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Relative chronology of rock art at Djedefre's Water Mountain, SW-Egypt

Djedefre's Water Mountain (DWM) was discovered in December, 2000, by C. Bergmann on a walking tour with two camels (www.carlo-bergmann.de). The author visited it in December, 2004. DWM is one of many hills in an area about 70 km west of Mut (Dakhla). The mountain has a platform on its eastern side, which was artificially enlarged and protected by walls (Fig. 1). The difference in the patina between the upper and the lower part of the rock wall in Fig. 14 may indicate the levelling of the platform.

The mountain derives its importance from petroglyphs, including hieroglyphic inscriptions and paintings on the walls at the level of the platform. The oldest dated petroglyphs are a cartouche of Cheops and an inscription from his time (Kuhlmann 2002). This dating was confirmed at a test excavation on the platform, where roasted locusts were found at the bottom of the pit and radiocarbon dated to about 2610 BC (Kuper & Förster 2003). The name Djedefre's Water Mountain stems from a beautiful petroglyph (Fig. 2). Here the name of Djedefre, the son of Cheops, is written within a large hieroglyphic sign for „mountain“. The term „water mountain“ is presented by the combination of the sign for mountain with the sign for „water“, two parallel zigzag lines. In Fig. 3 the zigzag lines were later replaced by two horizontal lines and some short vertical lines and eventually the upper part was destroyed by pecking. Figs. 2 - 3 show that the surface of the rock was smoothed and possibly cleaned before the application of the petroglyphs.

On Djedefre's Water Mountain, there are several types of petroglyphs. One type comprises hieroglyphic inscriptions, images from Egyptian mythology and images related to the Nile valley. Other petroglyphs seem to be related to people from Dakhla and/or from the desert. To the left of the image of the water mountain in Fig. 3 there is a boat with several stick-figures representing humans.

Below is a curved line possibly representing another boat. At the right there is another stick-figure of a human with a long diagonal stick. Further to the right there is a picture of an oryx, the body is polished and the long horns are engraved. Oryxes do not need surface water for drinking, they are, however, not animals of the sands. They live in semi-desertic steppes (van Neer & Uerpmann 1989: 322). Other desert or steppe animals represented here are giraffes; their images were produced by pecking and engraving (Fig. 4). Animals not directly related to the desert are the griffon (Fig. 5) and the donkey (Fig. 6).

Images of women with skirts are represented in another type of petroglyphs (Fig. 7), similar to those reported by Winkler (1939: 27-30), Krzyżaniak (1988; 1999) and Krzyżaniak et al. (1991) from the east of Dakhla. At DWM they are highly schematic, the upper part of the body is an engraved line, and head and breast are pecked. The women are accompanied by men (Fig. 7). The images of men are composed of a vertical line for the body and two short lines each for the arms and legs, giving them the shape of an arrow. The head is sometimes expressed by a round cluster of dots, or two dots representing the eyes (Fig. 8).

The relative dating of the pictures can be interpreted from superimpositions. Kuhlmann (2002: Fig. 4) has already presented some examples. Here, the „arrow-man“ in Fig. 7 cuts into an older oryx. In Fig. 8 the woman on the right is partly superimposed by a softly pecked animal, probably a giraffe. In Fig. 9 the feet of the „arrow-man“ on the left cut into a pecked quadruped. The man on the right is partly superimposed over a giraffe with pecked legs and neck and a polished body. Both men have clusters of dots to represent the head.

Fig. 10 is located immediately on the left of Fig. 9. Here a giraffe is presented with engraved neck, legs and upper contour of the body. The body is slightly polished. The neck of this animal cuts into a pecked ostrich. The hind-legs end with dots, they are superimposed over another giraffe with less sharp contours. The front-legs of the first giraffe were purposely damaged when a piece of rock was cut out by five or six strokes with a pointed tool. The resulting depression was possibly used as a peg-hole (see below). I correlate the first giraffe with the „arrow-men“ because of the same technique and the same superimposition over pecked animals.

Fig. 11 lies immediately to the left of Fig. 10. It shows two „arrow-men“ and an eye-let. The man on the right has some dots at the top and two dots between the legs on both sides of the lower end of the body, possibly representing the testicles. The planned position of the eye-let was marked by the stonemason with a cross (there are further examples). This cross is superimposed over the man on the left. The right opening of the eye-let cuts away a part of the man on the right. This clearly demonstrates that the eye-let was produced later than the men were.



Fig. 1



Fig. 2



Fig. 3.



Fig. 4.

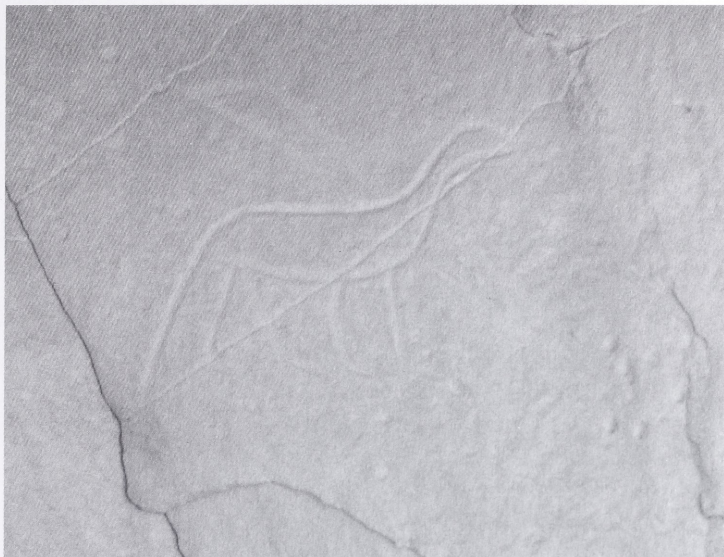


Fig. 5.



Fig. 6.

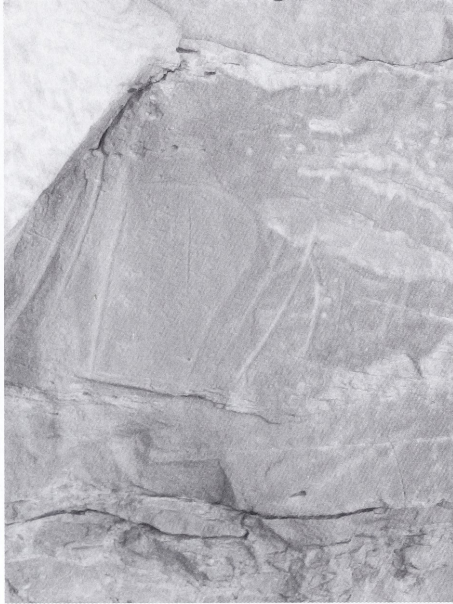


Fig. 7.

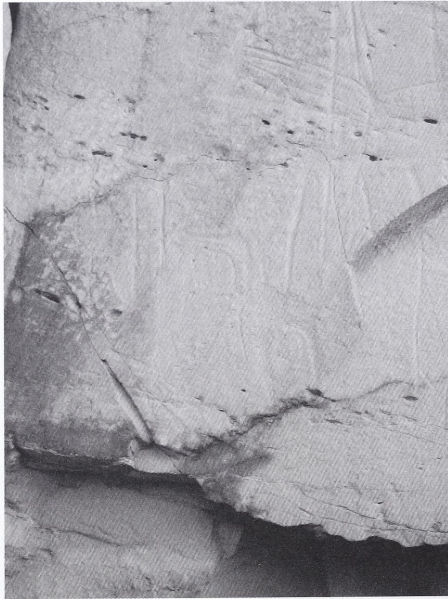


Fig. 8.



Fig. 9.

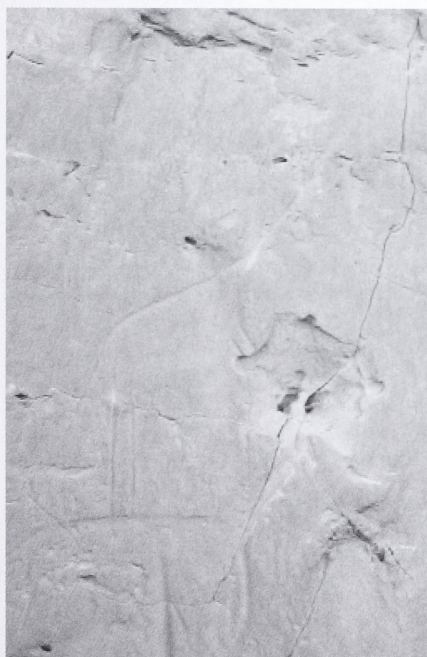


Fig. 10.

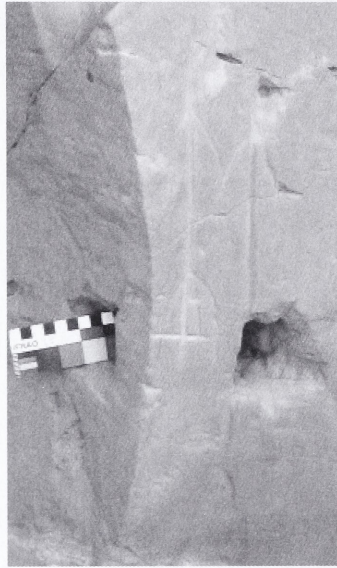


Fig. 11.



Fig. 12.

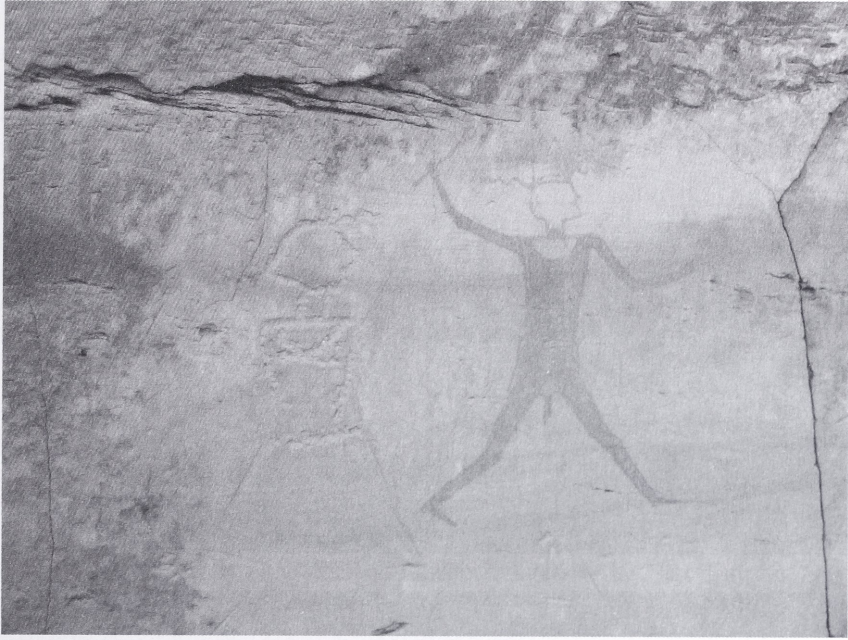


Fig. 13.



Fig. 14.

Site of DWM were supposed to pass "uphill" (Khalimov 2002: 136-137)



Fig. 15.



Fig. 16.

The next examples for superimposition are Figs. 12 and 13. The central part of Fig. 12 is a giraffe with sharply engraved contours and extremities. Each of the hooves is represented by two dots. For the tail there are several versions. Because of the technique and the angular shape of the body I correlate this animal with the „arrow-men“. The hind-legs of this giraffe end in another animal, which was produced by pecking and abrading. Because of the shape of the body and the long neck it may be an image of an ostrich, the legs of which are missing. The front-legs of the giraffe cut into the neck of this animal. The head of the giraffe was erased during the process of cleaning and smoothing the rock surface for a painting of a human whose heel is visible on the right side of Fig. 12. Above the giraffe a part of the image of another human was also erased.

Fig. 13 shows the extension of Fig. 12 to the upper right. The painting represents the Pharaoh in the act of „smiting his enemies“. The posture is similar to that of the Pharaoh on the Narmer palette. The image in Fig. 13 is not to be interpreted as a historical document, but as a symbol for the power of the pharaohs. Similar pictures were reported by Almagro Basch et al. (1968: Figs. 158, 160; lamina XXII) from the Nubian Nile valley. Those are petroglyphs. The latter was very expertly executed and has been dated to the New Empire. On the left of the painted pharaonic symbol of Fig. 13 there is a petroglyph of a human. The lower part was engraved and thereafter partly erased together with the head of the giraffe of Fig. 12 to make room for the red pharaoh. It is the lower part of the dress of an Egyptian man. The upper part of this image was completed by pecking, probably after the painting. It has a cross-band. The head and the crown are similar to those of the red pharaoh, the arms are missing. There are traces of petroglyphs visible on the smoothed area, but their meaning cannot be identified.

Eye-lets were mentioned above. Fig. 14 gives an impression of the position of three eye-lets high on the wall. For orientation: the red pharaoh (Fig. 13) is on the left. Fig. 8 is on the right-hand rock surface. For the preparation of the two left eye-lets large pieces of the rock were detached using a blunt instrument. On this occasion a petroglyph next to the middle eye-let was partly cut off. It is probably a large image of an ostrich similar to the smaller one above the eye-let (here only partly visible) created by soft pecking, a technique mentioned earlier. The light patina of these images again demonstrates the late dating of the eye-lets. Fig. 15 gives another overview. The images of Figs. 9 and 10 are on the left, Djedefre's Water Mountain (Fig. 2) is on the right. Figs. 14 and 15 demonstrate that the people who made the eye-lets did not pay any attention to the existing petroglyphs. Intellectually they were from a different group or time than the authors of the earlier rock art.

The inscription from the time of Cheops informs us that the people at the site of DWM were supposed to produce „mefat“ (Kuhlmann 2002: 136-137;

Kuper 2003). This is translated as „powder“ and interpreted as „ferric oxides“. Normally this mineral is called haematite. Many people all over the world have used haematite in the past as a basis to produce red colour. This was also required by the pharaohs in the Nile valley. Actually the rock art at DWM demonstrates that red colour was used there. There are three different examples. The red pharaoh in Fig. 13 has already been mentioned. The second example is on Fig. 15. On the right-hand side under the symbol of DWM there is a rectangle with engraved outline. It is subdivided into red and blank parts („blank“ being the colour of the rock surface). The meaning of this picture is not known, but it is probably of the same age as the symbol of DWM above and as the images below (Fig. 3). Several water mountain symbols were partly coloured in the same way. The third example of red colour is shown in Fig. 16. Here several rectangular areas were mechanically smoothed and, before or afterwards, were treated with red colour, probably in a low concentration in water. This use of red colour is unusual. Due to the mechanical smoothing several petroglyphs were nearly erased. It seems that they were produced by engraving and thus the timing of the application of paint may be after that of the „arrow men“. In one of the coloured fields there is a cartouche; the text has not yet been interpreted. One probable source of haematite is the quarries, which Negro et al. (2005) found already in 1991 WSW of Abu Ballas.

Fig. 3 shows side-by-side motifs from the Nile valley and from the steppe/desert (the oryx), probably created by different people. A time difference is, however, not visible.

Based on the observations above a relative chronology was drafted, separately for motifs from the Nile valley and for local motifs. This is not clear-cut for all cases. The time differences are certainly not of equal length, some may be very short and others may be longer, as the differences in patina demonstrate.

Here a comment may be added concerning the purpose of the eye-lets. There are about 19 of them at an elevation of 1.50 to 2.00 m above the ground. Kuhlmann (2002: 135,137) assumes they were used for tethering donkeys overnight to protect them from prowling wildlife or dogs. He is, however, surprised about the small number of donkeys to be tied up in comparison with the large number of people mentioned in the written text. The table above shows that the eye-lets are not from the time of the inscription under Cheops, but more likely from the time of the red pharaoh. There is another possible purpose. Schulz-Schaeffer (2001: 122-123) made an illustration where the eye-lets are used for the construction of a roof made with fabrics. This could also explain the peg holes, which are to be found at a similar height as the eye-lets.

Direct dating of rock art has been tried with little success until now. It would therefore be useful if archaeological data could give a hint as to the abso-

lute dating of the rock art. Kuper (2003) reports pottery from the Old Kingdom and from the Sheikh Muftah Group of Dakhla from the excavations at DWM. In Dakhla three local cultural units are distinguished. The first, the Masara unit from the ninth millennium BP (McDonald 1993), is not relevant here.

pecked animals damaging the water-mountain symbols (when?)	
red pharaoh; panel with red colour	eye-lets
	softly pecked animals
	women with skirt; „arrow-men“; engraved animals, some with polished body
	engraved giraffe with pecked and polished body
modification of water-mountain symbol	
water-mountain symbols; inscription of Djedefre; images of griffon etc.; use of red colour; ship (earlier?)	animals with polished body and pecked or engraved extremities;
hieroglyphic inscription and cartouche of Cheops	pecked animals and human (earlier?)

The second is the Bashendi cultural unit. The sites are to be found within the Dakhla oasis and in surrounding areas (McDonald 1993; 1999: 118-122, 127-128). Their stone tools show similarities with other cultural units from Khartoum to the Fayum and the Delta (McDonald 1996) and in the Western Desert (McDonald 1999: 127-128). It is therefore thought that the Bashendi-people were a local version of nomadic cattle pastoralists who used the oasis as an annual refuge. They are dated about 7600 - 6850 BP (Bashendi A) and after 6500 BP, mostly before 6100 BP for Bashendi B (McDonald 1999: 130). As Bashendi sites are to be found near rocks with petroglyphs of giraffes, ostriches, large antelopes, long-horned cattle and birds (reported by Winkler, 1939), it is assumed that these petroglyphs are the products of the Bashendi unit or related groups (McDonald, 1999: 128). DWM had not yet been discovered at the time when these reports were written. Because of the similarity of the motifs at DWM the earlier petroglyphs may have been created by Bashendi or similar groups.

The third cultural unit in Dakhla is the Sheikh Muftah culture. The sites occur only in the Dakhla oasis and few on the route to the Nile valley (and now

at DWM). At some sites there seems to be an overlap with Bashendi occupations. Most Sheikh Muftah sites are later than 5500 BP and some are coeval with the Old Kingdom presence in the oasis (McDonald 1993; 1999: 122-127, 129-130). The earliest ceramics of Pharaonic Egypt in Dakhla are from the Archaic Period 2920-2650 BC. By about 2300 BC many new migrants had arrived from the Nile valley. They lived side by side with the people of the Sheikh Muftah culture for several decades. At the end of the First Intermediate Period the Sheikh Muftah culture had disappeared and the size of the Pharaonic Egyptian community diminished (Mills 1999).

The images of women with skirts were reported from the eastern part of Dakhla and the road between Dakhla and Kharga (Winkler 1939:27-30; Krzyżaniak 1988; 1999; Krzyżaniak et al. 1991). Červíček (1986: 83) mentioned examples from Fukundi in Nubia and from Khor Ghattas near the Second Cataract. Bergmann found many of them at DWM and other places W and SW of Dakhla (e.g. www.carlo-bergmann.de). So, these images concentrate in and around Dakhla.

Winkler believes that the petroglyphs of „pregnant women with enormous buttocks“ are images of statuettes made by the „Early Oasis Dwellers“ and he assigns them together with the petroglyphs of the „Earliest Hunters“ to the Amratian Period (1939: 29,33). Červíček (1986: 83; 1993: 45) assigns the „female anthropomorph with the so-called false steatopygy“ or the „female anthropomorph with a wide decorated skirt“ to his C-Horizon (2100-1400 BC) and compares them with images on Nubian C Group pottery. In order to explain his timing he refers to his earlier work (Červíček 1974:139-note 455; and indirectly to 1974: 117 n. 320), where he, however, gives a much wider range for the attribute of „so-called false steatopygy“, namely Naqada, Group A, and Group C. The bases for these comparisons are not from rock art, but they are paintings on ceramic and figurines. Ucko, one of Červíček’s references, studied figurines from Egypt and other areas. He comes to the conclusion that the majority of the Predynastic Egyptian figurines are not steatopygous, but obese (Ucko 1968: 171). He realizes that steatopygia may be shown in objects of various cultures for different reasons, and he concludes that these are not necessarily true images of women. Therefore he recommends that steatopygia should not be used for correlations between different cultural units.

Following Ucko, it may not be justified to correlate the images of women with skirts in rock art with mobile art objects of any period from the Nile valley. On the other hand the images in rock art are restricted to a certain area in and around Dakhla. A cultural unit, which is also restricted to that area, is the Sheikh Muftah Unit. One may speculate therefore that the Sheikh Muftah people are responsible for these petroglyphs. If that were correct, the petroglyphs are to be

dated prior to the end of the First Intermediate Period when the Sheikh Muftah culture disappeared.

The interest of researchers in DWM presently concentrates on the activities of Pharaonic Egyptians concerning minerals for the production of red colour. Bergmann found in addition to DWM, however, many places with water mountain symbols, which he calls Outposts, and other rock art sites in the vicinity. This indicates that the inhabitants or visitors from Dakhla must have performed other activities besides quarrying and the transport of haematite in this area. This raises the question of water supply. While Bergmann found large jars at many places in the desert, especially on the donkey trail to Abu Ballas and beyond, there is no large jar in DWM. In the test trench Kuper (2003) only found kitchenware.

There are two possible sources for water, rain and groundwater. Bergmann believes that water was available in the area immediately SW of DWM. He calls this area Biar Jaqub (Jacob's wells). On the Russian map, sheet G-35-Г (G-35-G), Djedefre's Water Mountain lies at an elevation of about 220 m in an area with a general slope to NE towards the Dakhla depression. It is possible that some relatively small pools developed here after rains. About 25 km SE from DWM there is a depression below the 200 m line. In this depression area Meissner et al. (1993) interpreted Quaternary playa and semi-lacustrine deposits from satellite pictures. All these indications still have to be checked on the ground. The frequency of rains has decreased in this part of the Sahara since about 5000 BC. Arid to hyperarid conditions set in about 3500 BC. Dakhla experienced a lacustrine phase about 8000 - 3500 BC (Kröpelin 1993: 56-57). Rain was probably no longer a regular feature in 2500 BC.

The Dakhla-basin is part of a huge aquifer system in the Nubian sandstone covering N-Sudan, SW-Egypt and SE-Libya (e.g. Brinkmann et al. 1987). The archaeological site Lobo, initially a spring and later a well (Klees 1989; Midant-Reynes 2000: 147-148), was probably supplied from this aquifer. Similar springs/wells may have existed near DWM, but the area remains largely unexplored.

Bergmann is sure that he has found Wilkinson's second Zarzóra, which was said to be at a distance of two or three days walk straight west of Dakhla (see Almásy 1940: 72). The distance is certainly correct and the former existence of an oasis may have survived in the memory of the people. The most recent discovery, a sickle, was made south of DWM in December, 2004 (Fig. 17). It is now hidden at the site and the coordinates will be supplied on request.



Fig. 17

Acknowledgements

This manuscript is an abbreviated version of a presentation given at the annual meeting of the Association des Amis de l'Art Rupestre Saharien (AARS) in Ingolstadt 2005. I am grateful to K. Campbell for improving the English.

Postscript

During a second visit to Djedefre's Water Mountain and the surrounding area in January, 2006, we found a small piece of a green-blue mineral on the surface at the foot of a hill about 500 m north of DWM. The maximum dimensions are 11 x 8 x 6 mm. The entire surface of the piece is smooth and rounded. This may be an effect of wind and sand to which it has been exposed over a long period of time. There is no local source for this type of mineral, it was lost by a visitor. In the context of visitors from the Nile valley, the mineral is most likely turquoise. Alternatively, it may be amazonite. A method for a non-destructive analysis was not yet found.

North of DWM, we inspected several small depressions for similar conditions as at DWM. In one depression, about 13 km NW of DWM, we found a

small area with lake deposits. Nearby, there are the remains of several trees. A small loose piece of wood was collected and two radiocarbon dates were established. They yielded BP 3298 \pm 26 and BP 3370 \pm 26. The overall one-sigma-range is cal. BC 1729 - 1524 (KIA 29294 and 29295).

In the depression indicated on the Russian map and on the map of Meissner et al. 1999, mentioned above, we found some yardangs with dead bushes about 25 km ESE of DWM. A piece of wood yielded a radiocarbon age of BP 108 \pm 23 (KIA 29296). This late dating may explain the presence of the sickle (Fig. 17.) mentioned above.

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