

GROOVES: SPECIAL CATEGORY OF CENTRAL SAHARAN PREHISTORIC ROCK ART

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Introduction

In the prehistoric rock art of the Central Sahara the main focus of the research has long been human and animal figures. Non-figurative forms such as carved lines, if considered at all, were overlooked, or regarded as just secondary or incidental to the main art. Besides the well-known, documented and classified figurative rock art in the Central Sahara, namely the Kel Essuf engravings, the Round Head paintings, the Bubaline engravings, the Pastoral engravings and paintings, and the Horse and Cameline engravings and paintings, there is a special group of non-figurative engravings called grooves. These are simple lines usually between 5 – 40 cm long and between 0.5 – 2.5 cm deep, carved on vertical or horizontal rock supports, either inside or outside rock shelters, on boulders in rock shelters or in the open air.

The grooves have traditionally been ignored, or at most, just mentioned (Menardi Noguera 2017). In rare cases they were interpreted as by-products of activities (Di Lernia 1999). It is only in recent times that serious attention has been given to these engraved lines (Soukopova 2018) and since then it has become evident that they have a significance of their own. Re-

cent research conducted in the Algerian mountains of Tassili and Tadrart (Map 1), has shown that grooves were by no means accidental by-products but were consciously created in selected places.

The examination of more than 390 decorated shelters and open-air sites revealed that the grooves are very abundant in the Central Sahara and particularly numerous in certain regions, where they often represent the prevalent form of rock art. Since they present a very similar pattern throughout a large territory, they possibly functioned as codified signs created systematically and with special purpose known to prehistoric people.

Every rock art site was studied as a whole with a special focus being centred on the relationship of grooves with other forms of rock art, as well as on the presence/absence of water at a site and a possible relationship between grooves and water. Studying each site as a unit composed of multiple inter-related pieces and placed into an environmental context, the fieldwork attempted to determine a possible function of rock art sites in prehistoric times.

The ethnographic record and the comparative study

Fig 1. The study area and the regions of grooves mentioned in the text: 1. Northern Tassili (Bordj El Haouas), 2. Central Tassili (Djanet oasis) and Tassili plateau, 3. Algerian Tadrart (Google map modified by the author).

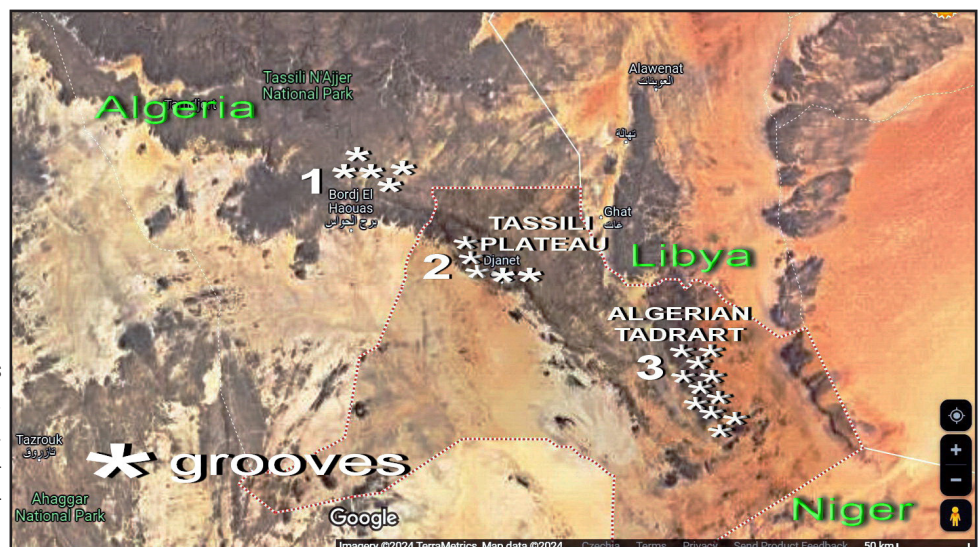




Fig. 2. Straight and zig-zag lines covered by paintings of an unidentified animal and a male figure in the Round Head style estimated to be roughly 10,000 years old. Photo elaborated with DStretch (Abri Freulon, south of the Algerian Tadrart).

of other African rock art regions are used here to establish a possible interpretation. The focus on water and rain is a consequence of the fieldwork results, which showed an evident connection between grooves and waterfalls in 39 sites. Although this relationship might be explained as functional, in several instances the context suggests ritual purpose, for example when grooves are associated with cupules on vertical walls.

Chronology and location of grooves

The absolute chronology of the grooves is not known, but they were certainly produced in various periods. The earliest documented case consists of engraved lines, covered by Round Head paintings of an unidentified animal and a male figure at the Abri Freulon shelter south of the Algerian Tadrart (fig. 1). These paintings are estimated to be at least 10,000 years old and thus the grooves must be contemporary or older (Jelinek 2004; Soukopova 2018). At Aman Samednin II shelter in the same region, there are grooves covered by Pastoral paintings of domestic cattle (fig. 2) which have an estimated age of between 7,500 years BP to circa 3,000 years BP (Aumassip 2004; Dunne et al. 2012). Because the grooves here are mixed with the Kel Essuf engravings which predate the Round Head paintings, and they present a similar rate of erosion, they could be of the same period predating 10,000 BP (Striedter et al. 2002-3; Soukopova 2012). In the Central Sahara we also find engraved lines associated to the Pastoral engravings (fig. 3). The grooves in the



Fig. 3. Grooves covered by white paintings of cattle in the Pastoral style estimated to be roughly 7,500 years old and mixed with the Kel Essuf engravings which predate 10,000 BP. Photo elaborated with DStretch (Aman Samednin II shelter, south of the Algerian Tadrart).

study area usually present a dark patina, which dates them to at least 6,000 years old (Cremaschi 1996). Taking these facts together, their patina, the state of erosion and their incorporation into the oldest rock art context, we can suppose that the majority of grooves documented in the study area belong to the prehistoric era.

The engraved lines are found in the whole of the Central Sahara but they are particularly numerous in the Algerian Tadrart. Recent research showed that grooves are also frequently present in the Northern and Central part of the Tassili mountains (Map 1). However, the



Fig. 4. Engraved lines associated to an engraved cow in the Pastoral style estimated to be roughly 7,500 years old. The grooves and the contours of the animal present the same patina. (Aman Samednin, south of the Algerian Tadrart).



Fig. 5. A row of vertical grooves with a few horizontal grooves found under the hand of the guide. (Tan Hedsan, Northern Tassili).

grooves seem to be typical only in the lower geographical regions. If compared with the high Tassili plateau, which is extremely rich in prehistoric rock paintings, we notice that grooves are rare here, whereas in the neighbouring lower mountains they are abundant. Sometimes we find a single groove or a couple of lines, however grooves are more often found grouped, leaving the surrounding rock surface empty. Their distinctive trait is that they are not randomly scattered on the rock but are carefully arranged into smaller groups, rows or clusters. When on a vertical wall, the grooves are always oriented vertically and only exceptionally do we find one or a few horizontal grooves (fig. 4). Whereas the figurative rock art, namely painted or engraved human and animal figures, were intended to be seen and admired, as they are often exposed on panels visible from large distances, grooves, which are much simpler and inconspicuous, evidently had a different function.

The location of grooves in the study area may be divided into 6 characteristic situations:

- Grooves under a waterfall – 39 sites
- Grooves on a boulder – 16 sites
- Associated to cupules – 8 sites
- Large clusters of grooves – 6 sites
- Long rows of grooves – 6 sites
- Associated to kettles – 3 sites.

Each of these characteristic situations is described below in order of frequency. It must be noted that these are minimum numbers of characteristic situations because large areas of the Central Sahara have not yet been documented.

Grooves and rain

Research undertaken by the author proved that numerous Central Saharan rock art sites with paintings or engravings were connected to rainwater (Soukopova 2011; 2016; 2020). When the Central Saharan

Region in Algeria:	Number of sites with grooves:
Northern Tassili (Bordj El Haouas area)	19
Central Tassili (Djanet area)	20
Tassili plateau	3
Algerian Tadrart	100
TOTAL NUMBER OF SITES	142

Tab.1 Region and numbers of sites with grooves in the study area. These are minimum numbers as there are still large territories in the Central Sahara to be explored.

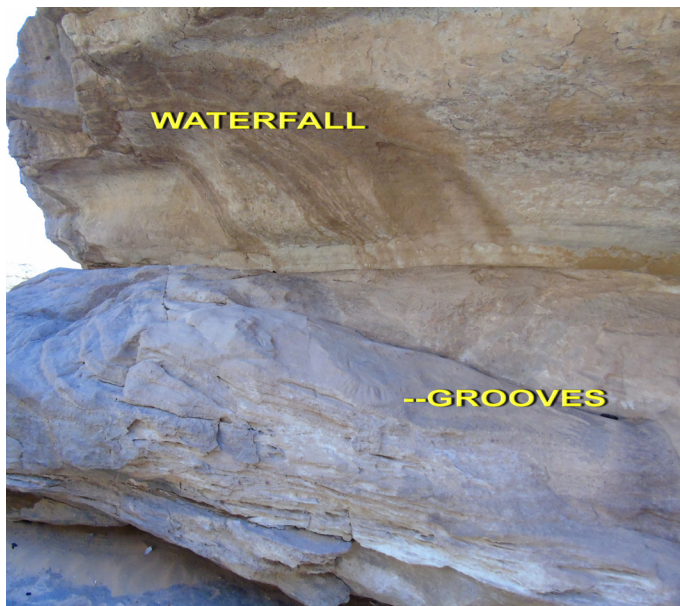


Fig. 6. Dark stripes on the rock wall are traces of ancient waterfalls. The grooves were carved in a place of the rock where rain water was running down. (Tissetnekrar, central Tassili).



Fig. 7. Grooves carved on a protrusion from the rock under which there is a free space. (Wadi Imassarajan, Northern Tassili).

grooves were first presented (Soukopova 2018), their connection to water was not yet recognised. Only with further research did it become evident that numerous grooves were intentionally carved under ancient waterfalls (Soukopova 2020). Other fieldwork has confirmed this connection and has also provided new information and documented further cases of grooves associated with water. However, not each site in the study area is related to water. Of 142 sites presenting grooves, 39 sites have clear connections to ancient waterfalls. Other sites with grooves do not present an evident relationship to rainwater, nevertheless this relationship cannot be excluded since many sites are found in the open air and thus exposed to rain.

Water has always played a fundamental role in the life of African societies, where God is associated with sky and rain and according to numerous creation myths the World originated from divine water. Rainmaking has always been practised in Africa: riverbanks, waterfalls, caves or mountains have been used as places for rain rituals (Mbiti 1969; Griaule 1965).

Due to the lack of direct ethnographic records applicable to the prehistoric rock art of the Central Sahara, we may instead approach the interpretation through comparative studies. The ethnographic record shows that the fundamental issues of African traditions such as rituals, taboos or rules connected to the initiation rites had to be preserved in their original form from generation to generation. Change was not permitted in order not to offend the divinities or ancestors (Jahn 1961; Jaulin 1967). Some traits of African belief, for example those regarding rain, have thus been in use for an extremely long time, possibly for millennia.

Grooves under a waterfall

The traces of ancient waterfalls are still visible on the rock walls. Throughout the millennia, running water left visible stripes of a different colour to that of the underlying rock - either much darker or much lighter (fig. 5). Sites where grooves are carved intentionally under ancient waterfalls are present throughout the whole study area: in the Northern part of the Tassili (9 sites), in the central part (13 sites) and in Algerian Tadrart (17 sites). They are situated mainly on the rock walls, but also sometimes on the rock floors. When carved on the wall they are often located on a protrusion from the rock under which there is a free

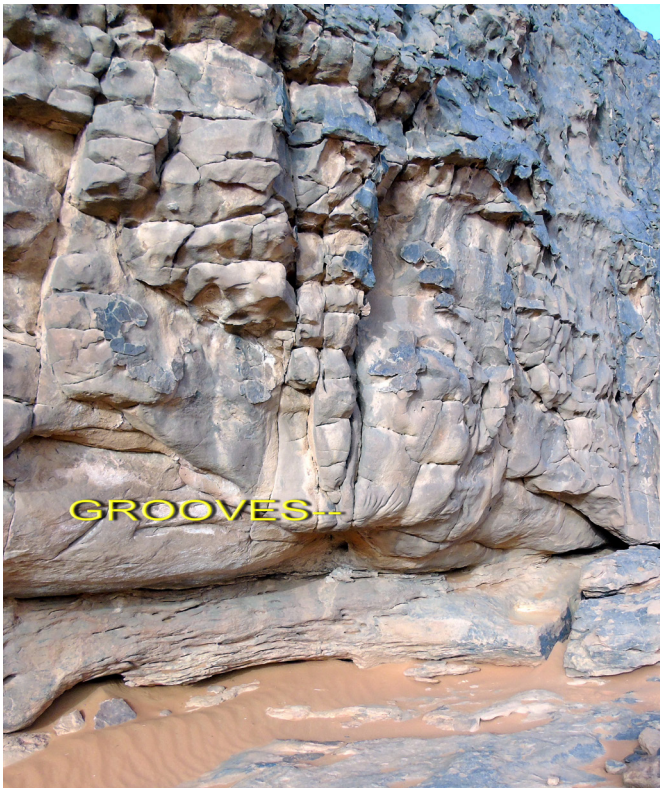


Fig. 8. Grooves carved on the edge of a protrusion may have collected running water into one flow. (Taren, central Tassili).

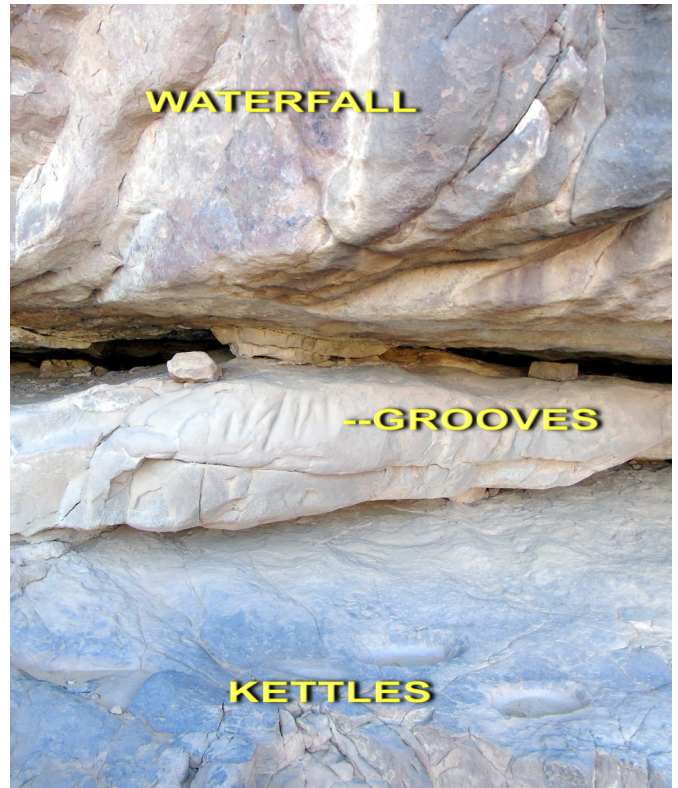


Fig. 9. Grooves and kettles carved under a waterfall. (Tan Hed-san, Northern Tassili).



Fig. 9. A detail of the grooves carved on the rock protrusion. (Taren, central Tassili).



Fig. 10. Grooves arranged in a V shape and mixed with cupules on the shelter's floor. (Bohedien shelter, the Algerian Tadrart).

space (figs. 6, 7, 8). We may hypothesize that these carvings collected running water and lead it into a container placed under them. Sometimes we find kettles carved under the waterfall and grooves (fig. 9). A typical pattern is grooves arranged in a V shape: several lines are carved so that they get closer in the lower part of the motif (fig. 10). In these cases, the intention to unite the water course seems plausible.

Grooves carved under ancient water courses did not always have suitable conditions for placing a possi-



Fig. 11. Grooves and a zig-zag line carved in a place where water was flowing during rains. (Temelra, Northern Tassili).

ble container under them. In these cases, the water was only passing through them. A hypothesis may be that these grooves were indicators of places where water was flowing in certain periods, i.e. they may have served as markers of water points (fig. 11).

The last case regards grooves that are accumulated in great numbers under waterfalls and occupying a large surface of the rock wall. Examining these sites as a whole (such as the presence of other forms of rock art, their position, etc.) the author suggests that these were



Fig. 12. Grooves on a boulder mixed with cupules. (Tan Hedsan, Northern Tassili).



Fig. 13. This boulder is covered with cupules, the grooves were added on the remaining marginal spaces on the surface. (Wadi Tidunadj cave, the Algerian Tadrart).

ritual places where water played a fundamental role (see section Water sites).

Grooves on a boulder

Boulders adorned with grooves have been documented in the whole of the study area: in the Northern part of the Tassili (5 sites), in the central part (1 site) and in Algerian Tadrart (10 sites). Grooves on boulders are sometimes mixed with cupules (fig. 12). It is difficult to imagine a practical function of such boulders. In a few cases the boulder was originally covered with cupules and the grooves were added later on the remaining marginal spaces on the surface (fig. 13).

There is one case, at least, where it is evident that grooves leading from cupules on the boulder were intended to drain liquids. At Agiugil site in the Northern Tassili the surface of the boulder is covered with cupules of variable depth: they are deeper in the area of the cupule that is nearest the edge of the boulder (fig. 14). The cupules carved on the edge of the boulder have grooves leading straight down from them. It is very likely that the carved complex served as drainage for liquids. The cupules and grooves occupy only one part of the boulder leaving the second half empty. If prehistoric altars existed, this boulder would be an ideal example: its empty flat space could have served as a slaughtering area for an animal whose blood would then run down through cupules and grooves.

Grooves associated with cupules



Fig. 14. This boulder may have been a prehistoric altar: the cupules carved on its edge have grooves leading down from them. (Agiugil, Northern Tassili).

Apart from those on boulders, grooves are also associated with cupules on rock walls and floors. Grooves associated with cupules have been documented in the Northern part of the Tassili (1 site), in the central part (2 sites) and in the Algerian Tadrart (5 sites). In several cases they are carved together under an ancient water course which indicates that cupules were also connected to rainwater. Indeed, sites where cupules were connected to rain have already been documented in the Central Sahara (Soukopova 2017; 2020).

Large clusters of grooves

Clusters of grooves have been documented in the Northern part of the Tassili (1 site), in the central part (2 sites) and in the Algerian Tadrart (3 sites). The grooves are accumulated into large clusters containing up to several hundred lines. They are carved on vertical walls, and in one case on an isolated boulder. In Wadi Tidunadj one site has hundreds of grooves carved on a vertical wall (fig. 15). The lines are placed deliberately side by side and they cover the whole wall up to 3 meters above the soil. It was evidently a place where more and more grooves were periodically added perhaps as a part of cyclical events. Moreover, the grooves are the only motif on the wall except for a few tiny engravings of cattle which were probably added later. The wall thus appears to have been reserved exclusively for simple lines.

Clusters in the other sites present the same character-



Fig. 15. A detail of a rock wall with a cluster of grooves. (Wadi Tidunadj, the Algerian Tadrart).

istics - the grooves on vertical walls are always carved vertically side by side. Only exceptionally do we find a few lines carved horizontally. Clusters of grooves are not mixed with other forms of engraving, lines constitute the only motif on the panel. We also find similar clustering of the same motif when it comes to cupules and the Kel Essuf engravings (Soukopova 2018).

Long rows of grooves

Long rows of grooves have been documented in the

Northern part of the Tassili (1 site) and in the Algerian Tadrart (5 sites). Except for clusters, grooves may be grouped in straight long single rows containing dozens of grooves carefully arranged side by side and always in a vertical position. Occasionally there are two long rows of grooves on a wall, one above the other (fig. 16). They are carved mainly on vertical walls, and sometimes under ancient waterfalls. They are placed roughly 1.20 m above the soil, i.e. at a comfortable height for a standing adult to carve. In one case they



Fig. 16. Two parallel rows of approximately 100 grooves on a vertical wall. (Iberdj, the Algerian Tadrart).



Fig. 17. A groove created a tiny canal which guided water into a small kettle during rain. (Bohedien, the Algerian Tadrart).



Fig. 18. An isolated rock formation with four clusters of grooves carved under ancient waterfalls may have been a ritual place. (Grotte des Ambassadeurs, Djanet, central Tassili).

are carved on the rock floor.

Grooves associated with kettles

This relationship is rare since only 3 sites have been found where engraved lines are connected to kettles: in the Northern part of the Tassili (2 sites) and in the Algerian Tadrart (1 site). At Bohedien site a groove created a small canal which guided water into a circular kettle in prehistoric times (fig. 17). At Imassarajan site in Northern Tassili, three grooves are carved between one oval kettle and two cupules, but they were not meant to channel water. On the contrary, in the Central Sahara there are frequent cases of canals leading from kettles, where canals served for draining water or other liquids (Soukopova 2017; 2020).

Water sites

When taking a holistic approach in the study of these sites, such as the location in the landscape, the presence of ancient waterfalls and all of the rock art, we notice that, not only single rock art elements but also entire sites, may have been related to rainwater. As discussed below, this connection does not seem to be founded for utilitarian reasons, on the contrary, it strongly suggests the existence of ritual places.

A good example is Grotte des Ambassadeurs, a large shelter near Djanet oasis in the central part of the Tassili (fig. 18). In this isolated rock formation, there

are four areas with clusters of grooves carved under ancient waterfalls: two are facing east and two are facing west. Apart from these, there are small groups of grooves disseminated all around the rock formation. Only under one cluster of grooves carved on a protrusion is there a space for a possible container; other clusters of grooves were placed on vertical walls so that rainwater only passed through them. In one spot grooves are mixed with cupules (fig. 19). The utilitarian function of these clusters of grooves appears unlikely and as all of them were located under a waterfall,



Fig. 19. Grooves under an ancient waterfall mixed with cupules on a vertical wall. (Grotte des Ambassadeurs, Djanet, central Tassili).



Fig. 20. A rock formation with cupules under a crack in the ceiling from which rainwater used to flow through. (Grotte des Ambassadeurs, Djanet, central Tassili).

the author hypothesizes that this site was a place of rituals related to rain.

Besides grooves, the site presents cupules scattered in various areas of the walls and floor, and large paintings of Round Head animals (estimated to be rough-

ly 10,000 years old) alongside recent paintings of the Cameline period (circa 2,000 years old). To further support a hypothesis of a rain site is a 1.50 m high rock formation in the middle of the shelter (fig. 20). It is placed under a crack in the ceiling from which rainwater used to flow through. Indeed, the upper surface of the formation is covered by cupules which, as already mentioned, were also connected to rainwater. As known from the ethnography, mountains and rock formations are favourite places for performing rain rituals. Single stones are also frequently associated with rain. Sacred stones are often employed in rainmaking ceremonies because rock is believed to be a manifestation of god or to be a dwelling-place of the spirits (Haruna 1997; Ombati 2017). All over Africa, god is associated with the sky; he is the supreme being who gives rain and therefore rain, as the saliva of god, is sacred. Rain is considered the greatest blessing, and its supply is one of the most important activities of god. Many societies make sacrifices, offerings and prayers to god in special places in connection with rain (Mbiti 1969; Akong'a 1987; Melis 2002).

Despite the spread of the Islamic and Christian religions, there is still a strong belief throughout Africa that rock is a source of water and rain (Fernández 2011). The notion of rain is one of those very fundamental life issues which, we believe, has changed



Fig. 21. The Algerian Tadrart is a region with the greatest concentration of grooves. This particularly shaped rock formation also presents grooves. (Tin Merzouga, the Algerian Tadrart).

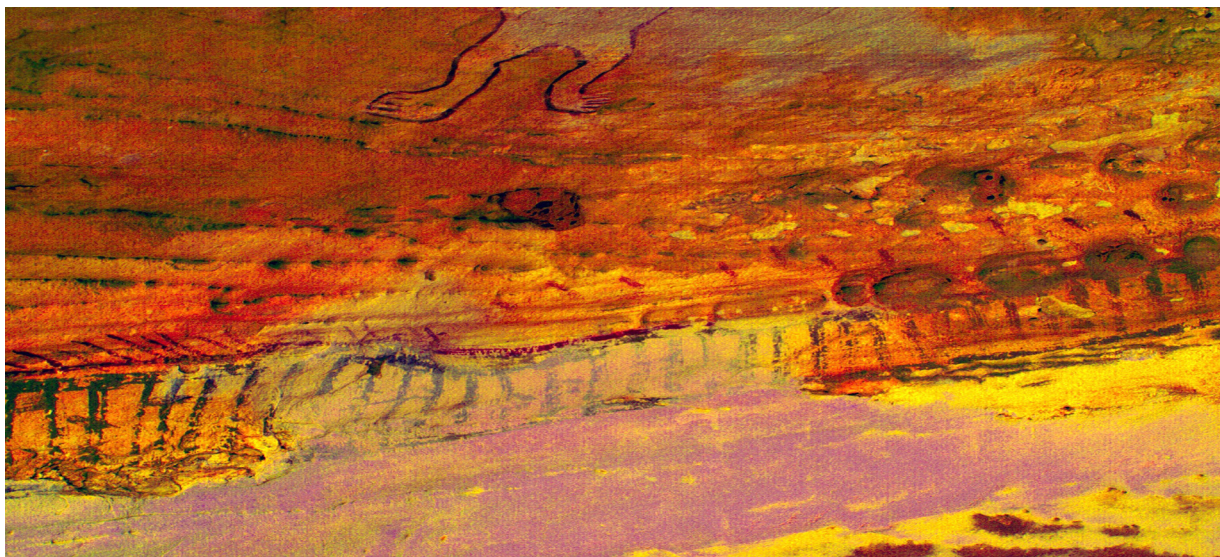


Fig. 22. Painted lines in the oldest Central Saharan paintings called Round Heads, estimated to be at least 10,000 years old. Photo elaborated with DStretch. (Uan Assakamar, the Tassili plateau).

little through the millennia. Therefore, as there are still rainmaking places in Africa today, similar places surely must have existed even in prehistoric times. The Grotte des Ambassadeurs, for its combination of various rock art elements and evident association to rainwater is an excellent example of a prehistoric ritual place where everything appears to revolve around water. Similar ritual places related to rain have already been documented in the Algerian Tadrart (Soukopova 2020).

Region of groves

Even though the entire territory of the Central Sahara has not yet been explored in terms of engraved lines, it is already evident that certain regions are richer in grooves than others. The richest is the Algerian Tadrart which, from the 142 documented sites in the study area, has 100 sites with grooves, 17 of which are connected to rainwater (fig. 21). Furthermore, we observe concentrations of sites with grooves in certain areas. For example, in a single wadi, In Djaren, there are 26 sites with grooves. This long wadi was one of the main water courses in prehistory and it still has sections with green vegetation today. The sites with grooves are located near riverbanks and 9 of them are definitely connected to rainwater. The fact that one of the wettest places in the Central Sahara was also one of the richest regarding sites with lines carved under waterfalls is significant. Also, as they are located in a place with an abundance of water, grooves as indicators of a drinking water resource does not seem plausi-

ble. Can we hypothesise instead that this ancient river was a scene of rituals related to rain?

A similar situation is found in another long wadi in the Algerian Tadrart, called Tidunadj, which has 12 sites with grooves, 2 of them are connected to waterfalls. It is significant that two main water courses are also the main areas with grooves, and it would be interesting to find out if the same occurs in those Central Saharan wadies near the Libyan and Nigerian borders, which are currently inaccessible due to political reasons.

The places with a larger incidence of grooves may have represented areas of specific activities. We know from the ethnographic record that in southern Cameroon there are special places reserved for healing rituals and they are frequented by various healers. In such places, sacred trees are found which play a fundamental role in the healing. During each ritual, the healer carves several lines into the trunk next to older lines, thus extending the concentration of grooves on the sacred tree (De Rosny 1996). Comparing this case with the Central Sahara, we cannot exclude that the act of carving into the rock was also a part of prehistoric rituals.

Painted lines

Painted lines are found within the oldest Central Saharan rock art called Round Heads, estimated to be at least 10,000 years old (Mori 2000; Aumassip 2004). Although painted, they present similarities to engraved lines as they are carefully placed side by side (fig. 22). It is difficult to interpret painted lines because they are often associated with mysterious objects (fig. 23).

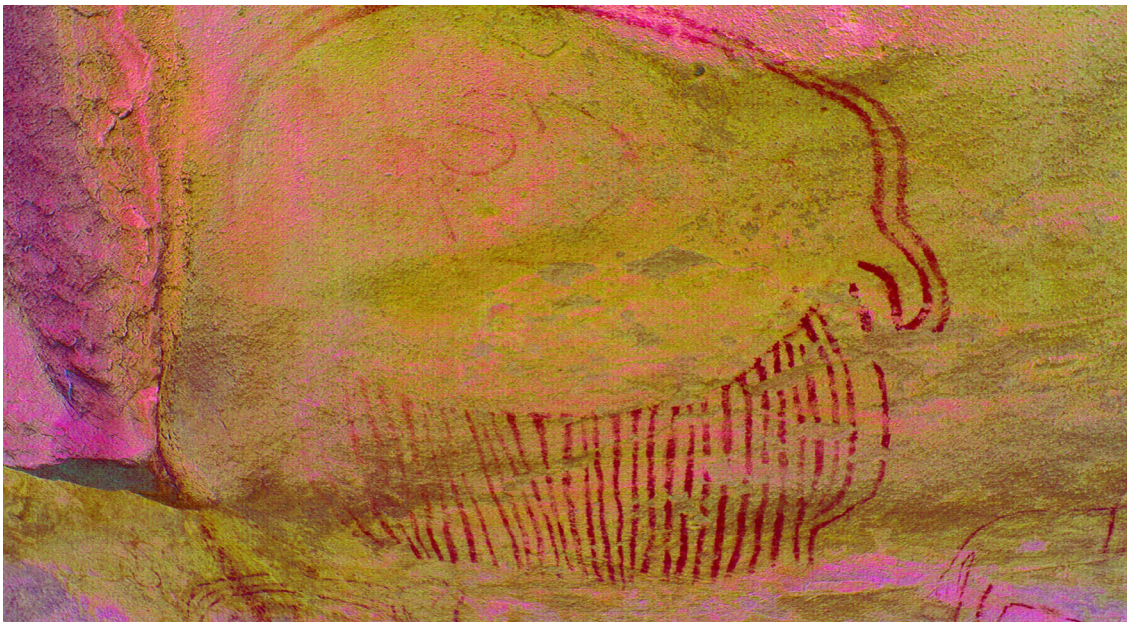


Fig. 23. Painted lines of the Round Head style associated to a mysterious object. Photo elaborated with DStretch. (Uan Assakamar, the Tassili plateau).

In several cases painted lines lead from unidentifiable down-headed animals which have been interpreted as rain animals (Soukopova 2011). If such interpretation is correct, the lines might signify rain. The hypothesis of lines as representing water at least in some situations is supported by a picture from wadi Bohedien in the Algerian Tadrart. It depicts an oval object strongly resembling a cloud: from its lower part, numerous parallel vertical lines are painted which, based on the holistic study of the site, together with comparative studies with other African regions, have been interpreted as rain (Soukopova 2020).

Painted lines are most numerous on the Tassili plateau, which is the region which has the fewest engraved lines, with only 3 sites with grooves revealed so far (fig. 24). On the contrary, there are 27 sites with painted

lines belonging to the Round Head period. We may ask why prehistoric people did not engrave lines on the Tassili plateau. A possible explanation may be that, in this highest point of the region, the shelter walls were particularly suitable for painting, rather than engraving. Indeed, not only grooves but engravings in general are rare on the plateau, where the absolute majority of rock art is painted. Another reason for the lack of engraved lines on the plateau may be the connection of grooves to waterfalls. If grooves served as water indicators in the lower regions, may this signify that in the highest point of the region these signs were not needed? Our understanding of grooves is only at the beginning and further research will hopefully give more answers.



Fig. 24. The Tassili plateau is extremely rich in the Round Head paintings. On the contrary, there are almost no grooves. (the oasis of Djanet, central Tassili).

Conclusion

From a research perspective grooves in the Central Sahara have long been overlooked, or they have been considered as by-products of prehistoric activities such as the sharpening of tools. The research conducted by the author showed that these simple engraved lines, contrary to what was previously thought, were consciously created in selected places and endowed with their own meaning. Not only are the grooves very abundant in the Central Sahara but they are also so frequent in certain areas that they represent the main form of rock art.

The grooves were sometimes purposely carved in the locations of ancient waterfalls. Given the great importance of rain and water for African societies it is plausible that these sites were connected to water. This connection may have been purely utilitarian such as the supplying of fresh water. It is likely, however, that some sites were used for rituals in which water played an essential role. The theme of water is certainly only one of many possible interpretations. Further research is needed to explain, for instance, the function of those grooves which are not related to water courses. For better understanding, each site must be studied in its entirety: rock art elements must not be considered as isolated units, but as interconnected components linked to the place in which they were created.

This paper also discussed the presence of painted lines in the earliest painted rock art, namely the Round Heads. Although they have a different technique and are located outside the main area of grooved art, they bear the same characteristics. In some cases, painted lines seem to embody rainwater. The connection to water was also discussed for another non-figurative rock art, namely cupules, which are often associated to grooves.

In the Central Sahara there are large territories still to be explored and documented in terms of grooves. The chance of finding new sites is high, especially in the lesser-known Northern part of the Tassili mountains, south of the Algerian Tadrart, and obviously in all the mountains near the Libyan and Nigerian border which have been inaccessible due to political reasons.

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