

SAHARAN ROCK ART, A REFLECTION OF CLIMATE CHANGE IN THE SAHARA

Nagète Aïn-Séba
Université d'Alger

ABSTRACT

The evolution of Saharan rock art implicitly reflects changes in the environment from the late Pleistocene, through the Holocene, to the historical period. These changes are very well illustrated in Algeria, which comprises vast rock art zones in the Saharan Atlas and the central Sahara. In this article, I present the different stages of this progression according to the changes in lifestyle, modes of representation, subjects portrayed, and proposals for the interpretation of the rock art. Thus, the subject of my study is that which can be deduced about the evolution of the environment, and hence the climate, in Saharan rock art.

KEYWORDS: Rock art, Sahara, climate change, paleoenvironment, classification.

L'ART RUPESTRE SAHARIEN, TÉMOIN DE L'ÉVOLUTION CLIMATIQUE AU SAHARA

RÉSUMÉ

L'art rupestre saharien reflète dans son évolution et en filigrane la modification du milieu, de la fin du Pléistocène, le long de l'Holocène jusqu'aux périodes historiques. Cette évolution est très bien illustrée sur le territoire algérien qui comprend de vastes zones rupestres, dans l'Atlas saharien et le Sahara central. Je vous propose d'en marquer les étapes en m'appuyant sur les changements dans les modes de vie, les modes de représentation, les sujets figurés et les propositions d'interprétation. Ainsi, le sujet de mon étude serait ce que l'on peut déduire de l'évolution du milieu, et donc du climat, à travers l'art rupestre saharien.

MOTS CLÉS: Art rupestre, Sahara, évolution climatique, paléoenvironnement, classification.



1. INTRODUCTION

In portraying subjects –animals or men– in different scenes, Saharan rock art has the advantage of offering us a direct perception of the artists' vision of the world around them, and thus of transposing us into their time without involving the complicated process of the excavation and reconstruction of the elements left behind. However, we cannot ignore the residual aspect of this art, much of which has probably disappeared, nor the subjective aspects related to any interpretation of the world involved in works of art in general, which are necessarily a re-transposition of a reality, which cannot be separated from the cultural filters imposed by the social, religious, and economic context.

Nonetheless, this art offers us a view, and this view is a reflection of the lives of these populations, of their way of thought, their stylistic and artistic modes of expression, and their natural environment. It is, of course, this last aspect that interests us primarily here, even if all these elements may be related.

We will consider the evolution of the environment in the rock art by following its chronological sequence according to the traditional Lhote-Monod classification. This classification is supported by numerous publications (including Anati, 2000; Aumassip, 1995; Mikdad *et al.*, 2000; Mori, 2000; Striedter, 1996, 2003; Striedter, Tauveron, 2000; and Tauveron, 2003), combining the results of half a century of studies by prehistorians in the art of the Sahara, Saharan Atlas and Central Saharan mountains, and spanning several countries, including Algeria, Morocco, Mali, Niger, Libya, and the Nile valley. This classification was called into question by Muzzolini (1986), who substituted the notion of cultural cores evolving in parallel or coming together on an essentially stylistic basis. This approach, which is not without interest, emphasizes the undeniable particularities resulting from the great size of the regions considered and the time scales involved, but is difficult to adopt in the context of a general overview. Classification is indeed a methodological tool used in all observation-based sciences to create order where the proliferation of life (or of productions in the case of art history) gives an impression of chaos. It poses a framework that is certainly more rigid than that of nature, where boxes can remain empty and elements can straddle each other or be left aside, but it has the advantage of simplifying things so we can better understand the major differences or similarities across the entity concerned. This is what we are looking for here and what is required by the subject at hand. Furthermore, this classification also clearly conveys this evolution of the environment, Saharan rock art being marked by the disappearance and appearance of animal species which reflect the nature of the surrounding environment.

Beyond not being supported by absolute datings, the problem that arises in Saharan rock art is the lack of correlation with well-identified material cultures,

* Professor, Archaeology Institute, Algiers.

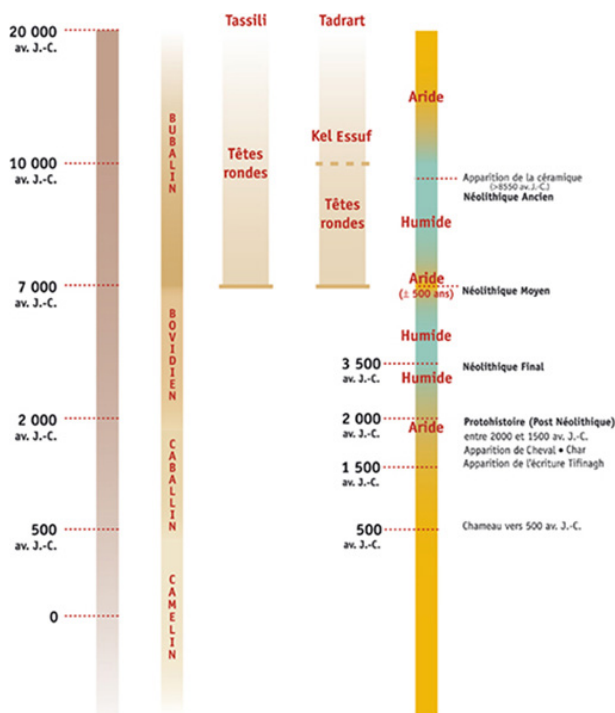


Figure 1. This table correlates the climatic phases that have been recognized with the rock phases (Tauveron, 2003).

of which it can be considered the pictorial and symbolic projection. Ancient art appears to begin with the Bubaline, also known as hunter-gatherer art, and is illustrated by wild fauna. It also includes facies which are more restricted in time and space, such as the Kel Essuf. This is followed by Bovidian or pastoral art in which domestic cattle predominate, then the Caballine, which is marked by the appearance of the horse, and finally the Cameline which essentially portrays a new arrival –the domestic camel.

The oldest periods –the Bubaline, Round Head, and Kel Essuf– can be attributed to the middle or end of the Late Pleistocene arid period (Aumassip and Tauveron, 2002), or even earlier for some of them (Aumassip, Kerzabi, 2018) (fig. 1).

2. BUBALINE OR HUNTER-GATHERER ART

What does ancient art depict? Essentially animals. And these animals were wild (let us set aside the question of the domestication of cattle, which has been subject to hypotheses, for even if it were proven, it was certainly a rare phenomenon





Figure 2. Hippopotamus, Tin Teghirt, Oued Djerat (Photograph by H. Lhote).

and does not seem to have had the impact it later did on the way of life). The presence of hippopotamuses, rhinoceroses, and elephants, immediately evokes a different kind of environment, suggesting a landscape of woodland savannah similar to that which is today home to these large mammals in the sub-Saharan region, or at least well-developed ecological niches, with more abundant water sources and rivers and much denser vegetation, given that we are dealing here with very large herbivores (such as the elephant), which consume about 150 kg per day of plant matter per day (fig. 2).

There are a large number of such depictions throughout this vast rock art zone, demonstrating their frequency and widespread presence. The naturalistic style in which these large animals have been portrayed demonstrates an intimate knowledge of them by the populations that depicted them. Their life-sized representation, often in isolation, which makes them appear magnified, and the care with which they have been depicted, gives these subjects a value and importance that indicates a social organization oriented around the hunting of large animals or at least a human world that was completely dominated by nature and what humans considered to be its most imposing representatives.

When human portrayals exist, they reflect this over-estimation of the animal world. Humans are often presented in small dimensions, in an approximative style, and are totally disproportionate in relation to the animal figures they sometimes accompany, or they are presented in the form of half-human, half-animal figures



Figure 3. Masked figure or half-man half-animal, Djebel Serkout, Ahaggar (Photograph by N. Aïn-Séba).



Figure 4. Women in open position, Oued Djerat, Tassili des Ajjer (Lhote, 1976).

(fig. 3). Added to this are depictions of a sexual nature, especially of women in open positions (fig. 4). All this reflects a Paleolithic lifestyle in the central Sahara, which we know can be attributed to the end of the Late Pleistocene or the very early Holocene, since the Neolithic period has very early dates in the region: 9,210 + 115 BP for the Launey site in Ahaggar (Camps *et al.*, 1968) and Talagalal, in Aïr (Roset, 1982).

Alongside these large herbivores, we can observe many other animal species, such as ostriches, donkeys, cattle, and so forth. And especially the *Syncerus complexus*, formerly known as the *Bubalus antiquus*, a now extinct species of buffalo which survived until 5,000 BP in some parts (Soleilhavoup, 2003) and which gave its name to this ancient period because it is no longer found subsequently, or hypothetically, with the exception of the Round Head period (fig. 5). Can the disappearance of this wetland animal be precisely due to the deterioration in environmental and climate conditions?

Fish, which are also present in the form of paleontological remains (catfish, Nile perch, etc.) at many sites, were also depicted during this period.





Figure 5. Ras el Ahmar (Aïn-Séba, 2007).

3. KEL ESSUF ART

The Kel Essuf is a cultural facies found in the southern Tadrart, and seemingly in the Acacus, where Mori spoke of ichthyomorphs. It has been well studied in the Algerian Tadrart (Ferhat *et al.*, 2000) and presents figures with very simple silhouettes, which have been engraved by pecking, and which sometimes bear signs of having been painted in ochre, as documented in about twenty rock shelters (fig. 6). This facies then appears to have evolved in the Tadrart region toward the Round Head tradition.

The interest for the subject at hand lies in the fact that the authors have demonstrated the existence of ancient springs and furnished flooring for collecting water. This chronologically places the facies at least 12,000 years ago, in the final arid period of the Late Pleistocene. The limited geographical scope of this facies and its clear stylistic discordance with neighboring areas suggests that the region was isolated during this period, probably due to unfavorable climate conditions.

4. ROUND HEAD ART

Continuing from Kel Essuf rock art, Round Head rock art gives pride of place to human beings, in contrast with the Bubaline. It is located in a region a little larger than that occupied by the Kel Essuf—the Tassili n'Ajjer, continuing into Libya with the Tadrart Acacus.





Figure 6. Aman Smednine (Ferhat *et al.*, 2000).



Figure 7. Fresco known as the Fisherman God, Jabbarren (Photograph by M. Tauveron).

The supremacy of human figures and their great size in certain cases which led them to be qualified as gods by those who first discovered them (Séfar, Jabarren) (Lhote, 1958) reflect the importance placed on human beings (fig. 7). They thus demonstrate the symbolic passage from the Paleolithic world towards Neolithization, during which humans became aware of their significance and power, even in relation to nature, in particular in producing their own food by domesticating animals and plants (Cauvin, 1994; Mori, 1998 or 2000).



Figure 8. Roundheads and moufflons, Tan Zoumaïtek (Photograph by M. Beddiaf).



Figure 9. Muzzled antelope, Tassili des Ajjer (Photograph by H. Lhote).

In terms of the associated fauna, we can mainly observe Barbary sheep and antelope, sometimes aligned in friezes, while they are relatively rare elsewhere in ancient art, thus highlighting and allowing us to distinguish the cultural choices and filters adopted by this population whether consciously or subconsciously (fig. 8).

Buffalo continue to be portrayed, as well as cattle. There are also depictions of crocodiles and fish.

The Round Head art, which is not very rich in scenes of daily life, nonetheless depicts scenes that can be related to planting activities (Striedter, 1984; Aumassip, Chaïd-Saoudi, 2004) and attempts at taming animals (fig. 9).

The stratigraphy of Tin Hanakaten, which was excavated and studied by Aumassip, shows a continuous occupation from the late Pleistocene and demonstrates the correlation of the lower layers with the Round Head period. Aumassip observes the frequent use of kaolinite in these layers, which is absent beyond this period, while the color white is very common in Round Head art. The remains of fish are only found in this lower formation, and are only depicted in the region during the Bubaline and Round Head periods. Likewise, the author observes an identical mode of burial in a funerary scene where the deceased has been painted in white and is covered in hatching and the tombs of the lower formation where the deceased was coated with kaolinite and encased in wickerwork. These correlations allow her to date the Round Head period to before 9,420 BP (dated samples not from the base of the stratigraphy) and up to 7,000 BP (Aumassip, 2013).

The abundance of vegetation during this period is demonstrated by the pollen, plant macroremains and brown-earth paleosols (fig. 10) that have been





Figure 10. Haijad, Tadrart Acacus, the lower layer of these deposits is dated to 9500 BP, the terminal evaporite crust showing the drying up of the lake at 4500 BP (Petit-Maire, 2012).



Figure 12. Ouan Oksem 2, southern Tadrart (Photograph N. Aïn-Séba).



Figure 11. Cattle herd, Tefedest, Ahaggar (Photograph by S.M. Ibbah).

observed in addition to indirect evidence such as the profusion of grinding material and ceramics at Neolithic sites.

5. BOVIDIAN OR PASTORAL ART

The domestication of the *Bos taurus* is now proven and demonstrated by entire herds of cattle depicted in the paintings and to a lesser degree in the engravings. Familiarity with this animal is demonstrated by its portrayal in diverse contexts, in a wide variety of positions and perspectives, with varied coats and horns (figs. 11 and 12).

These depictions are accompanied by diverse scenes of pastoral life, including milking, camping, herding and penning animals, in which we can note the use of cattle to transport people. Human figures are present in large numbers and their attire and activities are often highly detailed, appearing to show us scenes from daily life, which largely revolve around cattle.

The question arises as to whether the entire cattle population depicted here actually existed in this region, even spread over a few millennia, or whether semi-nomadism and the transhumance involved in the search for new pastures lead to a greater number of depictions as the populations travelled the area. Thousands of cattle have been depicted, painted or engraved, while the excavated sites have provided very little paleontological data (surface sites, soil acidity, etc.) and if we did not have the evidence from the rock art, we would never have suspected that herds of cattle travelled through these areas. Certainly, the presence of cattle is attested, in particular by burials (Paris, 1997; Tauveron *et al.*, 2009), but there is nothing that reflects the reality depicted or engraved in the region's rock art. The second question that arises is whether it is the large number of herds that accelerated the desertification process (the albedo, in other words, the reflection power of a surface, influences the heat and evaporation rate, and hence aridification, which in turn raises the albedo, and so forth) or whether, as per Wendorf's proposal (Wendorf and Schild, 1994), the domestication of cattle was a response to the beginning of aridification with water sources becoming ever more scarce, and the best way to ensure the availability of meat being to transport it on foot.

This period is very rich in lavish frescoes, especially in terms of the paintings, which show the presence of many other animal species.

The engravings are even more numerous, but contain less detail. This period, which is situated between 6,000 and 2,000 BCE, is correlated in particular by the datings from Tin Hanakaten, and its full development falls within the Holocene wet period.

Bovidian art takes on a third dimension with the sculptures in the round that often depict this animal, possibly representing idols according to Camps-Fabrer (1966) who was one of the first to study them. (fig. 13). In any case, the importance of this animal around which the lives of the author populations revolved gives it a sacred character, confirmed by the elements offered to us by Fulani mythology. Over time, the environment gradually deteriorated, pushing Bovidian populations, at least in part, to migrate with their herds to more favorable regions (in sub-Saharan Africa), in particular Mali as indicated by certain scenes that have been deciphered by Hamadou Hampâté Ba based on Fulani mythology (Dieterlen and Hampate Bâ, 1966). The anthropological analogy has been criticized, but it seems to us that it can provide clues that art prehistorians cannot afford to ignore in an attempt to understand the meaning of this art or part of this art. We also know what anthropological study has brought to the understanding of South African art (Lewis-Williams, Clottes, 2003).





Figure 13. In Tehak sculpture in the round representing a bovine (Aïn-Séba, 2019).



Figure 14. Chariot at a flying gallop, Tamadjert, Tassili des Ajjer (Photograph by M. Tauveron).

6. CABALLINE ART

With the appearance of clearly domesticated horses pulling chariots, another environment, another style, and another way of life, take center stage (fig. 14).

First of all, the question arises as to the origin of the sudden appearance of this animal species in the rock art, which is documented around 30,000 years BP in Algiers at the site of Les Phacochères in particular, and which was perhaps not present in the Sahara because it appears never to have been depicted, unlike its counterpart, *Equus asinus*. In parallel with this *caballus*, the horse in its domestic state appears to have been introduced in the Saharan region by the peoples of the sea

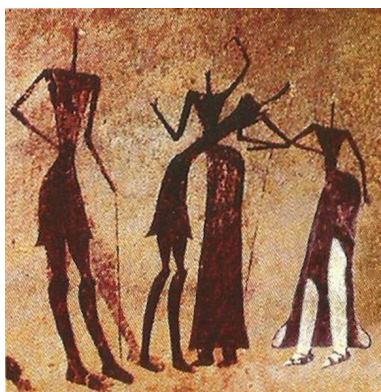


Figure 15. Caballine characters, Eberer, Tassili des Ajjer (Photograph by M. Beddiaf).

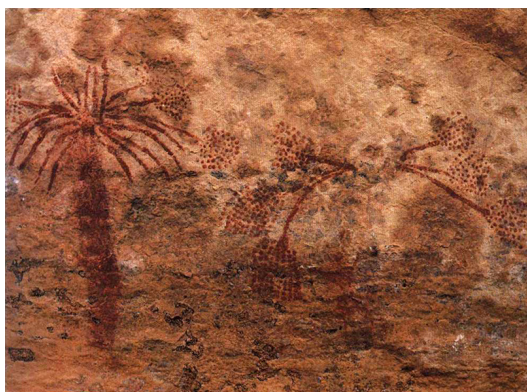


Figure 16. Date palms, Ralan, Tassili Azjer (Collectif, 2001).

who invaded the Nile delta in the 12th century BCE, and who after being defeated by Ramses III, dispersed into the Eastern Sahara.

Did the possibility of moving more easily, more rapidly, and more widely offered by horses make it possible to travel from oasis to oasis and gain independence thanks to the ability to transport water?

Horses certainly helped maintain part of the population as the region became increasingly arid and pastoralists and their herds were forced to migrate further south.

Horses and chariots are accompanied by many different characters represented in a unique and highly-stylized manner that differs from that observed in the Bovidian, with bi-triangular silhouettes and stick-like heads. A very profane lifestyle seems to emerge from these scenes, in which the characters are often depicted as couples and in which galloping horses seem to have brought these populations the thrill of speed (fig. 15).

Cattle are still present, but not at all in the same way. They are no longer depicted in herds, but instead are portrayed in isolation, with lean silhouettes. Alongside them, goats become more numerous. These two observations are very clear signs of climate deterioration, as cattle could no longer thrive in herds, while goats could easily adapt to the scarcity of plant cover.

In addition, with a few exceptions, signs of the surrounding vegetation appear for the first time with the depiction of date palms, suggesting an image of oases in a desert (fig. 16).

Other elements such as the depiction of wells reveal a concern for water, which was absent in previous periods (Lhote, 1976).

Finally, scenes of combat are observed in this period where they were practically unknown of before. Could this be related to tension created by the impoverishment of the environment?



Figure 17. Camel, Ouan Bender, Tassili des Ajjer
(Photograph by M. Beddiaf).

7. CAMELINE ART

With the appearance of the camel (*Camelus dromedarius*) in the rock art, we can now observe the desert environment we know today, the camel being the only species of large mammal adapted to this environment (around 5th century BCE) (fig. 17).

The origin of the domestic camel raises questions similar to that of horses, because the wild species was already documented at prehistoric sites. Attested more than 5,000 years ago in Arabia, it appears to have been introduced a little prior to Roman times, via Egypt (Gautier, 1937).

It is noteworthy that the Cameline rock art sites are often located in wadi beds that had become travel routes, while in previous periods, the engravings and paintings were made high above the wadi, suggesting that the streams and rivers were less intermittent.

8. CONCLUSION

We can interpret the evolution of the climate and the Saharan environment through the succession of periods—the Bubaline with its large savannah-type fauna, the Bovidian with its extensive herds, the Caballine, and finally the Cameline, with the camel, a desert animal par excellence.

The disappearance of certain animal species, and the appearance of other animals or elements are a common thread.

Finally, is the extinction of this art itself due to desertification and the need to adapt to new constraints? In any case, this art form, which lasted several thousand years, seems to disappear into the desert sands.



REFERENCES

- AÏN-SÉBA, N. (2007): "Le bélier à sphéroïde de la station de Ras-el-Ahmar (secteur de zaccar, Djelfa, Algérie)". *Sahara, Préhistoire et histoire du Sahara*, 18: 168-173.
- AÏN-SÉBA, N. (2019): "Nouvelles rondes-bosses sahariennes". *Ikosim*, 8, AASPPA, Alger: 29-48.
- ANATI, E. (2000): *L'art rupestre dans le monde: l'imaginaire de la Préhistoire*. Paris, Larousse.
- AUMASSIP, G., (1995): *Chronologies proposées pour l'art rupestre nord africain et saharien. L'Homme méditerranéen*, Mélanges offerts au Pr Gabriel Camps, 1995: 143-156.
- AUMASSIP, G. (2013): "Le site de Tin Hanakaten (Tassili Azjer, Algérie) et la chronologie de l'art rupestre saharien". *Ikosim* 2, AASPPA, Alger: 49-60.
- AUMASSIP, G. et CHAÏD-SAOUDI, Y. (2004): *Préhistoire du Sahara et de ses abords*. Paris, Maisonneuve et Larose, 2.^e ed. 2019, L'harmattan, Paris.
- AUMASSIP, G. et KERZABI, S.A., (2018): *Mémoire des pierres*. Alger, ANEP.
- AUMASSIP, G. et TAVERON, M. 1998 (2002): *Y a-t-il un art paléolithique au Sahara? Colloque L'art paléolithique*. Tautavel: 235-245.
- CAMPS, G., DELIBRIAS, G. et THOMMERET, Y. (1968): "Chronologie absolue et succession des civilisations préhistoriques dans le nord de l'Afrique". *Libyca*, 16: 9-28.
- CAMPS-FABRER, M. (1966): "Matière et art mobilier dans la préhistoire nord-africaine et saharienne". *Mémoire du CRAPE*, V, Paris, AMG.
- CAUVIN, J. (1994): *Naissance des divinités. Naissance de l'agriculture. La révolution des symboles au Néolithique*. Paris, CNRS Edition.
- COLLECTIF (2001): *Promenade au Tassili Azjer*. Association des Amis du Tassili, édition ANEP, Alger.
- FERHAT, N., STRIEDTER, K.H. et TAVERON, M., (2000): «Les Kel Essuf: un nouveau faciès de l'art rupestre du Sahara central». *Comptes Rendus de l'Académie des Sciences*, 324: 75-77.
- GAUTIER, E.F. (1937) *Le passé de l'Afrique du Nord. Les Temps obscurs*, Paris, Payot, pp. 188-201.
- HAMPATE, BÂ A. et DIETERLEN, G. (1966): "Les fresques d'époque bovidienne du Tassili-n-Ajjer et les traditions des Peul: hypothèses d'interprétation". *Journal de la Société des Africanistes*, 36(1): 141-157.
- LEWIS-WILLIAMS, D. et CLOTTES, J. (2003): *L'art rupestre en Afrique du Sud: Mystérieuses images du Drakensberg*. Edition du Seuil, Paris.
- LHOTE, H. (1958): *A la découverte des fresques du Tassili*. Paris, Arthaud.
- LHOTE, H. (1976): "Les gravures rupestres de l'Oued Djerat (Tassili-n-Ajjer)". *Mémoires du CRAPE*, 26, Alger.
- MIKDAD, A., EIWANGER, J., ATKI, H. et al. (2000): "Recherches préhistoriques et protohistoriques dans le Rif oriental (Maroc)". *Rapport préliminaire. BAVA*, 20: 109-167.
- MORI, F. (1998): *The great civilisations of the Ancient Sahara: Neolithisation and the Earliest Evidence of Anthropomorphic Religions*. Edition L'Erma Di Bretschneider.
- MORI, F. (2000): *Le grande civiltà del Sahara antico*. Bollati Boringhieri.
- MUZZOLINI, A. (1986): *L'art rupestre des Massifs Centraux Sahariens*. Cambridge Monog. In Africa Arch., 16, Oxford, B.A.R., Int. Serv. 318.



- PARIS, F. (1997): "Les inhumations de *Bos* au Sahara méridional au Néolithique". *Archeozoologia*, IX: 113-122.
- PETIT-MAIRE, N. (2012): *Sahara: les grands changements climatiques naturels*. Edition Errance, Paris.
- ROSET, J.P. (1982) "Tagalagal, un site à céramiques au Xe millénaire avant notre ère dans l'Aïr (Niger)". *Comptes rendus des séances de l'Académie des Inscriptions et Belles Lettres*, 126(3): 565-570.
- SOLEILHAVOUP, F. (2003): *Art préhistorique de l'Atlas saharien*. Périgueux. Pilote 24 édition.
- STRIEDTER, K.H. (1984): *Felsbilder der Sahara*. München, Prestel-Verlag.
- STRIEDTER, K.H. (1996): "Eléments de datation de l'art rupestre saharien". In *The Prehistory of Africa 15, Colloquium XXIX and Colloquium XXX, XIII International Congress of Prehistoric and Protohistoric Sciences*, Forlì, pp. 129-136, Forlì, ABACO.
- STRIEDTER, K.H. (2003): "L'âge de l'art rupestre du Sahara algérien". *L'Algérie en héritage. Art et histoire*. Paris: Actes Sud, pp. 60-69.
- STRIEDTER, K.H. & TAUVERON, M., 2000 (2003): "The most ancient rock engravings in the Central Sahara". *3rd AURA Congress*, Alice Spring, Australia. 10-14 July 2000, *Afrique: Archéologie et Arts*, 2: 31-38.
- TAUVERON, M. (2003): *La Tadrart, paysage de la préhistoire algérienne*. Djazaïr, année de l'Algérie en France.
- TAUVERON, M., STRIEDTER, K.H., FERHAT, N. (2009): "Neolithic Domestication and Pastoralism in Central Sahara: The cattle Necropolis of Mankhor (Tadrart Algérienne)", in Roland Baumhauer & Jürgen Runge (eds.): *Holocene Palaeoenvironmental History of the Central Sahara. Palaeoecology of Africa* 29: 179-186.
- WENDORF, F. & SHILD, R. (1994): "Are the Early Holocene cattle in the eastern Sahara domestic or wild?". *Evolutionary Anthropology*, 3(4): 118-128.



