displayed on a graffito in Gebel Sheikh Suleiman, by some boat models, on the Narmer palette, and in eighteen petroglyphs in Lower Nubia and Upper Egypt (DUNBAR 1941, ALMAGRO BASCH & ALMAGRO GORBEA 1968, OTTO & BUSCHENDORF-OTTO 1993, VAHALA & CERVICEK 1999).

5.1.4. *Pharaonic and Later Boat Motifs*

The Eastern Desert was one of the sources of raw materials such as gold, granite, greywacke and galena for Pharaonic Egypt. At the same time, one of the routes along which disassembled boats were transported by donkey caravan, in order to be reassembled on the Red Sea coast on their way to the enigmatic land of Punt (BARD & FATTOVICH 2007), led through Wadi Hammamat. This route, and that to Berenike further south on the Red Sea coast, is also attested by late rock art as well as Greek and Latin inscriptions, especially in Wadi Qash (Qash-3/RME-18) and Wadi Mineh (Mineh-14/RME-24b). We should expect to find representations of boats with masts or sails along these routes between the Nile Valley and the Red Sea. Vessel technology obviously advanced in Egypt during the early dynastic period, which is obvious in the use and the position of a sail. Indeed, an important defining feature of a boat petroglyph dating to the pharaonic period is the presence of a mast and sail, and there is no clear example in the central eastern desert of

a petroglyph showing a sail before Naqada III, although they are known from Lower Nubia. The position of the mast is also indicative, as it moved back towards the middle of the vessel from the Naqada-III period to the New Kingdom (1570-1070 BCE), a period of nearly two millennia. Early boats would probably only have been able to sail before the wind. We do not see sea-going vessels, with the mast set one third of the way back from the prow (BOWEN 1960), illustrated before the Fourth Dynasty (2613-2498 BCE). And it is not until the reign of Hatshepsut (1498-1483 BCE) that large sea-going vessels able to carry large cargoes are shown, in addition to large Nile vessels which could transport two massive stone obelisks at a time.

There are many paintings in royal and private tombs, temple murals, papyri as well as boat models that display vessels from the pharaonic era. There are several features which assign a boat an old, middle or new kingdom date. In the Old Kingdom (2686-2181 BCE), there are usually two rear steering oars with thin leaf-shaped blades (LANDSTROM 1970); a triangular sail also appears at this time. The vessel that was interred next to the pyramid of Khufu is seen to have an incurved stern and a vertical prow after the one thousand two hundred and twenty-four pieces of cedar wood were reassembled into an almost 44 m long boat. This feature later only occurs in New Kingdom tomb paintings of the 'otherworld', never in secular contexts. The boat associated with the pyramid of Khufu was certainly not an ordinary vessel and may even have not been meant for actual travel or transport at all. The Egyptian hieroglyph for "to sail upstream" consists of an incurved sickle boat with its sail unfurled, while the processional boat of Osiris, god of the afterlife, is an incurved vessel with double steering oars. Maritime Egypt was remarkable with the prevailing winds from the north and the flow in the river Nile running in the opposite direction. By the 9th-10th dynasties (2160-2040 BCE), boats are shown with one or more very large steering oars attached to a pole at the rear of the vessel. Middle-Kingdom vessels (2040-1782 BCE) also have this feature, in combination with a retractable mast. Finally, the central mast is a defining feature of New-Kingdom vessels (1570-1070 BCE), as is the triangular steering oar blade, which never appears before this period. Figure 11 shows a petroglyph from Wadi Abu Mu Awad showing the latter feature.

6. Using the Stylistic Method

As scientific dating is not possible, the approach taken here is first to identify clearly Naqada vessels by reference to the C and D-ware and other



Fig. 11. — Petroglyph from wadi Abu Mu Awad showing New Kingdom or later steering oar, RATS: 105.

Nile Valley's artefacts, and pharaonic boats by the presence of mast, sail, and/or steering oar(s). But by this means only a minority of the boat images will be identified (forty-nine predynastic Naqada I/II/III and seventy-two pharaonic).

The next stage is to identify 'compositions'. These are sets of associated and related motifs in terms of style, subject, superimposition and patination. An illustrative example is shown in figure 12 (Baramiya-9), where eight boats, one with an 'arms-raised' figure amidships, are found among numerous animal and hunting motifs. All these images, with the exception of four later additions of three horses and a camel, constitute a single composition. A considerable number of animals and six boats can be seen here. Most of these are square boats, which are common in the corpus. Two possess a stern with a feature seen in other boat images, akin to a 't' with downturned ends. There are two other similar stern features which can assist in dating. Both these boats also have two 'streamers' at the other end. Double streamers are found on the sickle boats on D-ware hanging from the 'standard' pole. However, none of the few Naqada-II petroglyph boats have them. The streamer is mainly found in southern wadis (twenty-two/twenty-five sites). These features alone do not tie the design to any particular time period. However, in the right-hand corner there is an incurved 'three-frond' boat with an s-shaped prow which bears some resemblance to the boat on the Ashmolean clay box. Again, this alone is not conclusive of an early, predynastic date. But it additionally contains a clear 'arms-raised' figure found as figurines and on C and D-ware, dating to both Naqada I and II.

Therefore, it is possible to date both this boat type and the scene as being predynastic. If the incurved 'frond' boat can be dated to late Naqada I/early

Naqada II, then we have a date for the whole scene. Thus, scenes with the 'arms-raised' figure alone can be dated to Naqada I/II and with the incurved 'frond' boat to a narrower period than that. Given the paucity of Naqada-II sickle boats akin to those on the D-ware, their lack of association with hunting scenes and the lack also of 'arms-raised' figures, scenes with this figure are likely to date from late Naqada I/early Naqada II. In addition, all three 't' features are found at one site or more in close association with an 'arms-raised' figure (fig. 13), so point to a predynastic date. Where boats have examples of these features, they will be labelled 'predynastic', as will clearly associated images on the same rock face with the same patination. Given the strong association of boats, especially 'square' types, plumed figures, often engaged in hunting and animals such as giraffe, hippo, crocodile and hippopotamus which (mostly in southern wadis) can be assigned an early date, boats in this context are termed 'probably predynastic'. By this means, another three hundred and thirteen boat images can be dated: twenty pharaonic and two hundred and ninety-three predynastic. Human and animal images, which are determined to be integral to a scene with dateable predynastic/pharaonic boats, can then be dated, and then those associated with dateable images and of the same patination identified in turn.

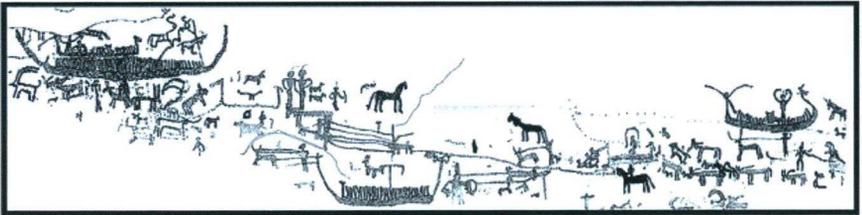


Fig. 12. — Panoramic composition of four illustrations combined, BAR-9 (NB: right-hand section with two further boats, animals and control of antelope not shown).



Fig. 13. — T'feature with 'arms-raised' figure in boat, MUA-12 (author's photo).

7. Dating the Petroglyphs

The first step is to identify the compositions by combining those images with the same patination and style on the same rock surface. Intrusive images are excluded. Next, images within the composition which can be matched to a comparable motif in the Nile Valley's Predynastic, Pharaonic and Graeco-Roman cultures are used to date that composition. Sites are designated 'predynastic', 'late', or if elements are present from both cultures are labelled 'mixed'. Because of the prevalence of animals, and hunting scenes which cannot be given a specific date, there will inevitably be sites at which petroglyphs have been added at different times but will be dated only by a comparable motif to one historic period. By this means 72 % of the sites in the corpus can be dated: seventy-five predynastic (30 %), eighty-three late (33 %), twenty-one mixed (9 %).

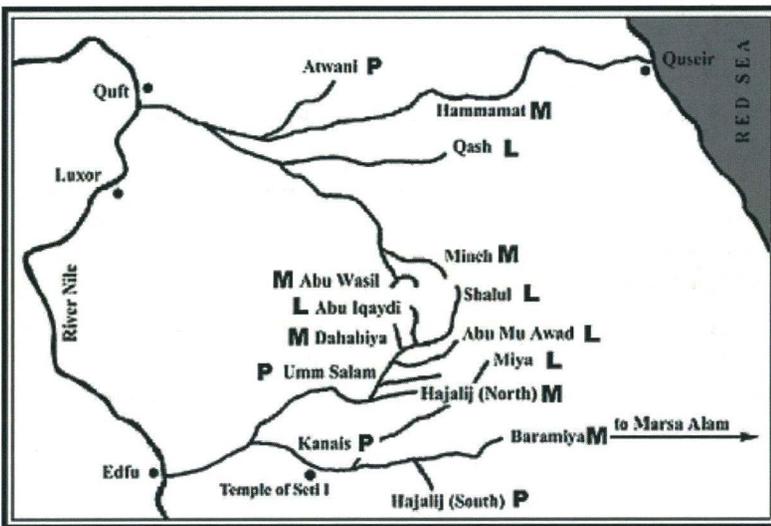


Fig. 14. — Dating of each wadi according to date of all images: P = Predynastic, L = Pharaonic, M = Mixed.

8. Balance between Predynastic and Late Sites

There are clear differences in the proportion of predynastic versus late sites in the three areas (fig. 14). In the southern wadis, 'predynastic' sites outnumber 'late' ones 4:3, but in the central wadis 'late' sites dominate by 2:1.

In the north they are almost equal with 'mixed' sites. In the south, wadis Hajalij (south) and Umm Salam overwhelmingly have 'predynastic' sites, while in Baramiya they just outnumber 'late' ones. Wadis Miya and Abu Mu Awad have mainly 'late' sites. The core central wadis Abu Iqaydi, Dahabiya and Shalul have a ratio of 4:1 'late' sites to 'predynastic' ones, whereas the northern central wadis are virtually balanced. In the northern wadis there is a considerable percentage of mixed sites, especially in Wadi Hammamat.

There is a pattern of increasing numbers of 'late' sites as one moves from the southern wadis into the core central ones. Predynastic images are concentrated in the area of Wadis Kanais/Baramiya/Hajalij (south) and the first site in Wadi Miya near to the junction with Baramiya, and also in Wadis Umm Salam and Umm Hajalij (north). All the other dateable sites in Wadi Miya, going north and a distance from Miya-1, are 'late'. The central wadis have far fewer predynastic petroglyphs than the other areas, and many of the horse and camel rider figures. They include scenes of what may be fighting. These are unique as there is no sign of conflict in the petroglyphs of any other period. Thus, if the lack of images is evidence that early travellers did not go there much, there is a hiatus between north and south in the survey area. Since Gebel Shalul is a route connecting the northern and southern halves of the survey area, and there was a well there in antiquity, we might expect to find petroglyph sites in this part of Wadi Shalul. However, this is not the case as there are none. The main Pharaonic and Graeco-Roman route was to the west and it was not a predynastic route.

Starting with the two wadis which directly connect the river Nile with the Red Sea, Wadi Baramiya in the south and Hammamat in the north have a near balance of early and late sites, since they are main routes to mines, quarries and the Red Sea. Wadi Baramiya having twice the number of sites than Hammamat can be accounted for by Baramiya being the main route from Edfu and el Kab into the heart of the eastern desert. It is also the route northwards and southwards to concentrations of gold mines. Pharaonic inscriptions are not included in this study; however, there are many in the bekhen quarries in Wadi Hammamat, Baramiya also having a considerable number (ROTHE *et al.* 2008). Hierakonpolis and el Kab were prominent settlements and elite centres in the Naqada era. Hierakonpolis is located on the west bank of the Nile opposite Edfu, which is a major entry point into the desert and was politically important in the predynastic, whereas Edfu only became prominent in pharaonic times.

It is apparent that there is a clear stylistic relationship between 'frond' boat petroglyphs at Hierakonpolis and those in Wadis Kanais and Baramiya. There is also a concentration of these boats in the four southernmost wadis

(fig. 15). Southern wadis make up seven of the fifteen in the survey area, so the predominance in the amount of petroglyphs (60 % as opposed to just over 50 % of sites) could be ascribed to this percentage representation of the total number of wadis. However, Naqada and Abydos in the north were also important predynastic centres on a par with Hierakonpolis and el Kab. So, there could have been considerable activity into the desert originating from these places, especially from Naqada since it is nearly opposite Quf, which constitutes an entry point into Wadi Hammamat. The presence of some 'frond' boats, 'arms-raised' figures, and the type I sickle boats in the northern and north-central wadis shows that people of the Naqada culture were active there, but either not to the extent as in the southern wadis or that they revisited traditionally established sites.

The balance of power between Hierakonpolis and This, the yet-to-be located population centre of the Abydos 'U' and First-Dynasty cemeteries, is not clear in the Naqada period until this becomes predominant in Naqada III. Judging by the amount of petroglyphs and the 'integrated' scenes in the southern wadis, hunters from southern settlements were more active in the predynastic than those from the north of the survey area.

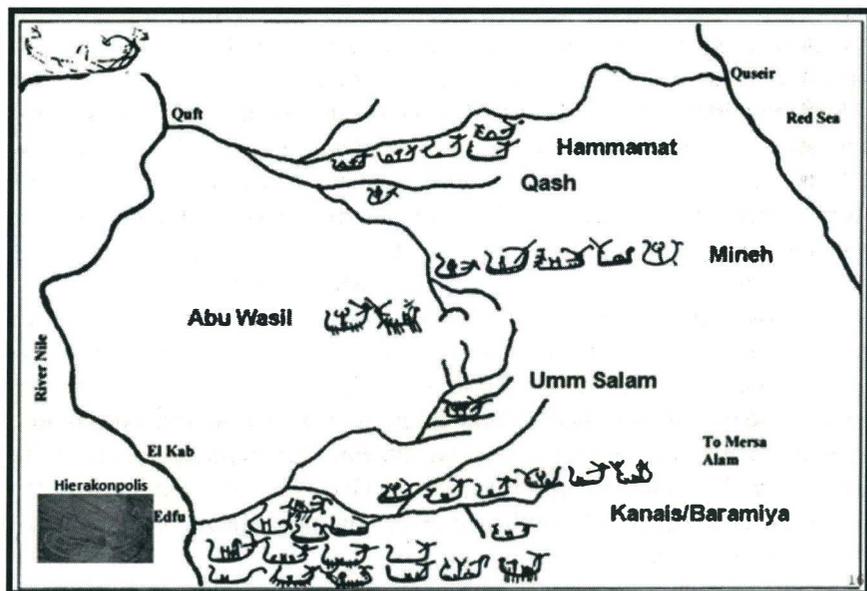


Fig. 15. — 'Frond' boats distribution in the central eastern desert showing presence all over the survey area but concentration opposite Hierakonpolis where related boat images are found.

9. Balance between Predynastic and Late Boat Sites

Considering the boat images separately, sites with 'predynastic' examples outnumber 'late' ones by 67: 47. Thus, all but eight predynastic sites are dated mainly by boats, while the presence of pharaonic figures, falcons and association with lettering or late dated animals, and horse/camel riders increases the number of 'late' sites considerably by thirty-four. It is also notable that not only can 3.5 times more boats be assigned a predynastic date than a dynastic one, but pharaonic vessels usually appear in ones or two's at a site, whereas large numbers of predynastic boats are often found together. Pharaonic boats tend not to be associated with animal depictions, in stark contrast to predynastic sites, or are situated on the edge of an animal scene rather than in the midst of it. This difference in number of portrayals and placement on the rock surface suggests that predynastic and dynastic boat petroglyphs have a different function. The three highest number of pharaonic boat images are in wadis Baramiya, Hammamat and Abu Mu Awad. All three are main routes to the gold fields or quarries. The only wadis in which there are none are Hajalij (south) and el Atwani. Indeed, wadi el Atwani has no pharaonic motifs at all. There is only one pharaonic boat at Kanais compared to more than twenty predynastic vessels, and perhaps surprisingly it is located on the opposite side of the wadi from the temple of Seti I and its associated well. So, just because there is a major pharaonic feature does not necessarily mean that a pharaonic boat petroglyph will be found there. In Wadi Miya the sole predynastic site is at the southern wadi end close to the junction with Baramiya, while the pharaonic sites are well to the north-west on the way to a marble quarry at Gebel Rukmam, and further to the gold mining area around Bir Dagbag. The connection with mining is enhanced by a dynastic image behind mining buildings at Bakariya, north-west of Bir Baramiya and just outside the survey area. Given that the pharaonic navy organized transport through the Eastern Desert, at least some of the pharaonic boat images may therefore be the work of transportation teams (TRATSAERT, in press). It is clear that in terms of boat images the content of the southern sites is overwhelmingly predynastic, while the central wadis overwhelmingly have late motifs. The situation in the northern area is mixed. Wadis Qash and Hammamat have considerable numbers of both early and late images, while el Atwani has no late boats at all (fig. 16).

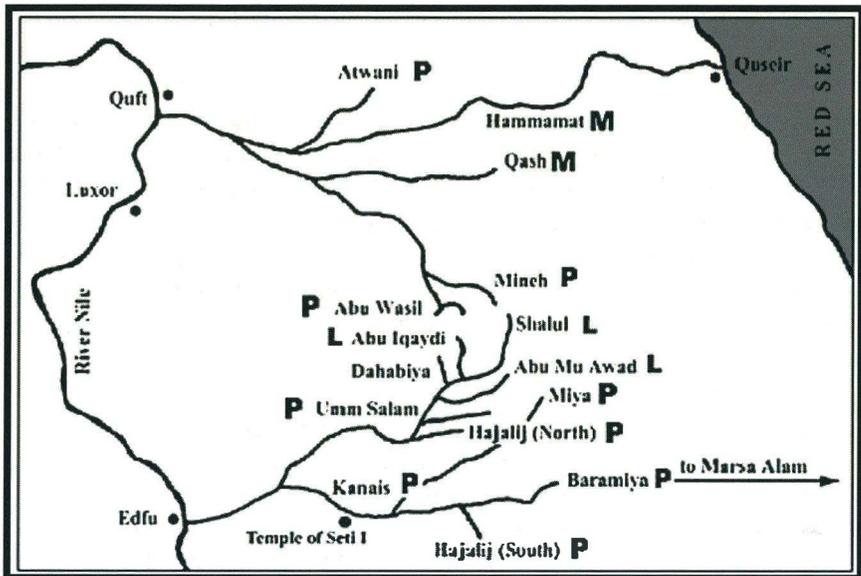


Fig. 16. — Dating of each wadi according to date of boats: P = Predynastic, L = Late, M = Mixed (Dahabiya excluded due to small number of boat images).

10. Conclusion

Hitherto, dating the petroglyphs of the Central Eastern Desert has been problematic due to the lack of a unified corpus and the impossibility of utilizing scientific methods. Therefore, the only method which can be effective is the use of stylistic comparison of motifs in the desert and the Nile Valley. In essence, this means using the ‘arms-raised’ figure, ‘frond’ and D-ware style vessels in the predynastic, and pharaonic boats, falcons and Min figures in the Pharaonic Era. Fortunately, nearly three quarters of the sites in the Central Eastern Desert corpus can be dated either to the Predynastic or the Pharaonic/Graeco-Roman Eras using this method. It is also clear that much of the predynastic activity took place in the late Naqada-I/early Naqada-II period, with very little rock art creation during Naqada III. Although ‘late’ sites marginally outnumber predynastic ones, the much shorter period of time in which the early sites were created, and the larger number of images generally in these early sites, shows a concentration of activity during a very limited time period.

Having dated a considerable proportion of the sites, some pertinent comments about the character of rock art’s distribution can be made. There is a

heavy concentration of predynastic sites in the southern wadis, and of the 'frond' boat which is an early marker, especially in Kanais/Baramiya. The former has boat motifs in a style closely related to Hierakonpolis examples, while the latter constitutes a junction north and south into the desert hunting grounds, and east to the coast. The central part of the survey area has little predynastic material and suggests a hiatus between north and south of the central eastern desert in terms of early predynastic rock art creation. The pharaonic material is concentrated in wadis which appear to have been routes to the gold mines, quarries and the Red Sea and is much less associated with extensive hunting scenes than in the predynastic tableaux.

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International Colloquium
The Signs of Which Times?
Chronological and Palaeoenvironmental Issues
in the Rock Art of Northern Africa
Royal Academy for Overseas Sciences
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Postscript

by

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The rock art of Northern Africa represents one of the earliest and most extensive records of human imagination and creativity. This graphic thesaurus, which includes both simple engravings and sophisticated paintings, is an integral part of the world's cultural heritage. It forms an irreplaceable archaeological and ethnographic documentation for the ancient civilizations of the Saharan area. As Paul G. Bahn states in his contribution to these proceedings, it was the 18th century which saw the initial rock art discoveries in Africa. Rock engravings in the northern part of the continent were first observed only in the mid-19th century; it was not until 1933 that rock paintings were first reported from the central Sahara. Decades of subsequent research on the subject have led to many hundreds, if not some thousands of publications, but even today the antiquity and meaning of this artistic expression are still much disputed. The international colloquium "The Signs of Which Times?", held at the Royal Academy for Overseas Sciences in Brussels from 3 to 5 June 2010, opted to focus on the chronological and palaeoenvironmental issues in the rock art. Gaining insight into its temporal and environmental context is, indeed, nothing less than a sine qua non for any deeper understanding of this graphic tradition.

Several contributions within this volume of proceedings make use of traditional methods to arrive at chronological conclusions, in particular the identification and definition of styles, the study of the relative chronology of these styles using, among other criteria, superimpositions, and the absolute dating of these on the basis of the presence (or the absence) of certain chronological markers, such as specific types of weapons, complex geometric

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figures or inscriptions. These methods have proved their usefulness in the past and will never be completely replaced. Other contributions focus on the potential use of palaeoenvironmental data to establish a chronological framework for rock art. Among these, the presence or absence of certain faunal species, as a direct reflection of prevalent climatic conditions, is, of course, a key element. Equally important, and also directly related to the environmental context and dependent on climatic conditions, are aspects of patination and weathering, again crucial to some of the temporal contexts of rock art that are presented in this volume.

Most contributors to these proceedings will agree that Northern-African rock art reached its peak, quantitatively for sure, but maybe also qualitatively — even though this is a very subjective judgment — in the Neolithic period (roughly 6th to 4th millennium BC). However, this short chronological span for the larger part of Northern-African rock art is far from the whole story. Younger rock art, dating to the proto-historical and historical periods, has long been identified in Northern Africa. More recently, the existence of rock art much earlier than the Neolithic has finally been proved, dating back to the Upper Pleistocene, albeit in rather peripheral areas of the Northern-African ‘subcontinent’. It remains to be demonstrated, although it seems highly likely, that the spread of rock art over the whole of Northern Africa happened as a consequence of the relatively rapid early Holocene reoccupation of the previously inhospitable central Sahara after the end of the hyper-arid Late Pleistocene climatic phase. This episode of reoccupation seems to have witnessed the creation of a wide but fairly homogeneous spectrum of iconographical concepts, which acted as a highly fertile substrate on which the many rock art traditions or ‘schools’ of the Neolithic period would grow, flourish and differentiate.

Obvious and attractive as it may seem, such a reconstruction of events lacks a solid scientific underpinning. It seems to be a common aspect of all current rock art research in Northern Africa that radiometric dating possibilities, both direct and indirect, are being explored as far as possible. This volume shows examples of this from Morocco, the central Sahara (Tassili n’ Ajjjer) and Egypt. Some breakthroughs were realized in the past few years in the field of Northern-African rock art chronology and more will undoubtedly follow. Much is certainly to be expected from the Algerian-French and Moroccan-Italian dating projects on rock paintings in the central Sahara and Morocco even though the physico-chemical characterization and the age determination of pigments and binders still pose numerous technical problems. As Paul G. Bahn concludes: “The next few decades will undoubtedly transform our knowledge and appreciation of this hugely rich resource, and

one hopes that this appreciation will help to preserve it from both natural and man-made damage”. Not all contributors to this volume will share his optimism, for various reasons, including the growing political instability in a number of Northern-African countries. Be that as it may, there is no other option than to pursue this scientific aim with all possible means. While not really being labelled ‘fringe archaeology’, rock art research, Northern Africa included, is still considered too ‘unconventional’ a scientific discipline by many. We share the responsibility to make it fully mainstream.

Francis Van Noten and I would like to express our gratitude to the Royal Academy for Overseas Sciences and its entire staff for making this international colloquium and the publication of these proceedings possible. We particularly acknowledge the enthusiastic support of Danielle Swinne, Permanent Secretary of the Academy. Patricia Bulanza, adviser of the Academy, is to be congratulated for the flawless practical organization of the event. Much time and energy was invested in the preparation of these proceedings by Els Dereymaeker and Philippe Mol, both advisers of the Academy. Last but not least, we would like to extend our sincere gratitude to all the participants in the colloquium and to the contributors to this volume. Both Francis and I think back to the 2010 Brussels meeting as an extremely stimulating and warm-hearted event... It would be a shame not to consider a sequel.

