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Archaeological Survey of Wadi Hamra, Gilf Kebir, Egypt

Introduction

Wadi Hamra ("The Red Valley") is the easternmost of the three major wadis which cut into the north-western part of the Gilf Kebir Plateau, today known as Abu Ras Plateau (Fig. 1). Today, this area is part of the driest and nearly plantless region of the Sahara, about 500 km south-west of the Egyptian Dakhla Oasis and about 300 km east of the Libyan Kufra Oasis. As a result of its remoteness and inaccessibility Wadi Hamra has not yet been subject to systematic archaeological investigations, as well as the other valleys of the north-western Gilf Kebir.

During March and April 2000 the ACACIA project of the University of Cologne conducted an interdisciplinary expedition to the Gilf Kebir and the western Great Sand Sea which led to the discovery and documentation of an archaeological surface site in Wadi Hamra. After entering the north-western plateau surface, Wadi Hamra was entranced in the south, followed by a visit of the rock art site documented by Rhotert's expedition in 1935 (Fig. 2; 3; see below), and a brief survey of the wadi to its northern mouth. In the central Wadi Hamra a prehistoric camp site was found near rock art sites that had been discovered by Berger & Berger in 1998 and Giancarlo Negro (after Zboray 2005). Berger & Berger had already noticed some artefacts, stone circles, and grooved abraders that probably belong to the site investigated by ACACIA in 2000. The site was then recorded, modified stone tools and potsherds were completely collected from the surface, and a small test excavation was carried out. Up to now, this site listed in the fol-

lowing as Wadi Hamra 00/9 is the only systematic recording of artefacts that still exists from the north-western Gilf Kebir.

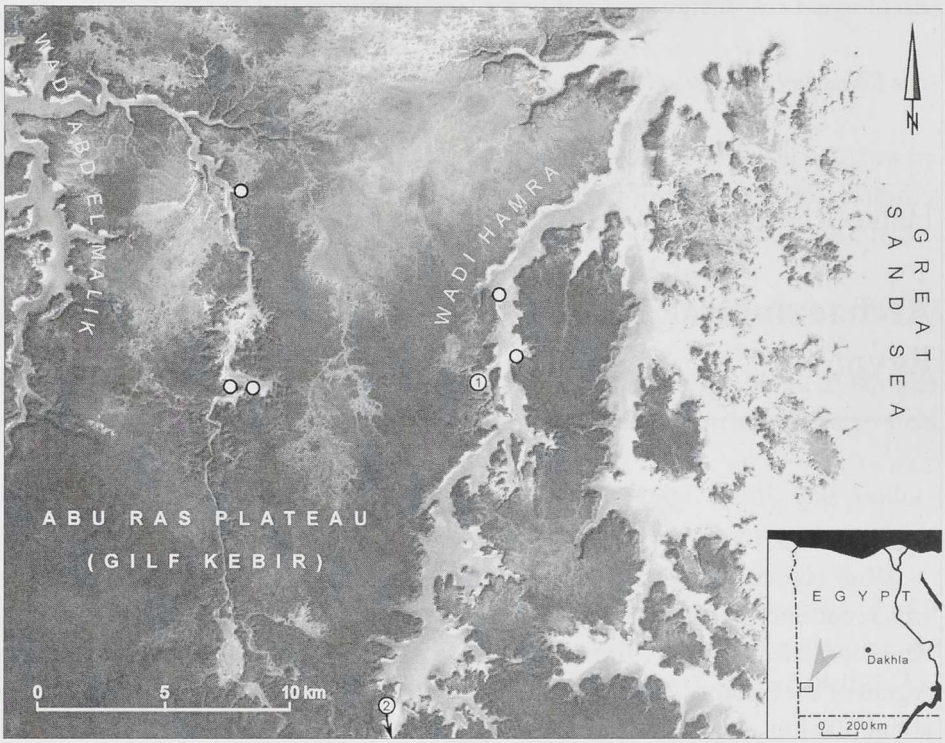

Fig. 1. Map of the western Gilf Kebir Plateau (Abu Ras Plateau) showing Wadi Hamra and its archaeological sites: 1 Side valley comprising rock art sites and the open air site 00/9; 2 Rhotert's rock art site discovered in 1935; other dots on the map mark rock art sites.

History of Exploration of Wadi Hamra and north-western Gilf Kebir

In terms of the European exploratory history, the north-western part of the Gilf Kebir was unexplored until the beginning of the 1930s. In 1931 Patrick Clayton, the former member of the Frontiers District Administrations, then member of the Desert Survey Department, made a one-day survey to the south-western side of the Gilf Kebir without having access without accessing the inner part of the massif. He discovered some rock engravings in an area that in early 1933 was named Wadi Sura by László Almásy (Clayton 1933b; Bagnold *et al.* 1939: 295). In 1932 the expedition of László Almásy, Sir Robert Clayton-East Clayton, Patrick Clayton, and Royal Air Force Wing Commander Hubert Penderel reached the

Fig. 2. Close-up of depictions at Rhotert's rock art site in upper Wadi Hamra taken in 2000 (cf. Rhotert 1952, plate XXVII,3-4).

south-western side of the Gilf Kebir with three Ford "A" cars and a light propeller aircraft to explore the plateau (Clayton 1933a; Penderel 1934; Almásy 1939). When Almásy made a solo-trip to Kufra to supply the expedition with water, Clayton and Penderel winged flew over the plateau and from the air saw a deep wadi dotted with acacia trees, which later became known as the Wadi Abd el Malik. They, however, failed to enter the wadi by car. During a second flight, Almásy spotted another valley east of Wadi Abd el Melik – probably the Wadi Hamra. The green trees and bushes seen from the air, as well as the stories about wells and pastures in the valleys of the Gilf Kebir told to Almásy in Kufra in 1933 by two caravan headmen, convinced him that he had found the legendary oasis of Zarzura (Almásy 1939; Bermann 2003).

Driven not only by geographical and frontier security interests, but by the mystery of Zazura, the unknown oasis, a number of expeditions returned to the Gilf Kebir during the following years (Bagnold 1937). In winter 1932/33 Clayton and his party traversed the Great Sand Sea from east to west which led him to the discovery of the Libyan Desert Glass deposits. The second objective of the expedition was to track the escarpments and valleys of the north-western Gilf Kebir. Probably the party took the first steps into the tree-lined valleys that had been located from the air. (Clayton 1933c; Almásy 1939: 127; 129). When Clayton's expedition was

Fig. 3. Upper Wadi Hamra viewed from the Plateau edge above Rhotert's rock art site. Workshops to obtain quartzite blocks for stone knapping exist at the foot of the slopes.

still underway Almásy returned to the Gilf Kebir in early 1933 with Penderel, and the Austrian writer Richard Bermann alias Arnold Höllriegel (Almásy 1939: 126-135; Bermann 2003). It was during this expedition when a caravan headmen in Kufra mentioned the names of the three valleys: Wadi Talkh, Wadi Abd el Malik and Wadi Hamra (from west to east). During the same year, after her husband's sudden death, Lady Dorothy Clayton-East Clayton set off together with Major Ralph Bagnold to the Great Sand Sea and the Gilf Kebir where they visited the wadis. In 1934 Almásy then surveyed the wadis with Hans-Jörg von der Esch and others (Almásy 1939: 143-155). In 1934 Kennedy Shaw and his team crossed the so-called 'gap' between the north-western and the south-eastern part of the Gilf Kebir, and entered Wadi Hamra (Shaw 1936; Mason 1936).

In 1933 the rock art sites recently discovered in Uweinat and at the south-western edge of the Gilf Kebir Plateau were the starting point for the first archaeological expedition to the Gilf Kebir. Within the frame of the DIAFE 11 (German Central-African Research Expedition), directed by the ethnologist Leo Frobenius, Almásy headed the party to Uweinat and Gilf Kebir. The expedition was accompanied by Frobenius' research assistant Hans Rhotert and the graphic assistant Elisabeth Pauli (Rhotert 1934; 1938; Almásy 1939: 140-143). The discovery of the rock paintings of the Cave of the Swimmers in Wadi Sura by Almásy was one of the important results of the DIAFE 11.

Within the DIAFE programme Rhotert led a second expedition (DIAFE 12) to the Gilf Kebir in April 1935, this time without Almásy. The latter, however, had prepared Rhotert in Cairo with his most recent cartographic information on the location of the wadis in the north-western Gilf Kebir (and by the same time Rhotert arranged some reconciliation between Almásy and Frobenius after the quarrel over the attribution of the Ayn Doua rock art discoveries). Rhotert took advantage of the experiences gathered during the 1933 tour. The expedition was supported by Ford in Cologne with ten Model "A" vehicles of which eight were used for the journey from Kharga to Gilf Kebir and Kufra. It was joined by a large scientific team of ethnographers and archaeologists, among them Frobenius and his wife, and a team of graphic assistants to copy the rock depictions led by Elisabeth Pauli (Rhotert 1938; 1952). A first reconnaissance trip in order to find a passage into Wadi Hamra took them around the northern Gilf Kebir, across the southernmost dunes of the Great Sand Sea ("Clayton's dune") into the 'gap' between both parts of the Gilf and then continued up onto the western plateau surface.

On April 17th the party set up their base camp at the southern tip of the large dune train within the 'gap'. In the early afternoon the team parted: Rhotert and

three members left with two cars towards Kufra to get water and gas, and two other groups departed for the exploration of the north-western Gilf Kebir Plateau. One of these groups headed for Wadi Hamra with three cars. It comprised the draftswomen Elisabeth Pauli, Elisabeth Krebs, and Käthe Marr; Frobenius and the ethnologist Karin Hissink; the archaeologist Elisabeth Weiß, as well as the writer Douglas Fox.

After the teams had reunited at Wadi Sura by April 22nd, Rhotert noted in his field book that the group had discovered "some rock engravings and stone artefacts" in Wadi Hamra before they had returned to the plateau surface by April 20th. What can be taken for certain is that the trip into Wadi Hamra which only took some days, led to the discovery of, at least, one rock art site with engravings (Fig. 2) in the upper section of Wadi Hamra which was later on published by Rhotert in his "Libysche Felsbilder" (Rhotert 1952: 49). Moreover, the group obviously conducted a survey along the wadi in search for prehistoric camp sites because in 1952 Rhotert reports many "Mousterian" and "Neolithic" artefacts which were found on wadi terraces in Wadi Hamra, among them many grinders (Rhotert 1952).

The first comprehensive volume on the archaeological results of the two DIAFE expeditions was already published in 1938 (Rhotert 1938) which covers the prehistoric archaeology of Transjordania, the subject of the first mainstay of the expedition. The second volume devoted to the archaeology of the Libyan Desert announced in volume I under the title "Die Libysche Wüste" (Rhotert 1938) never came into being due to the loss of an unknown number of expedition documents and artefacts during the World War II bombing of the city of Frankfort in 1944 where they were housed in the Frankfort University "Research Institute of Cultural Morphology" (what became the "Frobenius Institute" in 1946). As a consequence, Rhotert's volume published in 1952 as "Libysche Felsbilder" (Rhotert 1952) was fragmentary, though without doubt a milestone in the field of rock art research in the Libyan Desert. It only accounts for the rock art assembled during the expeditions in 1933 and 1935 including photo sheets, tracings and copies that survived the war, detailed cartographic material as well as descriptions and drawings of artefacts are however missing.

It should be added that the DIAFE 12 continued to the north-western Gilf Kebir. Starting from Wadi Sura on April 24th the group rounded the north-western Gilf Kebir and entered Wadi Abd el Malik for a four-day survey by car and on foot. Following Rhotert's field book, the survey yielded only meagre archaeological results: no rock art site had been discovered, and stone artefacts found in the valleys and on the plateau surface were mainly not retouched and less significant.

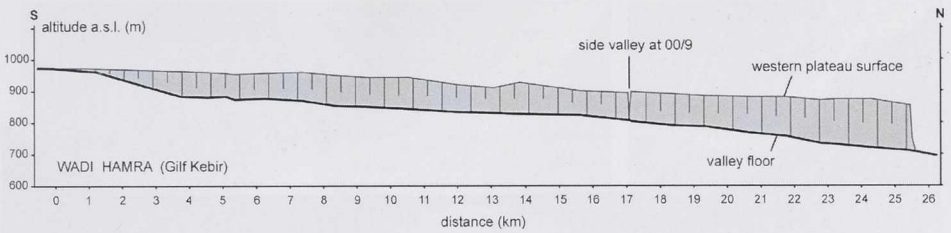

Fig. 4. Longitudinal section through Wadi Hamra from the head (left) to its mouth (right).

In 1938 Bagnold and Peel (Bagnold et al. 1938) discovered a small cave with some cattle paintings in Wadi Abd el Malik (AM 1 in the site list of Zboray 2005) which is to this date the only known site with paintings north of the Wadi Sura area.

In contrast to the south-eastern Gilf Kebir (for exploration history see Linstädter 2005), the north-western part has received relatively little attention after World War II; exeptions are a handful of new rock art discoveries in Wadi Abd el Malik and Wadi Hamra (Negro 1995; Berger and Berger 1999; Berger *et al.* 1999), and the re-discovery of Rhotert's rock art site in upper Wadi Hamra. Zboray (2005) lists a total of four rock art sites currently known in Wadi Hamra. Finally, a brief visit to Wadi Hamra is to be mentioned undertaken by the 1978 expedition of the Geological Survey of Egypt. Haynes who joined the mission reports "numerous game trails and several short stone walls that appear to be the blinds of ancient hunters" at "where an eastern tributary of Wadi Abt el Malik comes to within a few hundred meters of Wadi Hamra" (Haynes 1985: 301).

Site and artefacts of Wadi Hamra 00/9

The site of Wadi Hamra 00/9 is situated in a small side valley which branches off the Wadi Hamra in westerly direction some 20 km north of Rhotert's rock art site, and about 10 km south of the mouth of Wadi Hamra (Fig. 4-6). The side valley is known since the discovery of two neighbouring locations with rock depictions by Berger and Berger in 1998 (Berger and Berger 1999: 206-207; Berger *et al.* 1999). These sites yielded packed rock engravings of giraffes, ostriches, human figures and cattle. One rock art site was found in a southern tributary of the side valley. The other rock art site was located in the centre of the side valley where depictions are placed on vertical surfaces along a 5-6 m high rock terrace (Fig. 6). A number of small roughly made stone circles were observed on the top of the rock terrace. Moreover, some surface artefacts were noticed, but without giving any further details. An exception is the report about a couple of grooved abraders (Berger and Berger 1999: 219). In 2000 the ACACIA team located two surface clusters of artefacts in front

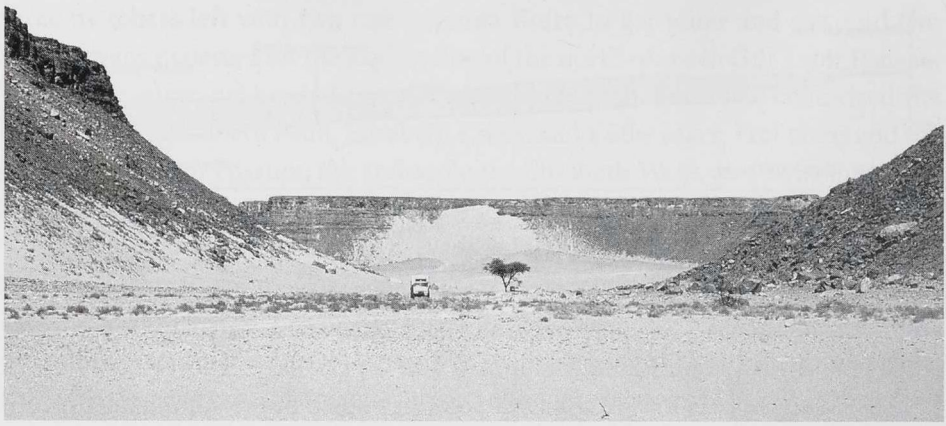

Fig. 5. View from the side valley at site 00/9 into Wadi Hamra. The surface scatter of artefacts covers the freed area of the terrace in front, while the wadi channels in the background are vegetated.

of the rock terrace. The site was going to suffer from increasing tourist visits of the rock depictions as already visible by car tracks deeply cut into the surface scatters. This and the fact that some of the artefacts were chronologically distinctive were the primary reasons for a one day rescue survey of the site.

Two surface concentrations of dense artefact scatters about 50 m apart were recorded on a 0.5-1 m high sediment terrace (Fig. 7). Some parts of the artefacts clusters were cut by wadi channels. After the prehistoric occupation, the northern part of the terrace was partly eroded by later wadi floods.

The south-western artefact cluster extends about 20 m in north-south direction. It yielded some tiny bone fragments and some flaked lithic material. Only two retouched tools (Fig. 8,1; 8,5) and a lower grinder were recorded. The elongated north-eastern cluster has an extension of about 60 x 10 m. Despite debitage and debris from a number of poorly defined workshops, it produced a number of retouched tools, cores, lower and upper grinders, and three grooved abraders. Moreover, a potsherd with organic temper from a vessel's rim was found within this scatter (Fig. 11,1). Another rim sherd, which shows a mineral temper (Fig. 11,2), was collected west of the artefact scatters in an isolated position.

The less deflated ground of the terrace on which the clusters were found, and the bones weathering out of the sediment suggested good conditions for organic preservation within the subsurface material. A small test excavation (00/9-1) of one square metre and about 10 cm deep was carried out at a knapping place of lithic material within the north-eastern cluster to examine the potential of the

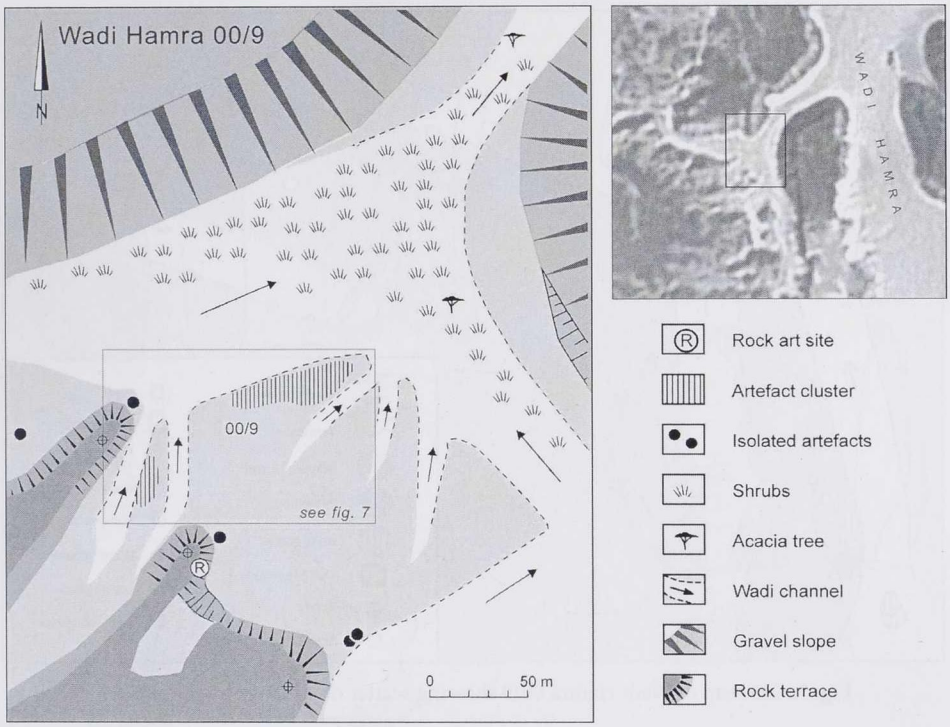

Fig. 6. Map of the side valley at 00/9.

subsurface material. Unfortunately, no organic remains were found, but a handful of tiny crumbling potsherds came to light which represent another vessel unit at the site (cf. sample 3 in Fig. 12).

The chipped stone artefacts of Wadi Hamra 00/9 were predominately made of greenish grey quartzite. This raw material has been found at outcrops and workshops on the slopes in the upper Wadi Hamra, close to Rhotert's site, where initial stages of the production sequence took place. Additionally, at 00/9 a brownish quartzite was used for smaller blades and flakes.

The blank production is characterized by flakes and blades of varying size showing large platforms and poor dorsal preparation. The total amount of retouched implements is small. Two end-scrapers on flakes (Fig. 8,3-4), two edge-retouched blades (Fig. 8,1-2), and two perforators on flakes (Fig. 8,5-6) were recorded. Five cores on large flakes were found within the north-eastern cluster (Fig. 8,7; 9,1-2). They represent large single platform cores which were chipped from larger blocks at the outcrops, such as those seen in the upper wadi, and then taken to the site of 00/9 where they were used as cores for the primary production (cf. *chaîne opératoire* for Wadi Bakht in Linstädter 2005, 153).

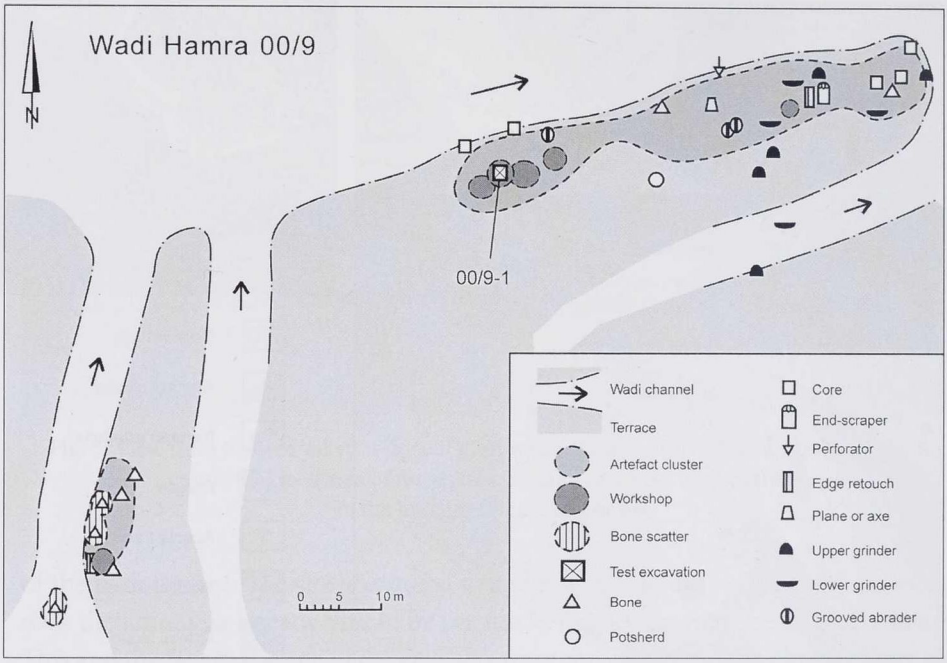

Fig. 7. Site map of Wadi Hamra 00/9 showing scatter of artefacts on the surface.

The upper and lower grinders consist of black or brownish quartzitic sandstone. Lower grinders only exist in fragments. The handstones have characteristic flattened shapes as are well known from Holocene camp sites elsewhere in the Eastern Sahara. The exception is a small short handstone (Fig. 9,3) which resembles the grinders of the Gilf type (Kuper 1981: 252-253). Another polished artefact with flaked ends might represent an axe (Fig. 10,1). The two grooved abraders shown by Berger (Berger and Berger 1999: 219; Berger and Berger 2000) were neither found on site nor in the vicinity. However, three other specimen of the same type were collected from the north-eastern cluster (Fig. 10,2-4). They have grooves of 6-10 mm diameter on both flattened surfaces. As already discussed elsewhere (cf. Baur-Röger 1989, 101) they were probably used for working wooden shafts. The polishing of ostrich eggshell beads is an alternative interpretation, but is less plausible because of the absence of beads or blanks on site.

Dating and cultural affiliation

As to the dating of the site, a mid-Holocene age (starting about 6600 calBC) is indicated by the flake-orientated technology, the high amount of grindstones, and the occurrence of pottery. The high amount of large flakes and cores is simi-

Fig. 8. Wadi Hamra 00/9: 1-2 blades with lateral retouch; 3-4 end-scrapers; 5-6 perforators; 7 large flake from local quartzite used as core.

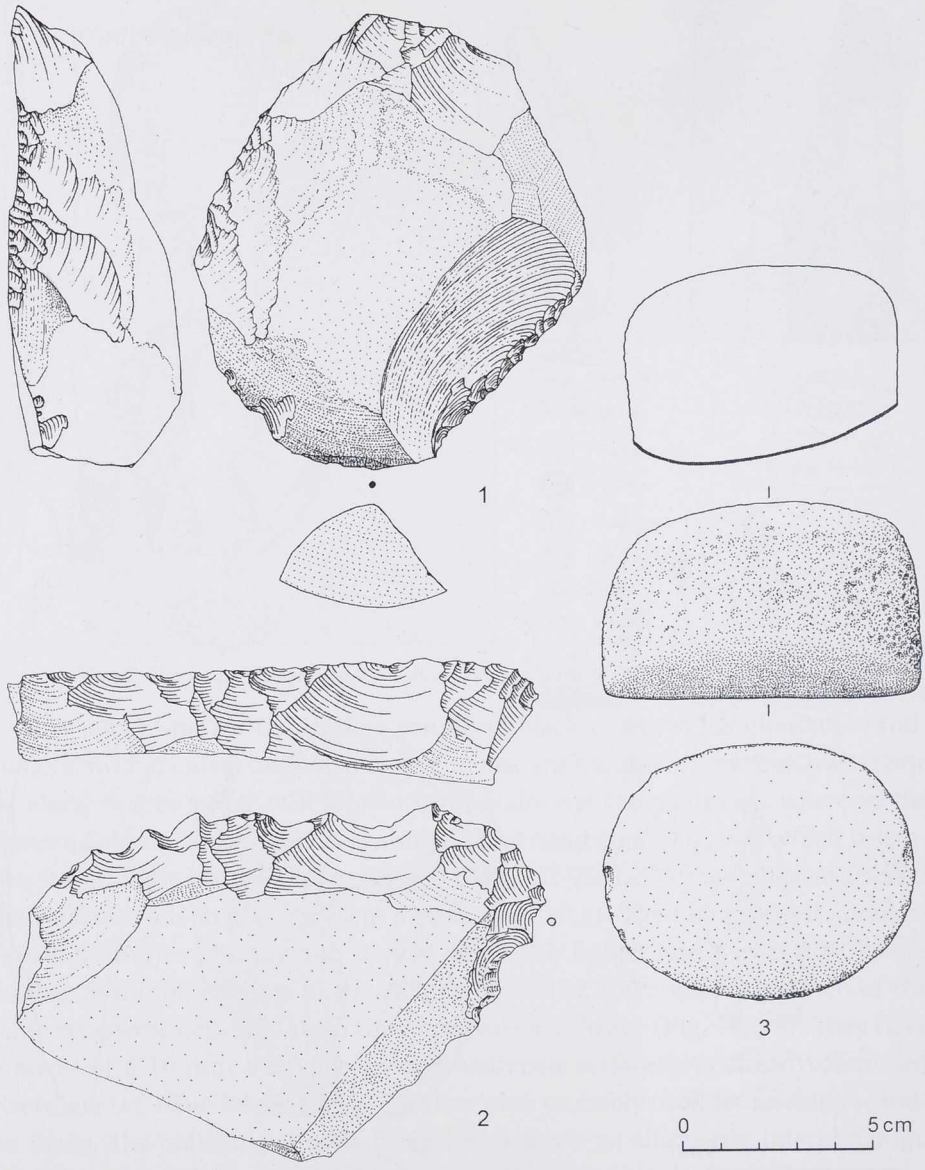

Fig. 9. Wadi Hamra 00/9: 1-2 cores from local quartzite; 3 handstone resembling grinders of the Gilf type.

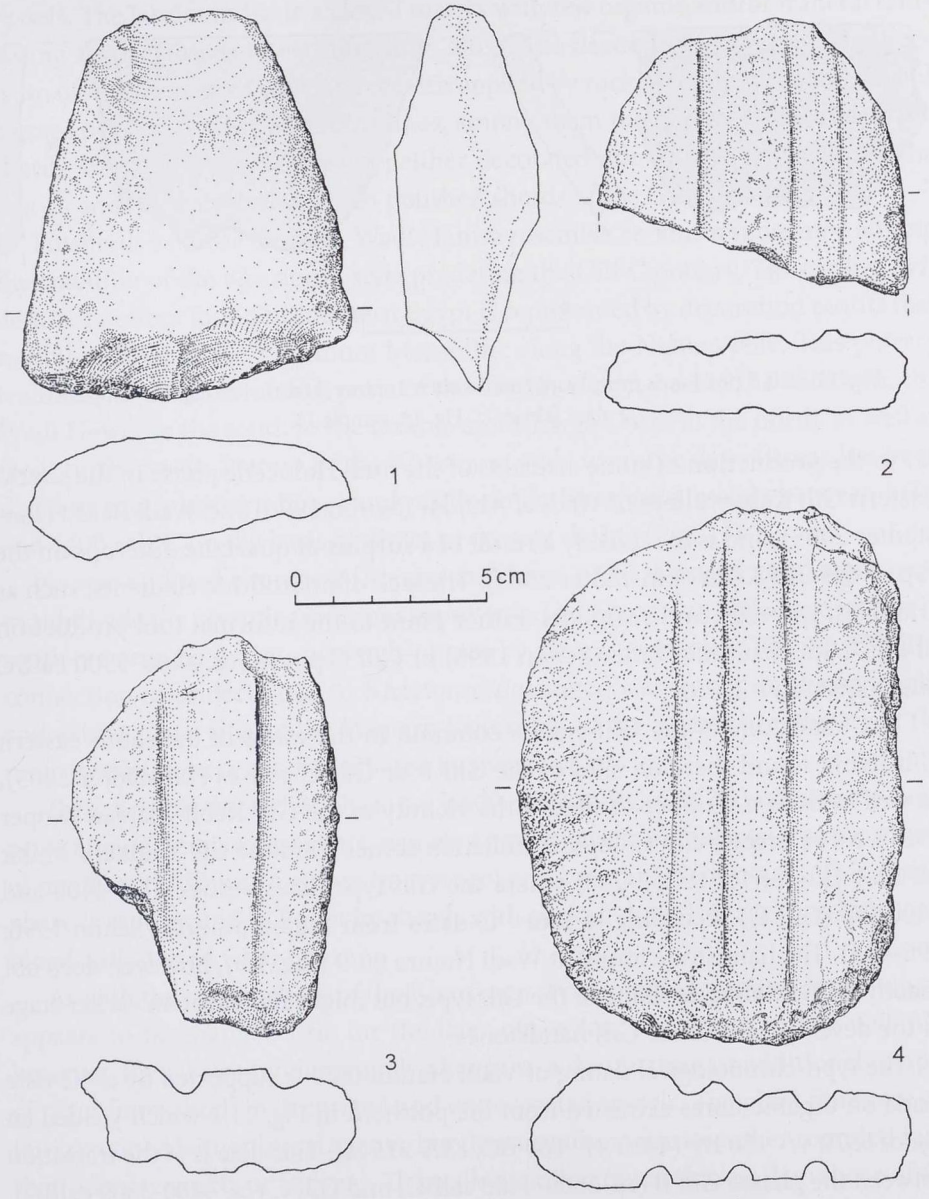

Fig. 10. Wadi Hamra 00/9: 1 plane or axe made of quartzitic sandstone; 2-4 grooved abraders made of fine sandstone.

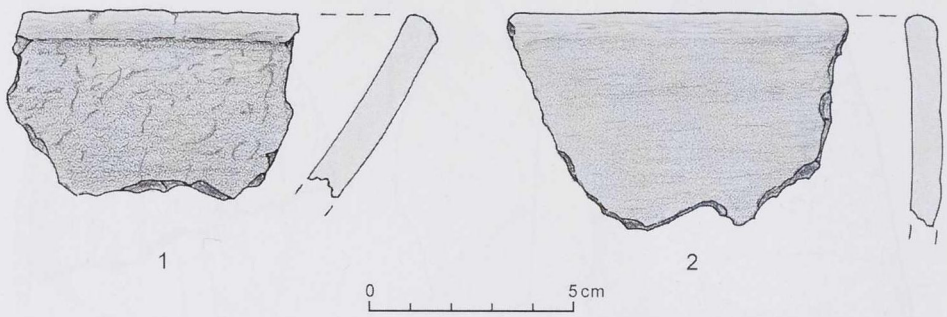

Fig. 11. Gilf B potsherds from Wadi Hamra 00/9: 1 mineral fabric (cf. Fig. 12, sample 4); 2 plant fabric (cf. Fig. 12, sample 1).

lar to the production of stone artefacts of the mid-Holocene phase in the south-eastern Gilf Kebir valleys of Wadi el Akhdar (Schön 1996) and Wadi Bakht (Linstädter 2005), and is most likely a result of a surplus of quartzite outcrops on the top of the Gilf Kebir (Linstädter 2003). The lack of microlithic elements, such as triangles, trapezes, and segments, rather point to the informal tool production of the "Late Neolithic" (after Schön 1996) or Gilf C phase (ca. 4400-3300 calBC after Linstädter 2005).

The handstone of the Gilf type is common in the wadis of the south-eastern Gilf Kebir, found there on sites of the Gilf B or Gilf C phases (Linstädter 2005), as well as from a number of sites in the vicinity of the Gilf Kebir Plateau (Kuper 1981). More precise chronological affiliation comes from the site Wadi el Akhdar 80/12-1 (Kuper 1981: 252-253) where the Gilf type dates between ca. 4400 and 4000 BC (Gilf C) according to four ^{14}C-dates from the excavation (Schön 1996: 396-415). The handstone found at Wadi Hamra 00/9 (Fig. 9,3), however, does not exactly fit the elaborate shape of the Gilf type, but might represent an earlier stage in the development of the Gilf handstones.

The typo-chronological dating of Wadi Hamra 00/9 is supported by a ^{14}C-date made on organic fibres extracted from the potsherd in Fig. 11,2 which yielded an age of 5570 +/- 150 BP (4430 +/- 160 BC; KIA-21541). This date is at the transition between the phases Gilf B (ca. 6600-4400 calBC) and Gilf C (ca. 4400-3300 calBC).

The potsherds found at Wadi Hamra 00/9 (Fig. 11) allow some further conclusions about the chronological affiliation through comparison with pottery elsewhere in the Eastern Sahara. As known from the Gilf Kebir valleys (Kuper 1995; Linstädter 2005) the Late Neolithic or Gilf C pottery (ca. 4400-3300 calBC) consists of thin-walled (3-6 mm in average), well smoothed or polished globular

vessels. The fabrics indicate a closed matrix with few organic and/or mineral tempering agents (Kuper 1995; Linstädter 2005). The decorations cover a wide spectrum of motifs most of which have been applied by rocker stamping or incising of zigzags or parallel rows of dots or lines, among them the herring bone motif. The sherds found at Wadi Hamra are neither decorated nor do they go well with the fabrics and the thin-walled, often polished sherds of the Gilf C phase.

Potsherds as those found at Wadi Hamra resemble ceramics subsumed among the tradition of the Khartoum style predating the Gilf C pottery. The earliest evidence of pottery found in southern Egypt is represented by decoration motifs that resemble those of the Khartoum Mesolithic along the Nubian Nile. This pottery tradition is common in most parts of the Libyan Desert west of the Nile from the Wadi Howar in the south to the Dakhla and Kharga Oases in the north, as well as from further west. Pottery of the Khartoum style from the desert areas has been dated in south-western Egypt and northern Sudan approximately between 6600 and 4400 calBC on the basis of direct or context dating (Fig. 13).

As was outlined elsewhere (Riemer and Jesse 2006) there are good arguments to subdivide the ceramic traditions represented by Khartoum style decorations in south-western Egypt into two sub-phases by means of fabrics (Fig. 12; 13). The connection of undecorated to Khartoum-decorated sherds within the same site contexts at many sites of the Western Desert led to the assumption that even the undecorated pottery can be affiliated by means of fabrics.

The fabrics of the earlier phase (ca. 6600-5500 calBC; Gilf B1) exclusively comprise mineral tempering agents, namely angular quartz or feldspar. The sherds are of medium thickness (6-8 mm in average) and have a closed matrix. This earlier phase is represented in Egypt by sherds with packed dotted zigzag, possibly combined with dotted wavy line.

As with the earlier phase of the Khartoum style complex, packed dotted zigzag appears to be characteristic for the later phase (ca. 5500-4400 calBC; Gilf B2), however, the fabrics fundamentally change to a dominating or additional temper of plant fibres, both in decorated and undecorated vessels. The plant fibres are often combined with mineral agents, but they usually comprise rather rounded sand than angular quartz or feldspar. The walls are often much thicker than those of the older mineral fabric. Decorations may consist of packed dotted zigag, but incised wavy line also occurs.

Using the plant temper from sherds a radiocarbon dating programme of sherds from different sites of the Egyptian Western Desert has revealed an absolute time frame for decorated and undecorated sherds ranging from approximately 5700 to

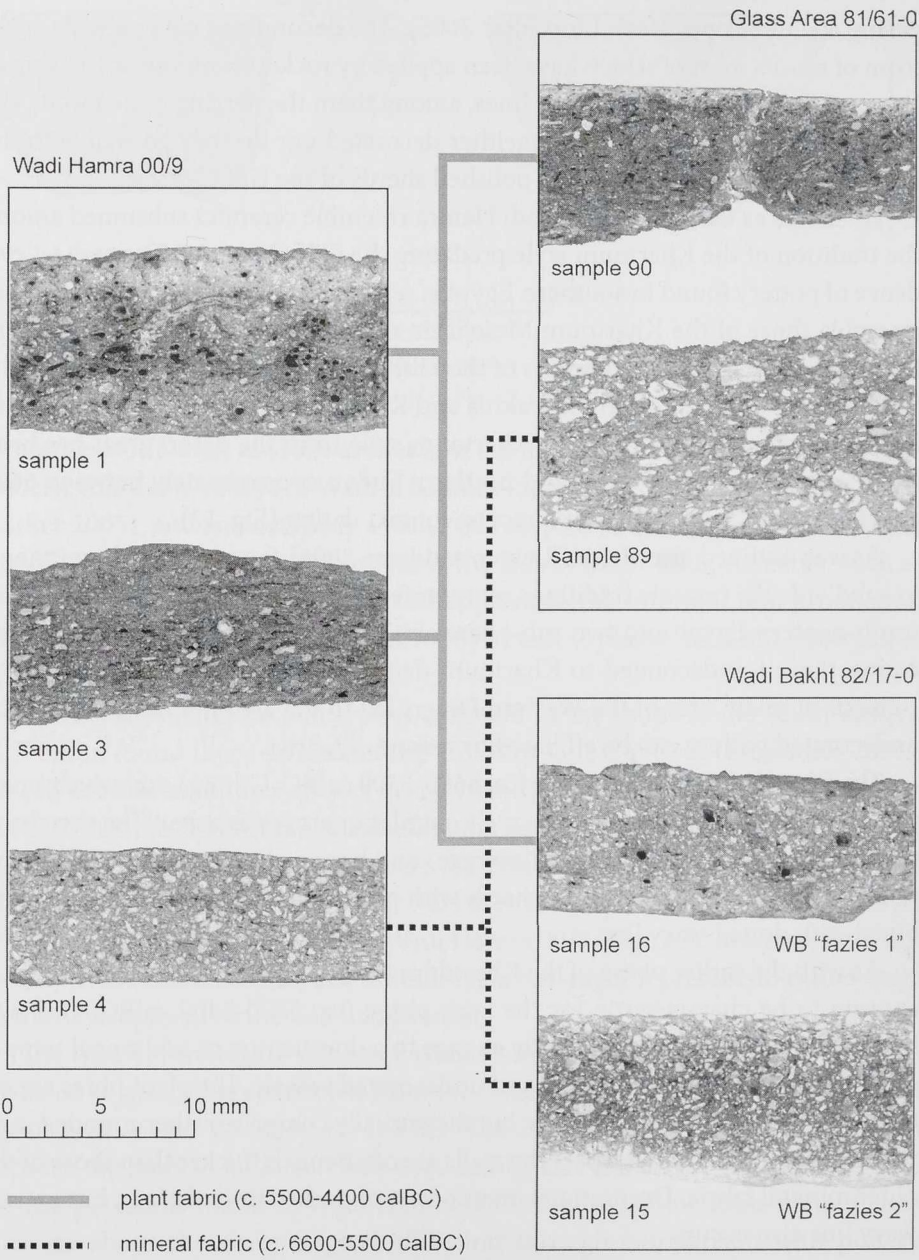

Fig. 12. Sections of potsherds showing fabrics of Wadi Hamra 00/9 compared to Glass Area 81/61, and Wadi Bakht 82/17. The dashed line connects sherds of mineral fabric (feldspar/angular quartz) affiliated to the phase Gilf B1 (ca. 6600-5500 calBC); the grey line connects sherds of plant fabric affiliated to phase Gilf B2 (ca. 5500-4400 calBC).

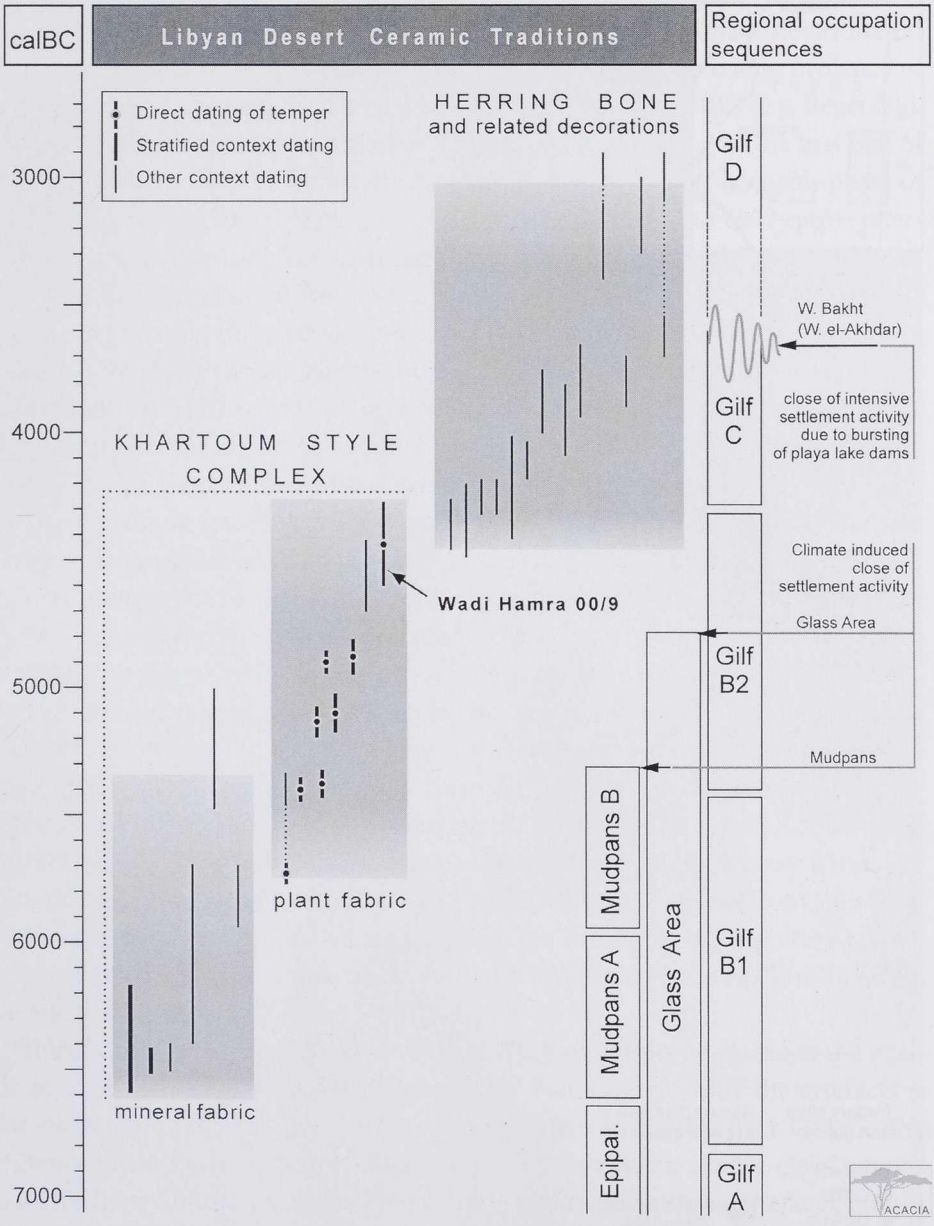

Fig. 13. Chronological chart showing context and direct dating results of potsherds by radiocarbon. Sites and dates are from B.O.S. and ACACIA study areas in the Western Desert of Egypt and northern Sudan.

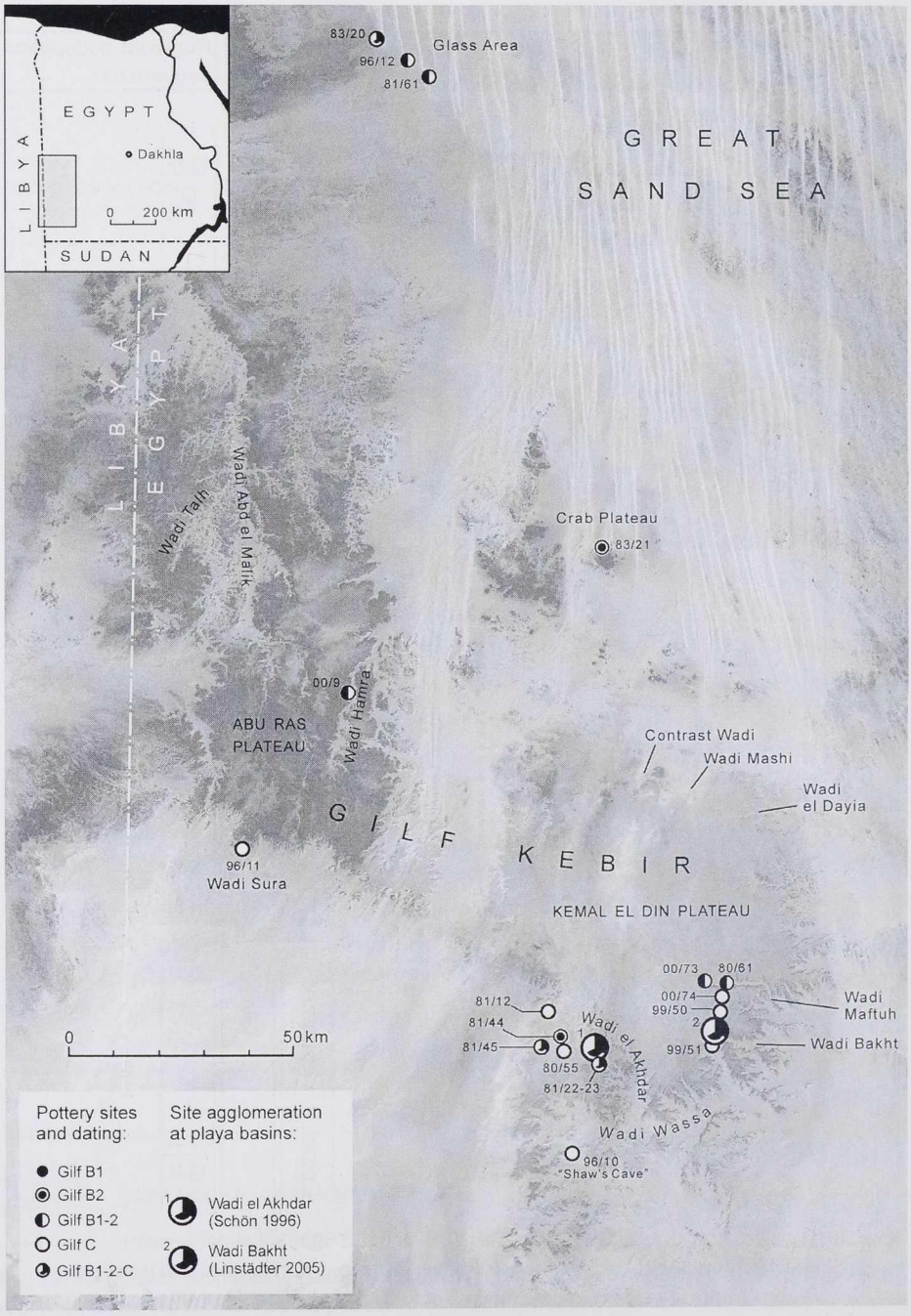

Fig. 14. Satellite map of south-west Egypt showing the distribution and dating of pottery sites recorded by B.O.S. and ACACIA.

4400 calBC (Fig. 13); the bulk of dates centres between 5500 and 4800 calBC. Referring to the depopulation as a consequence of the onset of the climatic deterioration of the desert areas in Egypt between 5300 and 4500 calBC, the dating evidence of many Egyptian sites concentrates on phases earlier than 5300 calBC (e.g. Regenfeld, Mudpans). This reduces the possibility to obtain material dating to the first half of the 5th millennium BC. Therefore, it is tended to suggest that the later sub-phase of the Khartoum style complex ranges from approximately 5500 to 4400 calBC referring to the relatively long-lasting chronologies in the Wadis Bakht and el Akhdar, as well as to a dated sherd from Wadi Hamra 00/9. Fig. 13 assembles the results of the direct dating programme as well as of sherds from 14C-dated contexts in south-western Egypt and northern Sudan. It indicates a clear tendency towards the sub-division of the Khartoum-style pottery, both decorated and undecorated, in the Egyptian part of the Libyan Desert. It also illustrates that the Late Neolithic (Gilf C) pottery complex started no earlier then 4400 calBC.

The potsherds found at Wadi Hamra 00/9 represent three vessels. The rim found in a somewhat isolated position on the surface of the site (Fig. 8,2) shows a closed matrix with a dense mineral temper dominated by course to medium-course feldspar (Fig. 12, sample 4). It has its closest parallels to the mineral fabrics of the earlier sub-phase of the Khartoum pottery (ca. 6600-5500 calBC, Gilf B1).

The other rim sherd, directly dated by radiocarbon, came from the north-eastern surface cluster (Fig. 8,1). It shows a medium-porous plant temper with an additional mineral component (Fig. 12, sample 1). The same appears in the fabric of the small vessel sherds excavated during the testing of the subsurface material (00/9-1) within the north-eastern cluster which comprises some plant fibres and mineral elements (Fig. 10, sample 3). In Fig. 12 sections of sherds from sites elsewhere representing the different subphases of the Khartoum-style pottery are exemplarily pictured; they come from site 81/61 ("Willmann's Camp") in the Glass Area and from site 82/17 in the Wadi Bakht.

In conclusion, site Wadi Hamra 00/9 can chronologically be placed at the middle of the 5th millennium calBC, however, the evidence given by the artefacts is somewhat contradictory whether it can be connected to Gilf B or Gilf C. The evidence given by the pottery fabrics of the north-eastern cluster clearly point to a Gilf B2 tradition (ca. 5500-4400 calBC), whereas the stone artefacts, and in particular the lack of microlithic elements, would speak for an affiliation to Gilf C (4400-3300 calBC). The directly dated sherd from Wadi Hamra 00/9 – in Gilf B2 tradition as mentioned before – marks the end of the pottery tradition of phase B2. Two hypotheses can be offered to explain this discrepancy in the chronologi-

cal affiliation: Either the site represents a transitional phase between Gilf B and C referring to the scenario that the lithic assemblages had developed before the pottery tradition was going to change or the site has multiply been occupied during different phases. The singular sherd of mineral fabric found in an isolated position on the surface which rather connects to the Gilf B1 sub-phase may point to the fact that the site has repeatedly been occupied.

The role of Wadi Hamra in the prehistory of the Eastern Sahara

One of the major observations made during the brief Wadi Hamra survey in 2000 was that Holocene archaeological sites, in particular large sites, are rare in the valley compared to the south-eastern Wadis Bakht and el Akhdar. In all larger wadis deeply cut into the north-western and south-eastern Gilf Kebir Plateau the topography has created favourable conditions for shrubs and trees. Beyond doubt, during the Holocene humid phase the vegetation made the valleys attractive for game, and therefore in turn for human occupation, either to gather plant food and wood, or to hunt gazelle, antelope, barbary sheep, and giraffe, as evidenced from bone records in the Wadis Bakht and el Akhdar (Van Neer and Uerpmann 1989) and rock depictions at various other sites. However, the plant cover did obviously not constitute the critical resource for humans which were dependent on regular water supply. Much of the vegetation receives its water from shallow local ground water tables within the wadi sediments which were hardly accessible for humans. The prehistoric people needed surface water that drained off the mountain and collected in endorheic basins after downpours. Such larger basins only occured in valleys of the Gilf Kebir where sand dunes had blocked the wadis and dammed the water for weeks or months after the rainfall. Among the larger valleys of the Gilf Kebir there are only the Wadis Bakht and el Akhdar where remnants of fossil dunes and playa sediments of former episodic lakes exist (Linstädter and Kröpelin 2005). In turn, these are the wadis which virtually received, by far, the greatest attention by prehistoric groups during the Holocene humid phase. Archaeological sites in other wadis where water has not been dammed, but quickly dispersed into the plains and extended forelands of the Gilf Kebir valleys, are few. Moreover, sites which exist in these wadis commonly comprise only very few artefacts. This would be the most plausible explanation for the situation in Wadi Hamra where only very few and small sites have been noticed. The location of site 00/9 within the smaller side wadi could indicate that a small basin existed here that contained water for a short period during the year. In so far Wadi Hamra reports of sporadic prehistoric occupations, while other wadis received much greater attention because of their greater surface water ressources.

The role Wadi Hamra has played in the subsistence strategies of the mobile prehistoric groups roaming through the dry savannah of south-west Egypt can only be hypothesized, as we are not well-informed, when exactly a pure hunter-gatherer economy was going to transform into a pastoral subsistence. The earliest introduction of domesticated animals into most regions of the Western Desert (with the exception of the possible early cattle found at Nabta Playa and Bir Kiseiba) can be dated to around 6000 calBC (Riemer 2007). In the Glass Area two bones of small livestock may date to the 6th or early 5th millennium calBC, however, bones of wild animals clearly dominate. From Gilf Kebir there is certain evidence for the introduction of larger numbers of small livestock with the phase Gilf C in the Wadi Bakht (starting ca. 4400 calBC). A ^{14}C-date around 5900 calBC (Gilf B1) obtained from ostrich egg shells in Wadi Bakht by the Combined Prehistoric Expedition might be connected to a number of cattle bones (Wendorf and Schild 1980, 219); however, the site from were the samples were taken is mixed up with later material, and the affiliation of the bones remains questionable. The same appears to be true for Wadi Bakht 82/22 where tooth fragments from domestic cattle were excavated by B.O.S. The site yielded ^{14}C-dates between 6400 and 5100 calBC (Gilf B1-2) as well as artefacts throughout all periods of the Gilf Kebir sequence, while direct dating of the tooth material failed (Fäder 2005: 201).

Consequently it can hardly be said from the general development in the Gilf Kebir region and its vicinity whether people from Wadi Hamra 00/9 were hunter-gatherers or pastoralists around the middle of the 5th millennium calBC. Judging from the evidence in other Western Desert regions, it can hardly be suggested that a fully fledged pastoralism was established before 4400 calBC (Riemer 2007). The contexts of the early domesticated animals found on sites of the 6th and beginning 5th millennium calBC in the Western Desert rather point to a kind of pastro-foraging. Traditional subsistence strategies, such as hunting and gathering of wild cereals, continue, as well the traditions in material culture.

The lack of arrow heads at the site may point to a predominant herding subsistence, but in the absence of distinct bone material, this is no more than a makeshift. Possibly it was the rich vegetation that attracted prehistoric groups to enter Wadi Hamra from the outer plains, despite that they were hunters or herders. Raw material from the quartzite outcrops probably was another attraction to visit the plateau, as it rarely occurs outside the Gilf Kebir. The similarity in stone artefacts and pottery between Wadi Hamra and sites in the Glass Area and in the Wadis Bakht and el Akhdar, point to a high degree of seasonal mobility over hundreds of kilometres that created the background for identical expressions in the material

culture. Such widespread networks of direct contacts have been evidenced from the Western Desert in other studies focussing on the distribution of pottery, stone tools and raw material for lithic production (Riemer 2006; 2007). In the case of Wadi Hamra one might suggest, that people who stayed in the valley (during the dry season?), moved their camps to places in the western Great Sand Sea – following the main direction of the wadi. The sites at the Glass Area might represent the opposite (rainy season?) section of this annual cycle during which groups alternately migrated between the mountain valleys and the plains.

Wadi Hamra fills a gap on our archaeological map of the eastern Sahara in many ways. Study regions intensively investigated during the last decades exist to the north, east and south of Wadi Hamra. They differ to some extent in their artefact assemblages, but parallels are apparent. During the mid-Holocene starting around 6600 calBC large parts of southern and south-western Egypt are characterized by a cultural complex with identical lithic and ceramic traditions probably based on a great network of contacts. Typical expressions in the material culture are the Khartoum style pottery, on the one hand, and the microlithic technology, on the other. The material culture does not significantly change before the middle of the 5th millennium calBC when the Gilf C pottery developed, and lithic tools changed towards a rather informal character. Following the southbound retreat of the monsoonal rains, the distribution of the distinct pottery tradition of Gilf C is, however, restricted to refuge areas in Egypt's southwest and northern Sudan.

Site 00/9 in Wadi Hamra indicates that occupation took place there at least until the mid-5th millennium calBC. When exactly the occupational history of Wadi Hamra came to an end as a result of the progressing aridification of the Sahara, can only be deduced from the general trends that became visible in regions elsewhere.

Differences exist in the chronologies, in particular between sites in the north and those in the south, due to the climatic deterioration in the Eastern Sahara at the close of the Holocene humid phase (Kuper and Kröpelin 2006). The first signals of depopulation can be traced by radiocarbon chronologies from the core areas in the Western Desert, such as in the Great Sand Sea by ca. 5300 calBC. In the Glass area the chronology lasted somewhat longer until approximately the middle of the 5th millennium calBC. The eastern Gilf Kebir Wadis Bakht and el Akhdar yielded traces of continuous occupations until 3700 and 3500 calBC, respectively. The termination of the Gilf Kebir occupation sequences is, however, not only a result of the general monsoonal retreat. In the Wadis Bakht and el Akhdar the dry conditions were buffered for some

time by the individual landscape formation of the Gilf Kebir where dunes blocked the valleys, and episodic lakes existed until the dams were broken by flash floods (Linstädter and Kröpelin 2004).

Characteristic Gilf C pottery has yet not been observed in Wadi Hamra, which might argue for an end of the occupation by the middle of the 5th millennium calBC, but this actually needs further field survey in the north-western Gilf Kebir. The possible reason why Wadi Hamra has a shorter chronology than Wadi Bakht and Wadi el Akhdar where sites agglomerated at the playa basins up to the middle of the 4th millennium calBC may be attributed to the southbound retreat of the summer rain belt which affected Wadi Hamra earlier than the valleys positioned farther south. It can, however, not be excluded that the long-term sequences at Wadi Bakht and Wadi el Akhdar are a result of the dune barriers that dammed the water of the wadis, and therefore constituted a kind of azonal geomorphological feature that would have buffered the progressing aridity for some time. To verify these somewhat hypothetical explanations further field surveys are urgently needed in the valleys of the Gilf Kebir before the remaining archaeological sites are ultimately damaged by the rapidly growing desert tourism. By 2007 the Egyptian Environmental Affairs Acency (EEAA) has declared the Egyptian part of Jebel Uweinat, the Gilf Kebir Plateau,and the south-western margins of the Great Sand Sea as protected area (Kuper 2007). It is hoped that the nomination as a protected area will prove to be the first step towards an efficient and sustainable protection of the environmental and the cultural heritage of south-west Egypt.

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REFERENCES

ALMASY, L. E. 1936. *Récentes explorations dans le Désert Libyque (1932-1936).* Le Caire. Publications de la Société Royale de Géographie d' Egypt.

ALMASY, L. E. 1939. *Unbekannte Sahara.* Leipzig. Brockhaus.

BAGNOLD, R. A. 1937. The last of the Zerzura legend. *Geographical Journal* 89: 265-268.

BAGNOLD, R. A. 1939. An expedition to the Gild Kebir and 'Uweinat, 1938. *Geographical Journal* 93: 281-313.

BAUR-RÖGER, M. 1989. *Prähistorische Straussenei-Artefakte aus der Ostsahara.* Unpublished M. A. Thesis. University of Cologne.

BERGER, U. and F. BERGER. 1999. Ein neuer Felsbildfund im Wadi Hamra (Gilf Kebir, Ägypten). *Almogaren* 30: 203-220.

BERGER, U., BERGER, F., LAMA, W., LAMA, S. 1999. A New Rock Art Site in Wadi Hamra, Gilf Kebir, Egypt. *International Newsletter on Rock Art* 24: 15-17.

BERGER, U., BERGER, F., EL-MAHDY, T. 2003. Report on a journey to the northern part of Gilf Kebir, SW Egypt, February/March 2001. *Cahiers de Láars* 8: 22.

CLAYTON, P. A. 1933a. A reconnaissance of the Gilf Kebir by the late Sir Robert Clayton East Clayton. *Geographical Journal* 81: 249-254.

CLAYTON, P. A. 1933b. The western side of the Gilf Kebir. *Geographical Journal* 81: 254-259.

FÄDER, E. 2005. At the foot of the northern blocking dune: Wadi Bakht 82/22. In: J. Linstädter (ed.), *Wadi Bakht: Landschaftsarchäologie einer Siedlungskammer im Gilf Kabir*: 169-211. Africa Praehistorica 18. Heinrich-Barth-Institut. Köln.

HAYNES, C. V. 1985. Quaternary Studies, Western desert, Egypt and Sudan—1979-1983 Field Seasons. *National Geographic Society Research Report* 16: 269-341.

KUPER, R. 1981. Untersuchungen zur Besiedlungsgeschichte der östlichen Sahara. *Beiträge zur Allgemeinen und Vergleichenden Archäologie* 3: 215-275.

KUPER, R. 1993. Sahel in Egypt: Environmental change and cultural development in the Abu Ballas Area, Libyan Desert. In: Krzyżaniak, L., Kobusiewicz, M., J. Alexander (eds), *Environmental change and human culture in the Nile Basin and northern Africa until the second millennium B.C.*: 213-223. Studies in African Archaeology 4. Poznań. Poznań Archaeological Museum.

KUPER, R. 1995. Prehistoric research in the Southern Libyan Desert. A brief account and some conclusions of the B.O.S. project. *Cahier de Recherches des l'Institut de Papyrologie et d'Egyptologie de Lille (CRIPEL)* 17: 123-140.

KUPER, R. 2007. Desert parks in the eastern Sahara. In: O. Bubenzer, A. Bolten, F. Darius (eds), *Atlas of Cultural and Environmental Change in Arid Africa*: 118-121. Africa Praehistorica 21. Köln. Heinrich-Barth-Institut.

KUPER, R. and S. KRÖPELIN. 2006. Climate-controlled Holocene occupation in the Sahara: Motor of Africa's evolution. *Science* 313: 803-807.

LE QUELLEC, J.-L., DE FLERS, P., DE FLERS, P. 2005. *Du Sahara au Nil. Peintures et gravures d'avant les pharaons*. Ètudes d' égyptologie 7. Paris. Soleb-Fayard.

LINSTÄDTER, J. (ed.) 2005. *Wadi Bakht. Landschaftsarchäologie einer Siedlungskammer im Gilf Kebir*. Africa Praehistorica 18. Köln. Heinrich-Barth-Institut.

LINSTÄDTER, J. and S. KRÖPELIN. 2004. Wadi Bakht revisited: Holocene climate change and prehistoric occupation in the Gilf Kebir region of the Eastern Sahara, SW Egypt. *Geoarchaeology* 19: 753-778.

MASON, M. H. 1936. *The Paradise of Fools*. London. Hodder and Stoughton.

NEGRO, G. 1995. Due nuove stazioni d'arte rupestre di probabile età epipaleolitica nell'area dell'Uadi Gamra, Gilf Kebir (Sud-ovest dell'Egitto). *Sahara* 7: 51-68.

PENDEREL, H. W. G. J. 1934. The Gilf Kebir. *Geographical Journal* 83: 449-456.

RHOTERT, H. 1934. Verlauf der 11. Deutsch-Innerafrikanischen Forschungsexpedition (DIAFE) in die Libysche Wüste. *Bilderbuchblatt* 4: 44-46.

RHOTERT, H. 1938. *Transjordanien. Vorgeschichtliche Forschungen in Kleinasien und Nordafrika 1*. Stuttgart. Strecker und Schröder.

RHOTERT, H. 1952. *Libysche Felsbilder*. Darmstadt. Wittich.

RIEMER, H. 2006. Out of Dakhla: Cultural diversity and mobility between the Egyptian oases and the Great Sand Sea during the Holocene humid phase. In: K. Kroeper, M. Chłodnicki, M. Kobusiewicz (eds), *Archaeology of early Northeastern Africa. In memory of Lech Krzyżaniak*: 493-526. Studies in African Archaeology 9. Studies in African Archaeology 9. Poznań. Poznań Archaeological Museum.

RIEMER, H. 2007. When hunters started herding: Pastro-foragers and the complexity of Holocene economic change in the Western Desert of Egypt. In: M. Bollig, O. Bubenzer, R. Vogelsang, H.-P. Wotzka (eds), *Aridity, Change and Conflict in Africa. Proceedings of an International Conference held at*

Königswinter, Germany, October 1-3, 2003. Colloquium Africanum 2: 105-144. Köln. Heinrich-Barth-Institut.

RIEMER, H. and F. JESSE. 2006. When decoration made its way: The northern extent of Khartoum-style pottery in the eastern Sahara. *Acta Nubica. Proceedings of the Xth International Conference of Nubian Studies, Rome 9-14 September 2002*: 63-72. Roma. Università di Roma "La Sapienza".

SCHÖN, W. 1996. *Ausgrabungen im Wadi el Akhdar, Gilf Kebir (SW-Ägypten).* Africa Praehistorica 8. Heinrich-Barth-Institut, Köln: 396-415.

SHAW, W. B. K. 1936. An expedition in the southern Lybian desert. *Geographical Journal* 87: 193-221.

WENDORF, F. and R. SCHILD. 1980. *Prehistory of the Eastern Sahara.* New York. Academic.

ZBORAY, A. 2005. *Rock Art of the Libyan Desert.* Fliegel Jezerniczky Expeditions. Newbury [DVD].