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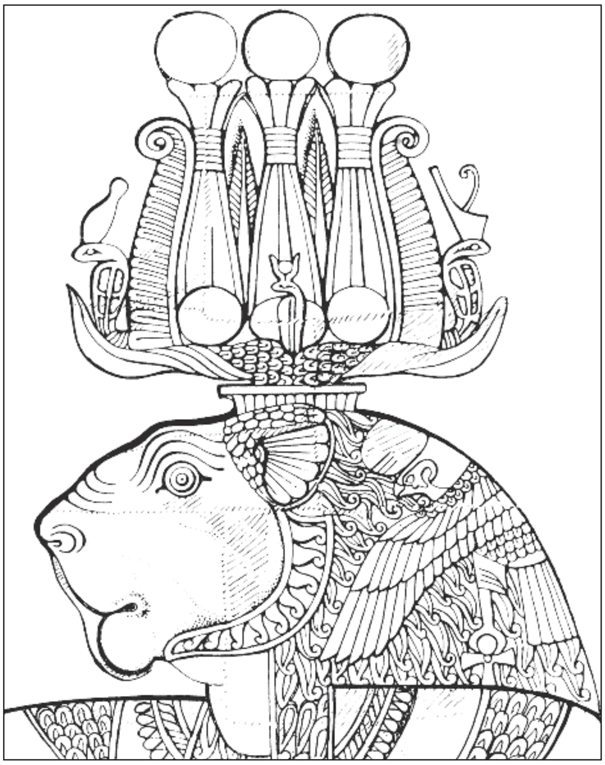

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EARLY HOLOCENE LANDSCAPES ON MOGRAT ISLAND (SUDAN) – PERSPECTIVES AND FIRST RESULTS OF THE LATE PREHISTORIC SURVEY 2014

INTRODUCTION

The Late Prehistoric Survey is a sub-project of the Mograt Island Archaeological Mission (MIAMi)[1] which is embedded in the Qatar Sudan Archaeological Project (QSAP). It is a continuation of previous surveying work initiated by the Humboldt University Nubian Expedition (H.U.N.E.) in the years 2006 and 2008.[2] During these campaigns numerous prehistoric sites have been recorded and preliminarily published.[3] Additionally, the island was mapped by a geographer (see map x).[4] In 2008 one of the early Holocene settlement sites (MOG064) was partly excavated resulting in numerous finds that are presently kept for analysis at Humboldt University Berlin.[5]

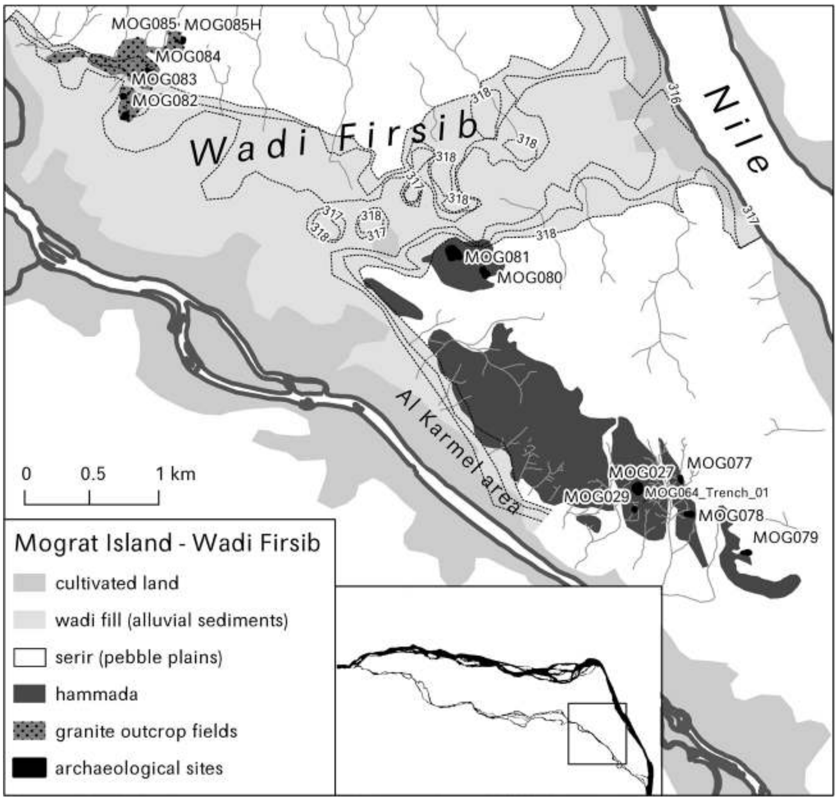

Fig. 1: Map of Wadi Al-Firsib and the hammada plateau east of Karmel at SE Mograt

THE SURVEY

The aim of the Late Prehistoric Survey[6] of Mograt Island is to locate, map and further investigate late prehistoric sites and their specific geological and topographical environments on Mograt. The main objective of the field-work is to define habitation areas of the period between 10,000 to 3,000 BC by the location of significant artefact concentrations including large and rather immobile artefacts, such as handmills and grinders. Therefore, stray finds and secondary finds at multi-period sites are clearly subordinated for the definition of a habitation site.

1 Project director: Prof Dr Claudia Näser; deputy project director: Dr Cornelia Kleinitz.
2 Näser 2006; Näser 2008.
3 Lange 2012. Prior to this survey, two Neolithic sites briefly mentioned by Kleppe (1982: 147) had been recorded during a tour of the University of Khartoum in 1977 (cf. Näser 2006: 14).
4 Ritter 2008.
5 Schulz 2008.
6 The Late Prehistoric Survey 2014 has been conducted between the 9th of January and the 5th of March 2014. The team consisted of Dr Annett Dittrich (freelance for Humboldt University of Berlin), Kerstin Geßner (freelance for Humboldt University of Berlin), and for part-time of Hassan Mustafa Alkhidir (National Corporation for Antiquities and Museums). Parallel to the fieldwork, the finds of the seasons 2006 and 2008 are currently analysed in Berlin.

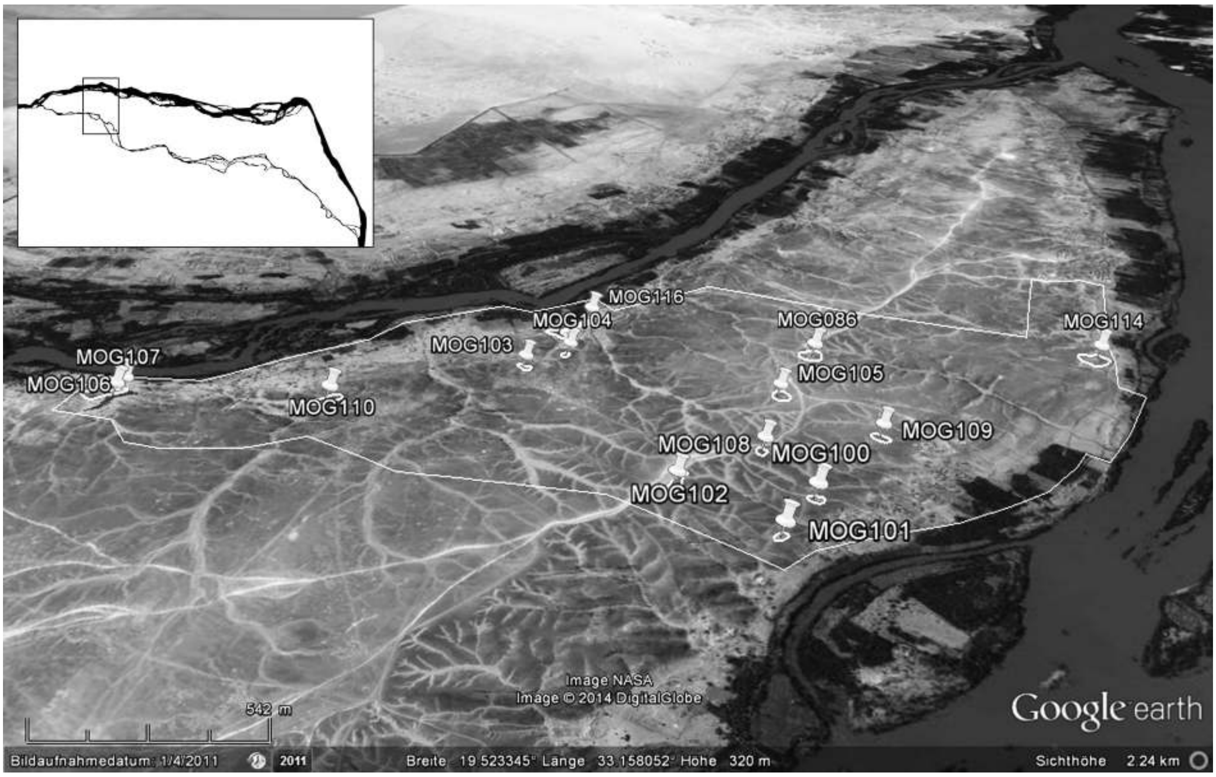

Fig. 2: Bird's eye view at western Mograt with sites located in 2014 (view to SW)

Attention was also paid to the recording of surrounding geomorphological features, as another aim is to investigate landscapes as spaces of interaction between humans and their environments within the area of an island's topography. With a length of 31 kilometers along the east-west axis and a width of up to 6 kilometers, the main island of Mograt provides an interestingly restricted landscape located at one of the two major turning points of the river Nile.

The present survey was conducted by walking to transect study areas to their full extent. These areas were chosen in advance on the basis of satellite images and were oriented either according to landmarks such as plateaus or wadis, or to accomplish continuous north-south transects that cover both the northern and southern Nile banks (figs. 1, 2). Originally, the survey concentrated on areas above the 320 m contour line but in the course of the study it could be confirmed that substantial sites are also present below this line at the lower Nile terraces given the fact that they had been embedded in alluvial sediments and were thus preserved. Thus, only cultivated areas have been excepted from the survey.

Furthermore, sites were mapped not only by GPS co-ordinates but as outlined areas in a GIS system through projecting GPS tracks onto satellite images.[7] Beyond forming indexes for archiving archaeological materials, prehistoric sites are thus considered as spatial features in their own right. At every site 360° panorama photography was carried out.

Artefacts were collected from the surface of each site only as far as to establish a minimum collection of significant lithics, potsherds, and small finds, while statistic samples were gathered through more systematic surface collections using a grid of 4 x 4 metres (fig. 3) or through test excavations.

Prehistoric Mograt – one, two or many islands?

As a premise, the conservation of Holocene settlement remains is very much linked to the presence of certain geological formations. Since as an island Mograt has always been directly subjected to the water-regime of the Nile, it can be assumed that certain Pleistocene to Holocene periods will fail completely to be uncovered due to the relative flatness of the island. The island's height levels vary between 303 m at the present alluvial plain and 337 m at the watershed, which is formed by the central east-west oriented ridge.[8] During exeptionally high

7 Google Earth and the open-access GIS software Quantum GIS were given preference due to their public and multilingual accessibility.

8 Cf. Ritter 2008: fig.1, 2; Lange 2012: fig. 1.

Fig. 3: Surface collection using a 4 x 4 m grid at site MOG027

inundations, as evidenced for Late Prehistory from adjacent regions,[9] much of the island must have been submerged. Presently, the main Nile channel passes to the east and north of Mograt, while the southern and smaller Nile branch remains subordinated and sometimes only carries a very low volume of water (fig. 1). Today, this influences the intensity of agriculture and the ceasing attractiveness of the southern part of the island, some parts of which appear abandoned and deserted. There are several indications, however, that during the past the order of this Nile branch system could have been reversed. Not only had the southern channel once a much higher water volume, but it must have crossed via the palaeochannel of the Wadi Al-Firsib dividing the modern island into two large individual islands (fig. 1).[10] Besides this feature, Mograt Island is flanked by numerous small islands[11] which mostly consist of flat alluvial mounds that are frequently submerged and are either overgrown with papyrus or intensely cultivated. Qurta Island, as one of the major islands[12] of the northern Nile branch, has been chosen for the survey (fig. 7) because at its centre it consists of granite outcrops meaning that it would have been a relatively stable island for a long time.[13] The present survey involved four study areas in which 26 sites in total have been located:

(1) eastern Mograt, the hammada plateaus east and south of Karmel, belonging to the southern palaeo-island (5 sites, fig. 1)
(2) western, central and eastern Mograt north of the Wadi Al-Firsib, belonging to the northern palaeo-island

Fig. 4: Flint lunate as found at the hammada surface of site MOG027 (length: 24 mm)

9 Williams and Talbot 2009.
10 Lange 2012: 261; Ritter 2008: 80.
11 Ritter (2008: 78) provided a number of 670 islands out of which only 24 exceed an area of 10 ha each.
12 For place names cf. Ahmed 1971: map 1.
13 The structure of the granite rocks crossing Qurta Island at the north-south axis makes it a place where the river Nile was difficult to pass by boat but maybe easier to cross from one bank to the other. For a description of Qurta cf. Ahmed 1971: 7f.

Fig. 5: Former cataract landscape shaped by granite outcrops and alluvial fills north of Wadi Al-Firsib

Fig. 6: Handmill inside which a grinder found nearby is placed, note that due to erosion the surface layer of the surrounding granite has already peeled off (MOG082)

(2a) eastern Mograt, the granite outcrop area north of the Wadi Al-Firsib (4 sites, fig. 1)

(2b) western Mograt, transect from the northern to the southern Nile banks to cover all present landscape features and height levels (15 sites, fig. 2)

(3) Qurta Island, north of central Mograt, granite outcrop area (2 sites, fig. 7).

Landscape and memory

One of the main study interests of the Late Prehistoric Survey project is the former human interaction with past landscapes involving the access to its relics in the present landscapes. As landscapes we understand not only the island's specific topography or geology, or, more generally, nature and its capability to transform over time. Landscapes are also social constructions, providing cultural-spatial orders for humans, animals and plants as well as for the deceased and for the spirits. This order is established by defining living spheres with various rights and resources, transitional spheres such as tracks and rivers, or spheres of memory that can also act as liminal spheres to access transcendental forces (e.g. rock art sites, specific rock formations, burial sites). All of these spheres are actively created and maintained by a society.[14] As humans have probably never entered an 'empty' landscape, during each period new links between humans and their environments were imposed on existing links. In this sense, landscapes do not only constitute palimpsests in an ideological way – meaning the cultural superimposition of various rights and rules -, but also palimpsests in a

14 Schama 1995.

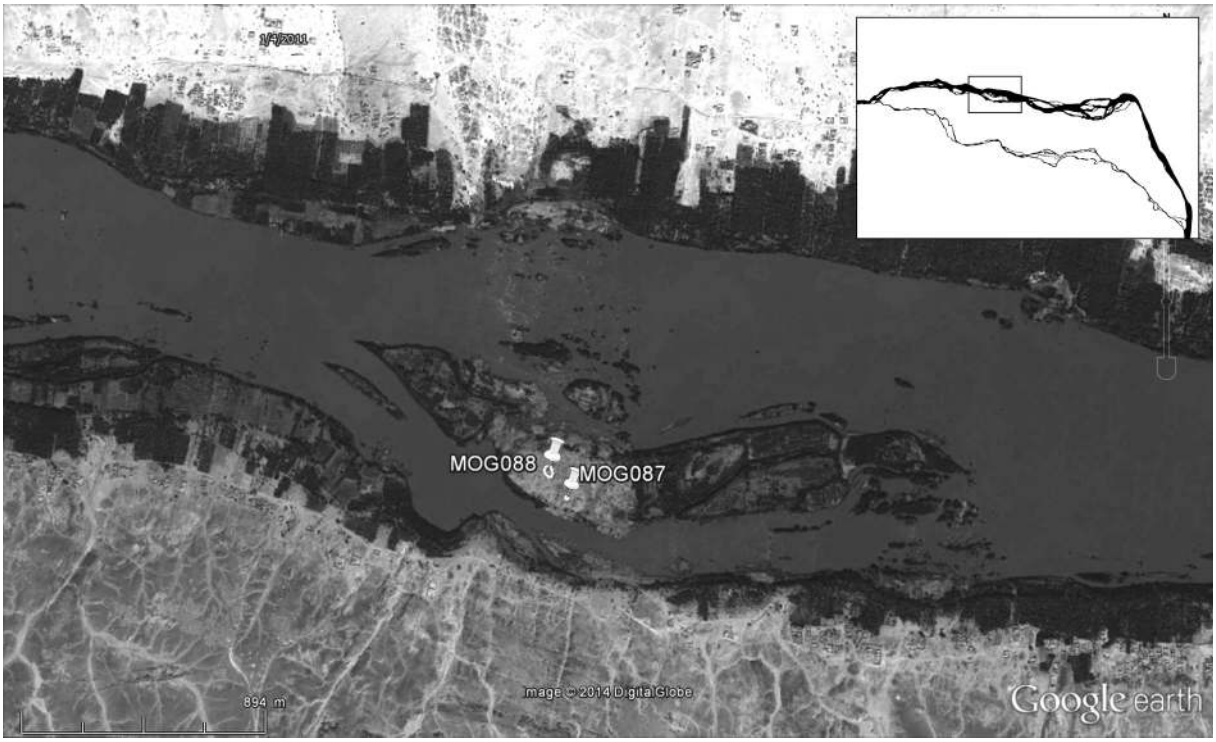

Fig. 7: Satellite image of Qurta Island crossed by a North-South oriented granite ridge

strict material way – the superimposition of material remains (artefacts, ecofacts) of various periods and activities.[15] In the case of the plateau near Karmel, for instance, it is indicated that Kerma burials were dug at the place of an extensive former early Holocene settlement site.[16] Other examples for human-landscape interconnections are the recognition, collection, and manipulation of middle Palaeolithic artefacts during the Neolithic period, modern field archaeology itself, or the recent disturbance of prehistoric sites in the course of gold mining activities. Though such aims and activities cannot always be exactly determined for the past, there is a qualitative difference in sites, ranging for example from the knapping of one flake – a procedure that has been conducted at almost every square metre of the island's main geological feature, the great pebble plains – to the regular dumping of early Holocene household remains at Nile terraces. In fact, it turned out that different environmental settings and site features called for different modes of investigation, therefore we did not consider it appropriate to summarise all of the sites in one scheme. However, it is worth describing them from the angle of different landscapes.

15 Bailey 2007; Olivier 2011.

16 Näser 2008; Schulz 2008.

The granite outcrops

Four sites (Tab. 1) were marked by grinding traces at rock surfaces, usually at a windy spot, forming oval handmill negatives. As such grinding depressions are connected to specific properties of the stone, they are only found in the area of granite outcrops,[17] the rock surfaces often being devoid of any artefacts which have been completely washed away (fig. 5). Additionally, some of the grinding depressions were already damaged or destroyed by cracks due to the peeling off of weathered outer rock shells (fig. 6). This would suggest a dating to at least the late Holocene period when processes of erosion intensified, if not earlier.[18] The field of granite outcrops at the northern

17 Also at the Fourth Cataract they have been observed occurring in groups at granite outcrops, usually close to the river (cf. Dittrich et al. 2007: colour pl. 19).

18 Despite the fact that their function is commonly prescribed as profane 'handmills' their standardised sizes (length 25-45 cm, width 15-25 cm, depth 4-8 cm) and oval shape would not exclude more symbolic markings or extractions of the rock. They recall cup marks and grooves frequently observed in connection to the world-wide megalithic phenomenon and were thus neutrally called 'elongated hollows' by Kleinitz (2012: 45, pl. 11.5). At the site MOG085H two handmills were closely related to a (more recent?) rock gong pointing to a diachronic interest in certain rock formations as discussed also by Kleinitz (ibid.).

Fig. 8: View of the main car track along the island's crest at which four Neolithic sites were located

Fig. 9: Flat circular grinder as found close to the island's main car track (site MOG102)

margins of the Wadi Al-Firsib (cf. fig. 1) bears many traces of a former water passage such as whirlpools (*Strudeltöpfe*) making it very probable that it once constituted a cataract-like landscape. Today it lies completely deserted (fig. 5). Two sites have been located there that belong to the late Neolithic and Kerma periods. They were characterised by a high amount of quartz flaking, by discoid flint cores for obtaining small flakes (fig. 21.17, 18) and by pottery concentrations connected to the presence of hand-mills and grinders. As the outcrops outstand over the alluvial plain by only a few metres, their occupation would have been possible when the palaeo-channel's activity was already significantly reduced. Despite the alluvial fill between the outcrops contained a vast amount of artefacts of several prehistoric periods, all of them have been washed down from the rock surfaces and the former covering soil. A similar washing down could be observed at Qurta Island where the only prehistoric site in place was marked by grinding depressions at the granite rock surface (MOG087).

It is also noteworthy that the rock art site of As Sihan[19] is situated in an impressive granite landscape consisting of rounded boulders ('woolsacks') which were shaped by spheroidal weathering. From far away it might have given the impression of a resting animal herd or of indiviual large animals. Some petroglyphs have been tentatively dated to the climatic optimum during the early and mid-Holocene.[20] We plan to continue the Late Prehistoric Survey in the southern hinterlands of the site.[21]

19 Described by Ahmed (1971: 15) and recorded by H.U.N.E. as MOG045 in 2006 (Näser 2006; Lange 2012). It has been also the subject of an unpublished doctoral thesis of Fawzi Hassan Bakhiet Khalid (University of Lille, 2009).

20 Namely that of elephants (Lange 2012: 264, fig. 4).

21 During a short visit a number of grinding depressions ('handmills') were found near a characteristic granite boulder formation south of the village.

Topography	structure of sites	artefact density	secondary artefact density	research strategy	height of area	sites of MIAMI 2014
a) granite outcrops fields (former cataract areas) b) island formed by granite ridge	handmills at rock surfaces, light to dense scatters	low to absent	Horizontal redeposition, artefacts washed down from the rock surfaces, high density in alluvial fills between rocks	mapping	317-321 m 309-311 m	MOG082, MOG083, MOG085H MOG087, secondary alluvial fill: MOG088
pebble plains a) at bars protruding to the Nile banks b) at the watershed	light to dense scatters, hard to recognise due to pebble texture	medium	horizontal redeposition through small khors (washing)	mapping, surface collection	316-322 m 325-327 m	MOG100, MOG101, MOG103, MOG104, MOG109, MOG110 MOG086, MOG102, MOG105, MOG108
pebble plains, above alluvial sediments	not visible at the surface	low to absent	freshly broken artefacts randomly brought up through recent digging activities (pit fields)	mapping, test excavation	321-323 m	MOG079, MOG085
hammada above basement	light to dense scatters, easy to recognise as most materials are alien to the pre-cambrian basement complex	medium, often heavily eroded	vertical re-deposition due to desiccation cracks and other dynamics of hammada surfaces	mapping, surface collection (test excavation)	319-325 m	MOG077, MOG078, MOG079, MOG080, MOG081, MOG084
alluvial plains (Nile terraces), hammada above silt sediments	light to dense scatters, easy to recognise as most materials are alien to alluvial environments (except mollusks)	medium to dense, often calcified	vertical and horizontal re-deposition due to deflation, washing and soil erosion	mapping, test excavation, surface collection	308-313	MOG106, MOG114, MOG115, MOG116
silt mounds	stratification, ecofacts (mollusks) present	-	vertical re-deposition	logging, test excavation, extracting of mollusks	305-312	MOG107, MOG116

Tab. 1: Mograt Island. Sites of Late Prehistoric Survey MIAMI 2014 according to their specific environments

The hammada

In continuation of previous work carried out on Mograt Island, the main mission camp was based at the village of Karmel in sight of the great plateau[22] that contains the prominent silhouettes of Kerma tumuli. However, beside that there are frequent finds of early to mid-Holocene occupation. The plateau was intensely surveyed in 2006[23], 2008[24], and again in 2014. It is one of the highest points of southeastern Mograt (c. 323 m) and when the Nile palaeochannel of the Wadi Al-Firsib was active, it must have been part of an individual island (cf. fig. 1). The plateau's surface is characerised by a blackish hammada (fig. 3) while to the east a vast pebble plain (fig. 12) has accumulated probably through the main Nile channel.

The hammada ('rocky desert') is a weathering phenomenon forming so-called lag deposits[25] above ridges of the precambrian basement complex. At Mograt Island it appears as a dark coloured pavement of broken to grained gneisses, schists and other metamorphic rocks[26] often showing a desert varnish.[27] As most archaeological materials such as flint,

22 Though it does not belong to the Al Karmel area as indicated by Schulz (2008) but to the village of Al Sayyal (pers. comm. Hassan Mustafa Alkhidir).

23 Näser 2006; Lange 2012.

24 Näser 2008; Schulz 2008.

25 Laity 2008.

26 Whiteman 1971: 39.

27 The dark-coloured rock varnish is presently attributed to a process where bacteria at rock surfaces fix manganese and iron that are then cemented by clay minerals (Dorn 2009: 166). Also potsherds can be coated by desert varnish. The

Fig. 10: Modern house on top of a pebble bar protruding to the Nile valley – also a preferred location during Neolithic times

agate, quartz, bones or potsherds are alien intrusions against the background of the dark hammada, sites at hammada surfaces are easily recognised (fig. 4). They often contain a visibly high frequency of lithic artefacts, however, there is no indication that they mark original prehistoric surfaces. The hammada's development oscillates between deflation, surface wash through rains, as well as aeolian sedimentation resulting in the vertical movement of artefacts accounting for statistical biases when excavated in stratigraphical layers.[28] Usually there is a high level of surface finds, contrasting with few or even absent finds at the first layer, deeper down followed by more moderate frequencies.[29] As the decay of the basement progresses from the top down, finds get buried more deeply over time. In such environments the method of excavation will probably not reveal former early Holocene surfaces that must have existed well above the present level. It is only with the excavation of former depressions such as pits or natural cracks that archaeological contexts might be uncovered.[30] In 2008 altogether 24 square metres had been excavated at site MOG064, revealing a rich inventory of lithics, potsherds, ostrich eggshell beads and mollusk shells[31] that are analysed within the framework of the current project aimed also at gaining chronological precision by means of radiocarbon datings. We decided to additionally carry out a systematic surface collection at the nearby site MOG027, especially to investigate the spectrum of Holocene lithics.[32] Covering an area of almost 5,200 square metres, this site belongs to largest so far recorded at eastern Mograt. The pottery fragments show a broad range from Mesolithic decorations such as incised wavy-line (fig. 20.1-3), rocker stamp (fig. 20.4, 6) and double-pronged tool impressions (fig. 20.8), to Neolithic, late Neolithic and Kerma period decorations comprising impressed plain zigzags (fig. 20.9) and wolftooth patterns (fig. 20.5), commonly known from other areas in the Sudanese Nile valley.[33] However, a peculiar impressed fish-scale decoration (fig. 20.7) seems to be restricted to the area between Mograt Island and the 5th cataract.[34]

excavation of nearby Kerma burials at MOG034 revealed that the rock varnish of stones set up as grave markers did not reach below the present surface so that the coating seems to be a rather recent phenomenon, i.e. of the last 3,000 to 4,000 years.

28 Cf. Dittrich 2011: 119-127.

29 As discussed in detail by Laity (2008: 165) it is assumed that the upper silty layer is a quite recent aeolian accumulation – comparable to loess – uplifting the small-sized and today patinated finds to the present surface while significantly separating them from the more fresh-looking finds buried at greater depths. When cleared in the course of excavation it often shows a columnar structure that is attributed to the alternating shrinking and swelling of clays (ibid.: 164).

30 However, since disturbed hammada pavements tend to regenerate themselves due to constant surface dynamics, the surface will not indicate the presence of those (Laity 2008: 166).

31 Schulz 2008.

32 MOG027 was initially recorded in 2006 (Lange 2012). Interestingly, both sites show a constant proportion of Middle Palaeolithic stone artefacts (up to 4 %) both at the surface and at deeper levels.

33 Cf. Arkell 1949; Arkell 1953; Nordström 1972; Haaland and Magid 1995.

34 Cf. Alkhidir, in prep.

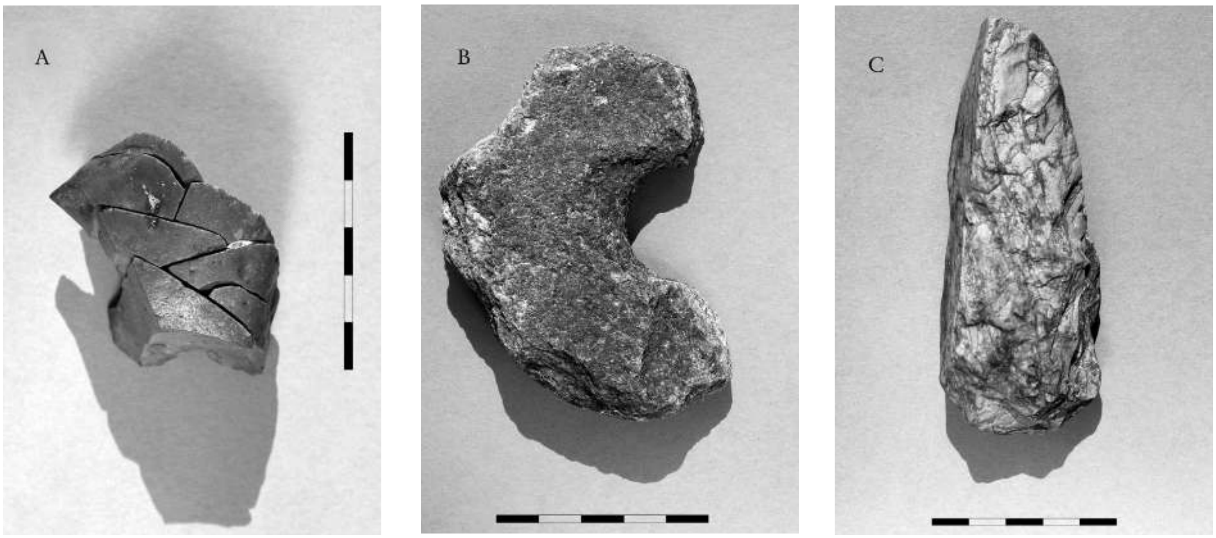

Fig. 11: A. refitted flint pebble core sliced into segmented flakes (strayfind); B. stong ring fragment (MOG106), C. a probable siltstone gouge (MOG049)

Since hammada surfaces are – geologically seen – the oldest archives of Mograt Island, the chronological spectrum of lithics is one of the broadest, including not only Middle Palaeolithic but also by Upper and Late Palaeolithic artefacts such as long blades, burins, or thick end scrapers. Among the early Holocene lithics are very small and narrow backed points with less than 2 cm in length (fig. 21.2), geometric microliths (fig. 4), a high frequeny of micropoinçons, also known as double-backed points or borers (similar to fig. 21.7) and a thumbnail scraper (fig. 21.3). Small conical cores show a focus on bladelet production (fig. 21.8, 21). The presence of late Neolithic to Kerma period lithics is indicated by numerous small quartz pebbles commonly sliced into segments. One of the future research objectives for the plateau southeast of Karmel is to clarify if sites such as MOG026, MOG027, MOG029 and MOG064 belong to one large and dispersed Holocene occupation zone, or if they are the result of a horizontal stratigraphy that is an outcome of multi-period shifting occupations. Although the variation within the finds would indicate the latter, at the first sight there is no good reason why this place was repeatedly chosen for habitation given its great distance to the Nile terraces and its rocky desert appearance today. Only when the climatic shift during the early Holocene is considered that resulted in a higher water level and the activation of the palaeochannel of the Wadi Al-Firsib, it can be imagined that the plateau once stood out as an individual island located right at the great bend of the river Nile.

Fig. 12: Pit fields east of the main hammada plateau of SE Mograt

Wadi Al-Firsib

The hammada plain extents northwards until the southern margins of the Wadi Al-Firsib (fig. 1) which has dried up today and is currently being transformed into cultivated land. At the narrowest point, which is about 600 m wide and still used for the Magal-Karmel car track today, there is a prominent rocky mound overlooking most of the wadi course. The archaeological site located on top (MOG081, 321 m) covers a total area of 9,400 square metres, and its occupation during prehistory should also be seen in connection with the former function of the wadi as a palaeochannel of the Nile. The finds at this spot range from the Mesolithic to the Kerma period. The occupation of the northern wadi margins is marked by four sites (MOG082, MOG083, MOG084, MOG85). While the sites on top of granite outcrops yielded remains of the late Neolithic to Kerma periods (MOG082, MOG083) it was only at site MOG085 that Mesolithic to early Neolithic finds have been found. Presumably, these sites are subjected to a horizontal stratification, with the more recent settlements moving closer into the bed of the palaeochannel after it dried-up. At the furthest point marked by site MOG085 the granite outcrops become more and more covered by the pebble plains, and most of the finds were randomly brought up from lower calcified silt layers through recent digging activities. Alluvial sediments containing calcified roots and stems can be observed in valleys to both sides of the Wadi Al-Firsib accounting for the former existence of ephemeral lakes and ponds. As the rocky mound containing site MOG081 is surrounded on all sides by calcified silt sediments it must have stood out as an individual island while the valley was flooded. The chronological sequence of the activity of the Nile palaeochannel and its implications for the occupation and land-use along the modern Wadi Al-Firsib will be one of the main future research objectives.

The pebble plains

It is almost paradoxical that Mograt Island when we cross it today, along the highway on the main ridge, looks for great parts featureless and like a desert pebble plain (fig. 8) but that below this superficial view it in fact offers a very patchy landscape. The pebble plains (serir) are frequently cut by khors and wadis running in dendritic shapes to the north and south of the main ridge which constitutes the island's watershed. The closer one gets to the Nile banks the deeper the khors appear sometimes reaching roughly 10 m in depth and separating numerous elongated basement bars covered with pebbles. Today these bars are too narrow to support a whole village so that settlements appear quite dispersed. At western Mograt the pebble bars protruding to the Nile banks (fig. 2: MOG100, MOG101, MOG103, MOG104, MOG109, MOG110) almost regularly held Holocene artefacts, mainly lithics from the Neolithic to the late Neolithic and Kerma periods. Currently, it cannot be decided whether the bars had been used as actual habitation sites – as it can be seen today (fig. 10) –, or if they were just preferred as remote knapping sites overlooking the villages located on the lower Nile terraces. Stretching over the whole length of the island, the pebble plains provided much of the raw materials required for lithic tool production, offering numerous flint varieties, silt stones, among them a significant green variety, quartzes, a porous ochre jasper as well as the sought-after agate pebbles of both the translucent and the opaque-banded varieties. Surface finds of lithic artefacts frequently date to the Neolithic period (fig. 21.13, fig. 11c).

Fig. 13: Potsherd decorated with wavy-line incisions brought up through disturbance at site MOG078

The pebbles that must have been originally accumulated through high energy water activity often directly overlay the basement complex[35] and filled up former khors and cracks. No artefacts have been found in these fillings, so far, pointing to a relatively high age of the initial deposition event. However, differences in the quality and sizes of pebbles indicate intense later re-deposition and sorting of pebbles. In various parts of the island they actually overlay silt sediments often with calcified roots and inclusions that probably originate from the African Humid Period spanning from the late Pleistocene to the mid-Holocene.[36] As in subrecent and recent times

35 Cf. Ritter 2008.

36 As recently dated by deMenocal et al. 2000. For a general

Fig. 14: Hammada plains at SW Mograt with Holocene stillwater sediments inside a khor valley (centre, site MOG116), in the background the Bayuda volcanic field

Fig. 15: Panorama view of site MOG106 (right, in front of the car), the early holocene silt stratigraphy MOG107 (centre) forming a barrier to the wadi (left)

fertilizer (marog) and lime colour have been extracted from the calcified sediments, these pebble plains have been turned into vast pit fields (fig. 12) even visible from satellite images.[37] At two of the located sites (Tab. 1) such activities brought up older Holocene material that must have been formerly included in the lower silt layers. Wavy-line decorated pottery (fig. 13) has been noticed among those stratified finds pointing to a chronologically older position than pottery decorations that have so far been found only at surface sites.

Such surface sites are represented by a group of four sites (fig. 2: MOG086, MOG102, MOG105, MOG108) that have been found on top of the main island's pebble ridge currently used as a car track,[38] although no sites were expected to have existed in this place. All four sites bear similarities as to the presence of grinders, potsherds and lithics. The latter mostly comprise a flaking industry characterised by the frequent use of the slicing technology which is typical for the early and middle Neolithic period (cf. also fig. 11a).[39] Backed or partly backed segments (fig. 21.9, 10) sliced from cortex platform cores (fig. 21.20) are frequent while macrolithic scrapers and irregularly retouched flakes (fig. 21.11, 14) are present as well. Grinders were commonly of a flat disc-shaped type (fig. 9) and included a variety of peculiar raw materials such as porphyry or a sandstone breccia that must have been imported to the island.[40] The pottery is almost exclusively decorated by dense rocker stamp fillings (fig. 20.11-16),[41] while vessel rims can be modelled as waved rims (fig. 20.12). It appears that these four sites, ranging in size between 1,000 and 4,900 square metres, corresponded to each other and were occupied almost contemporaneously. As they were far from the Nile and its resources, such as water, arable soils or clays, the reasons for their location must be sought beyond such pragmatic thoughts.

Nile history cf. also Fairbridge 1963.

37 Which in turn could be used to map the distribution of calcified alluvial sediments due to this specific kind of marking the landscape.

38 Darb al Gahaba (Ritter 2008: 79).

39 Kobusiewicz 2011.

40 The quarry for a white crystalline quartzite, however, has been located at the centre of the island.

41 Banded varieties appear quite similar to those recorded at Holocene sites at the Atbara junction further upstream (cf. Haaland 1995: fig. 4).

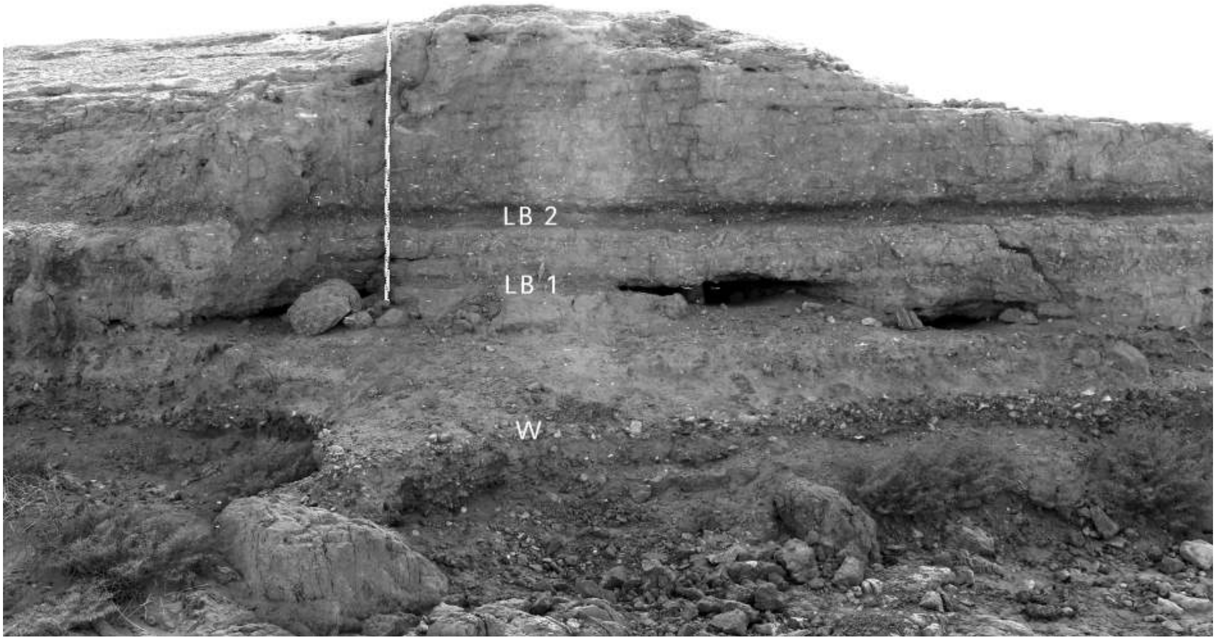

Fig. 16: Natural section at site MOG107 showing a sequence of wadi activity (W) and at least two early Holocene lakebeds (LB, length of scale: 2 m)

The Nile terraces

The lower Nile terraces that are preferred as living spheres today comprise the transitional zone between the pebble plains protruding from the island's centre, the hammada as a weathering surface of the basement, and the alluvial plains. Also for cultivating communities of the past, the Nile terraces would have been attractive, however, often these sites are reworked through more recent building activities, surface clearings, car tracks or field terracing. While in a few cases, terraced sites ranging in size between 2,700 and 6,700 m² were found between modern villages, their low number compared to sites in other locations (Tab. 1) is most significant. It was observed that basement ridges running parallel to the Nile courses formed the margins of such levelled terraces

Fig. 17: Shells of *Cleopatra bulimoides* collected from the section at MOG107

and served as a barrier holding back sediments and finds from being washed down. The main direction of erosion is, of course, from the upper to the lower terraces and is constantly followed up by small khors cutting through them and relocating archaeological material. Rather unexpectedly, these low sites do not only contain finds of the Neolithic and Kerma periods, among them irregular scrapers (fig. 21.11) and a fine continuously retouched flint piece (fig. 21.15), but also of Mesolithic age. Test excavations can show if this is due to periods of low Nile levels during the early Holocene, allowing for settling close to the Nile, or if this is an outcome of the downward movement of finds as discussed above.

Although the alluvial plains are mainly shaped by recent to sub-recent inundation events, in certain protected places, such as the deep valleys of former khor channels, silt layers of Late Pleistocene to Holocene age have been preserved[42] in their stratigraphical order (fig. 14). At MOG107 a stratigraphy at a natural section measuring 4.10 m in height has been recorded in detail (fig. 15, 16). It lowest sequences started several metres above the present water level of the southern Nile branch, meaning that the Holocene water level must have been more than 10 m higher than today. The lower levels consisted of a wadi fill mainly made of unpatinated pebbles that only recently became a severe target for gold-mining activities. For the purpose of screening this layer has

42 Cf. Ritter (2008).

site/ sample no.	material/ species	context	height (above local NN)	lab no.	conventional 14C age	calibrated 14 C age (1st sigma)	calibrated 14 C age (2nd sigma)
MOG107-02	shell of *Lanistes carinatus*, Olivier 1804	silt stratigraphy, south wall	2.23 m	Poz-63633	9030 ± 40 BP	8282–8245 calBC	8300–8213 calBC
MOG107-04	shell of *Cleopatra bulimoides*, Olivier 1804	silt stratigraphy, lakebed 2, north wall	2.33–2.43 m	Poz-63634	9680 ± 40 BP	9245–8956 calBC (9245–9142 calBC; 64.1 %)	9261–8917 calBC
MOG107-05	shell of *Lanistes carinatus*, Olivier 1804	silt stratigraphy, north wall	2.54 m	Poz-63636	8975 ± 35 BP	8274-8021 calBC (8274–8206 calBC; 63.3 %)	8281–7984 calBC

Tab. 2: Mograt Island. Radiocarbon dates for snail shells from MOG107 (MIAMI 2014)

already been widely extracted (fig. 16). No Holocene but a few Palaeolithic artefacts were found among the pebbles. The wadi pebbles were covered by sands changing to silts in the upper portion of the section. As their structure points to stillwater sedimentation, the former existence of lakes along the southern Nile branch must be considered. The upper layers were intensily intermingled with calcified roots – most probably of papyrus and reed – so that these levels could be identified as the former lake beds (fig. 16). Various mollusk samples have been collected from these layers. The smaller species most probably belong to the freshwater snail *Cleopatra bulimoides* (fig. 17), and the carinated shells of some individuals strongly point to the prevailence of lacustrine environments.[43] The sudden death of a great number of individuals is commonly attributed to the abrupt desiccation of the lake.[44] The other identified species is the apple snail *Lanistes carinatus* which is able to breath with lungs and to survive in the mud after the retreat of the inundation. It is a typical inhabitant of the alluvial plains grown with an acacia-tall-grass community and being flooded for a significant part of the year.[45] The radiocarbon dates for the middle sequence (fig. 16: lakebed 2) indicate two events dated to 9,200 calBC suggesting more permanent lacustrine environments and to 8,250 calBC pointing to seasonal flooding of the lake (Tab. 2).

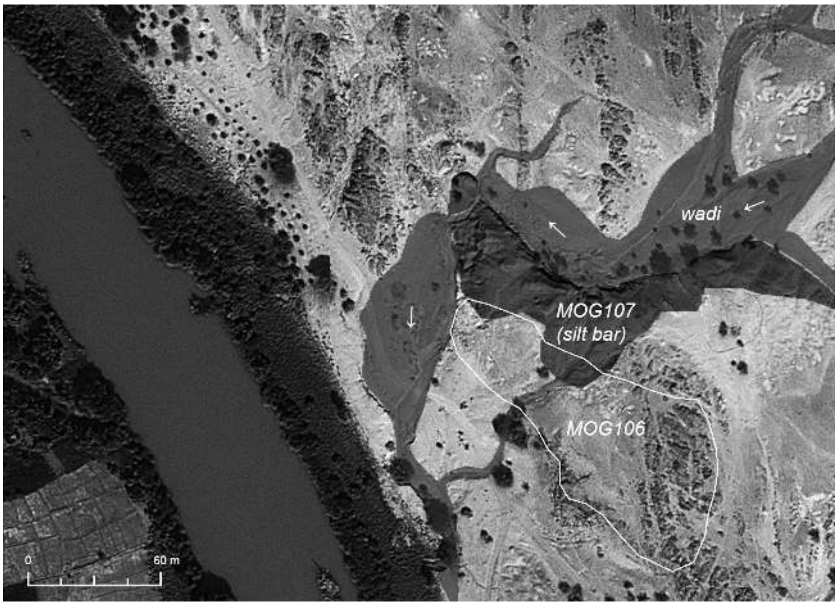

Fig. 18: Site MOG106 at a Nile terrace being closed off by a silt mound (MOG107) from the wadi passage

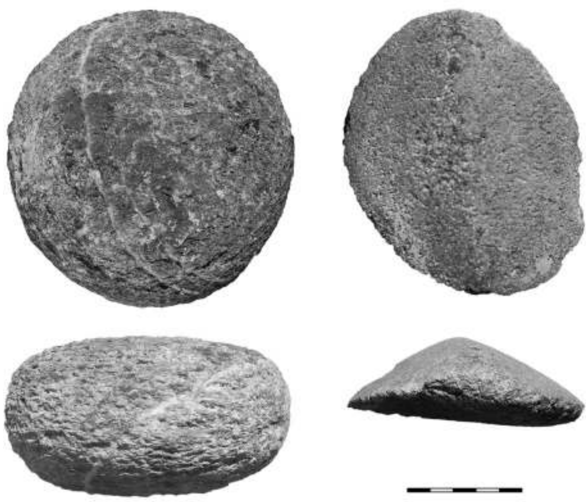

Fig. 19: Two stages of usage for grinders: a) roughly pecked circular blank, b) used piece heavily ground at three sides (both MOG106)

43 Van Damme 1984: 23.
44 Cf. Plaziat and Younis 2005.
45 Cf. Tothill 1946. Today it is not found between Khartoum and the Nile delta anymore (van Damme 1984: 11).

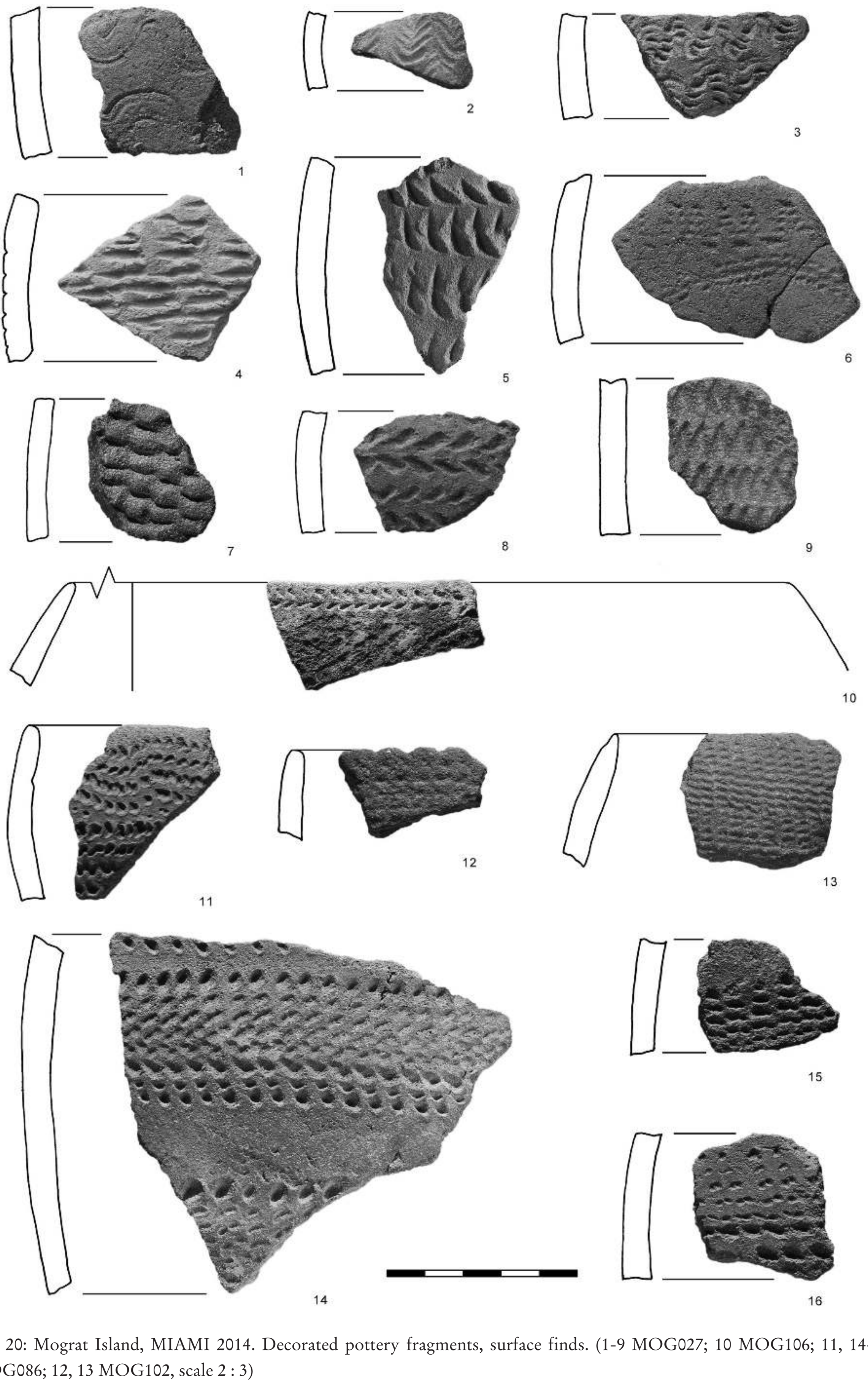

Fig. 20: Mograt Island, MIAMI 2014. Decorated pottery fragments, surface finds. (1-9 MOG027; 10 MOG106; 11, 14-16 MOG086; 12, 13 MOG102, scale 2 : 3)

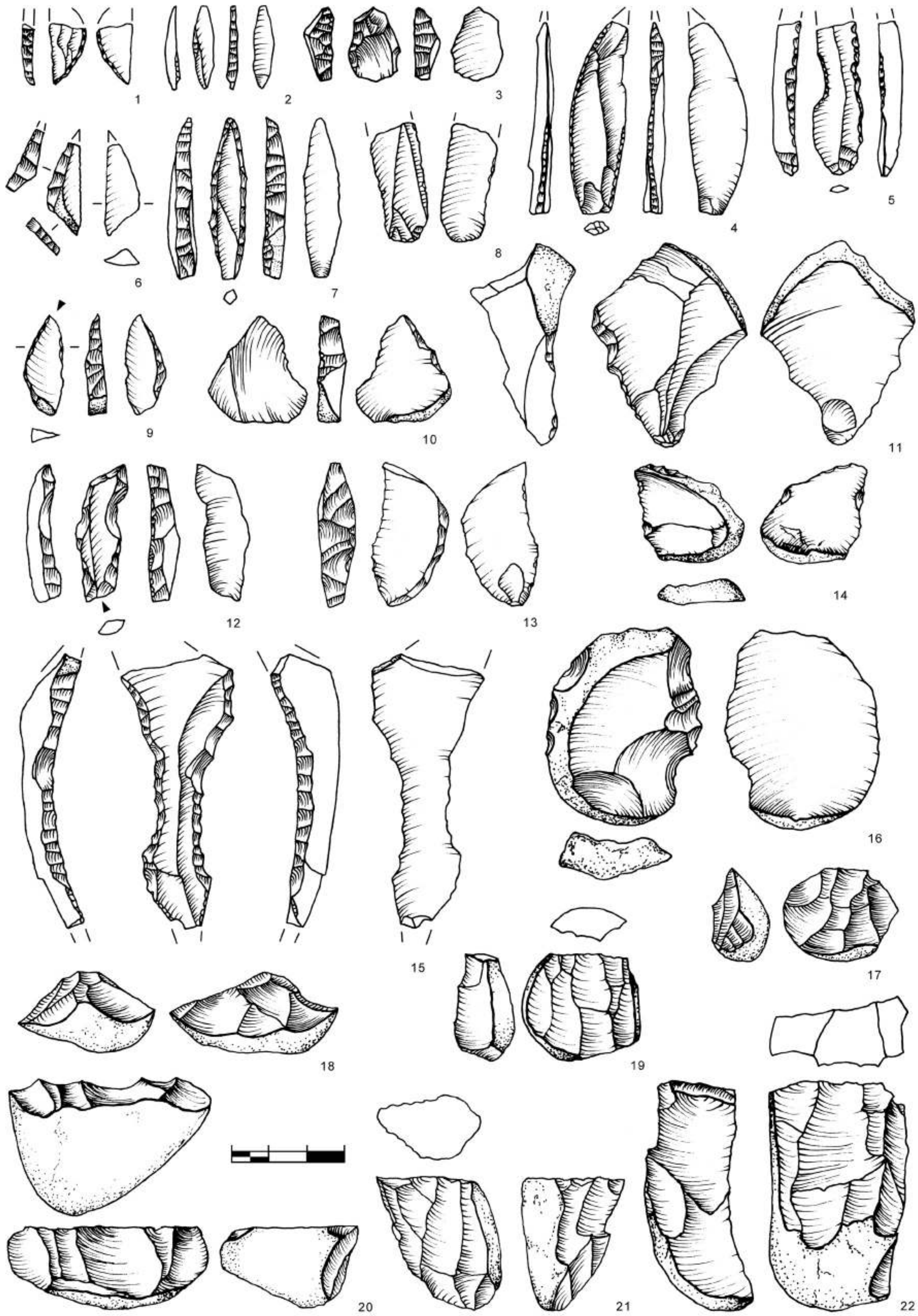

Fig. 21: Mograt Island, MIAMI 2014. Lithic artefacts, surface finds: 1 lunate; 2, 4 backed points; 3 thumbnail scraper; 5 notched blade; 6 triangle; 7, 12 micropoinçons; 8 blade; 9, 13 backed segments; 10, 14 partly backed segment-flakes; 11, 16 retouched flakes; 15 continuously retouched piece; 17, 20 cortex platform cores, 18 discoid cortex platform core, 19, 21, 22 single platform cores (1, 4-7, 19, 22 MOG106; 2, 3, 8 MOG026; 9, 10, 20 MOG086; 11, 12 MOG114; 13 MOG079; 14, 16 MOG108, 15 MOG115; 17, 18 MOG082; 21 MOG078; scale 2 : 3)

At two sites, MOG116 (fig.14) and MOG106 (fig. 18), artefacts were found embedded within the silt layers. At MOG116 Neolithic potsherds have been freshly weathered out of the upper silt layers. At the northwestern part of MOG106 this situation was even worse as artefacts have not only been weathering out for a long time – potsherds tended to show a desert varnish – but almost half of the site's surface had been removed by the aid of machinery piling up a heap consisting almost completely of artefacts.[46]

In addition, the reminder of the site showed traces of recent digging that might be connected to the search for gold. Nevertheless, a random surface collection revealed a broad and interesting spectrum of lithics, ranging from large blades and backed points (fig. 21.4), to micropoinçons (fig. 21.7) as well as microlithic lunates and triangles (fig. 21.1, 6). The long blade tradition, which is rare in the Nile valley, in particular points to a very early date within the Holocene sequence.[47] Several grinders of the three-sided type with a triangular section (fig. 19 right), an unused, roughly pecked granite grinder (fig. 19 left)[48] and the fragment of a flat stone ring (fig. 11b) have been found at the surface. The systematic excavation of one square metre at MOG106 to the depth of 0.4 m resulted in the recovery of 1,713 lithic artefacts, 154 animal bone fragments and 69 potsherds. These counts show that the settlement debris seems already to be quite compacted in the upper layers as a left-over after the deflation of former top soils, being furthermore subjected to slope-downward movements. At a depth of c. 0.30 m traces of fire such as ashes, burnt clay and burnt animal bones[49] were detected. Pottery decorations mostly comprise rocker stamp fillings (fig. 20.10) but also double-pronged tool impressions both at the walls and the rims (fig. 20.10) as well as incised wavy-line. With MOG106 we face the paradoxical situation that part of the site is situated in the midst of a former wadi channel (fig. 18), but has been preserved because the stillwater silt sediments of MOG107 had formed a large bar blocking and re-directing the passage of the wadi (fig. 15). Despite this, we are optimistic about that the stratigraphical situation as a whole – namely of site MOG106 being interconnected with the silt stratigraphy MOG107 – will allow us in future to get a chronological precision for successive events such as the presence of more permanent lakes, flood plains and dry shores either suitable for or hindering human occupation. Additionally, it can be expected that further excavation will uncover a significant amount of early to mid-Holocene settlement remains.

Conclusions

The relatively late intensification of the modern settlement on Mograt Island provides almost perfect conditions for a walking survey dedicated to locating late prehistoric remains. Despite the fact that the island contains an unusally high density of tumuli of different periods no Neolithic graves have been found so far during these surveys. However, as usual, time is pressing as construction work is intensified, and enormous irrigation channels already cut their way through eastern Mograt.

The patchy topography visible in pebble bars and dendritic khors at the island's centre finds its continuation in cataract landscapes at the Nile banks and in numerous small islands many of them densily overgrown. Today this requires a specific interaction with the landscape resulting in fields squeezed into small terraces and islands. Also the number of animals herded together is generally low and confined to household economies. Few large herd animals like cattle and camel can be seen, while donkeys are still an important means of transport, the feeding of which requires a considerable proportion of cultivated lands. By contrast, the variety of cultivated vegetables and fruits seems extensive. We have every reason to assume that the patchy landscape, accounting for the diversity both in individual land-use as in biological niches for faunal and floral species is one of the main characteristics of the riverbanks of Mograt Island. In the long-term perspective, covering the prehistoric past, we can combine this with the dynamics of the North African Holocene climate and the river regime of the Nile, allowing for oscillations in the direction of enhancing biological diversity – present in lacustrine sediments and in faunal and floral remains of species today extinct in that area – as well as in the opposite direction of increasing desertification. As a result we suggest that the landscape of Mograt did not suit the centralisation of power

46 By means of satellite images this activity can be attributed to the period of the last two years.

47 Cf. e.g. Dibeira West 53 in Lower Nubia (Schild et al. 1968).

48 As R. Haaland observed in an ethnoarchaeological study in Darfur in 1978, grinding stones were related to female activities (Haaland 1995: 164-165). Each woman used to roughly peck grinders at a specific quarry area and to bring them to the village for further processing. Kleppe (1982: 148) noted that specific grinders were in use for subsequent procedures at Mograt Island as late as the 1950s, and due to a scarcity in raw materials, grinders used to be personal or household possessions.

49 A dating failed due to the degree of fossilation and the insufficient content of carbon.

exercised by the monumentalisation in the amount of herded animals as previously observed for the Khartoum region or Upper Nubia during the Neolithic period. However, the rock art of As-Sihan suggests that the prehistoric island(s) of Mograt became a centre of a different kind, manifest in spirituality and in strong relations to uncountable ancestors.

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Zusammenfassung

Der Late Prehistoric Survey bildet als Teil des Mograt Island Archaeological Project (MIAMI) die Fortsetzung der in den Jahren 2006 und 2008 durch die Humboldt University Nubian Expedition aufgenommenen Arbeiten auf der Nilinsel Mograt. Als ein spezialisiertes Prospektionsvorhaben dient er der Auffindung und Untersuchung früh- bis mittelholozäner Siedlungsgebiete und Aktivitätszonen (10000-3000 v. Chr.), die über intensive Oberflächenbegehungen, GPS- und GIS-gestützte Luftbildauswertung sowie Testgrabungen erfolgen. Besonderes Augenmerk gilt der Erfassung der naturrräumlichen Gegebenheiten, um die Fundplätze als Orte spezifischer Interaktionen zwischen Menschen und ihrer Umwelt zu charakterisieren. Landschaften bilden in dieser Hinsicht soziale Konstruktionen, welche die dichte zeitliche Überlagerung von ideellen Bezügen (Nutzungsrechte an Ressourcen, Zugang zu mit Ahnen assoziierten Orten und transzendentalen Welten) als auch von materiellen Hinterlassenschaften als räumlich erfassbare Einheiten (Palimpseste) beinhalten. Während der vom Januar bis März 2014 andauernden Feldkampagne wurden insgesamt 26 Fundstellen lokalisiert, die sich verschiedenen Naturräumen zuordnen lassen. Auf den geologisch ältesten Verwitterungsoberflächen (Hammada) finden sich mehrphasige Oberflächenfundstellen in einem weit fortgeschrittenen Deflationsgrad, dafür aber mit wichtigen, im Niltal jedoch seltenen Hinweisen auf jung- bis epipaläolithische Klingenindustrien. Diese zugleich hoch gelegenen Areale südlich des durch das Wadi Al-Firsib angezeigten Nilaltarms bildeten im Frühholozän wahrscheinlich eine eigenständige Insel. Die Granitfelsenlandschaft nördlich des Wadi Al-Firsib zeigt mit einer horizontalen Fundstellenstratigrafie den Rückgang des Wasserdurchflusses durch den Nilaltarm während des mittleren Holozäns an. Nur in Verbindung mit Granit finden sich in den Felsen eingelassene Reibschalen. Die weitläufigen Grobkiesebenen, welche den nördlichen Teil Mograts dominieren, bedecken dagegen das präkambrische Basement und teils auch ältere alluviale Sedimente mit kalzifizierten Wurzelresten und mesolithischen Streufunden, die von einer ausgedehnten frühholozänen Seenbildung und Uferrandbesiedlung zeugen. Besser belegt sind diese Stillwassersedimente an Wadimündungen im westlichen Teil Mograts, wo ein 4,10 m hoher Aufschluss dokumentiert und über Schneckengehäuse zwei Seenstände auf ca. 9200 calBC und ca. 8250 calBC datiert werden konnten. Andererseits enthalten die Kiesebenen an der Oberfläche Funde zumeist neolithischen bis spätneolithischen Gepräges, vor allem auf dem westlichen Inselkamm. Mit vier Fundstellen bleiben die Nilterrassen als heute klar bevorzugte Siedlungsräume für die späte Vorgeschichte, sicher auch erhaltungsbedingt, deutlich in der Unterzahl. Die holozäne Raumnutzung der Insel Mograt lässt sich, angesichts einschneidender Klima- und Landschaftsveränderungen, vorläufig als vermutlich ähnlich kleinteilig und diversifiziert charakterisieren, wie es sich aus den heute noch insel- und artenreichen Uferlandschaften ergibt, die ein hohes Maß an individueller Erschließung und oft den Zugang über das Wasser erfordern. Die Ausdehnung der Tierhaltung über Haushaltsökonomien hinaus ist hingegen aufgrund begrenzter Weideflächen kaum denkbar. Andererseits bildet die bis in die jüngere Prähistorie zurückdatierende Felsbildstation As-Sihan den Ausdruck einer eng mit Tieren und der Granitfelsenlandschaft verbundenen Spiritualität.