

**FROM THE EARLY OLD KINGDOM TO THE BADARIAN.
PRELIMINARY REPORT ON THE 2012 EXCAVATION
CAMPAIGN IN THE SETTLEMENT AREA OF ELKAB**

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INTRODUCTION

Since 2009, the Belgian Archaeological Mission to Elkab from the Royal Museums of Art and History (Brussels) has shifted its attention from the rock necropolis to the settlement area of the Upper Egyptian pharaonic town site of Elkab. Two excavation seasons in 2009 and 2010 revealed the presence of a vast habitation area dating to the late Early Dynastic Period and the early Old Kingdom, situated within the Late Period ‘Great Walls’ of Elkab and immediately west of the temple area.

A 2 by 2 meter test pit was excavated in this area in 2009-2010, to a depth of almost 4 meters below the actual surface. The results indicated that the habitation dates back to Predynastic times and may even have originated in the Badarian period, suggesting that the site of Elkab was continuously inhabited for over 1500 years during late prehistoric and early historic times.

The 2012 excavation campaign aimed to expand exploration and understanding of the Predynastic occupation at Elkab. This contribution presents the preliminary results of that field season.

HISTORY OF RESEARCH

Descriptions, sketches and drawings by early travellers and Egyptologists indicate that an impressive tell, about 30 meters high, existed at Elkab (Fig. 1) at least until the middle of the 19th century. This tell was probably very similar to the partially preserved tells at, for example, Edfu and Kom Ombo. Unfortunately, the Elkab tell was dug away by the *sebakhin* and had entirely disappeared by the end of the 19th century. Based on 19th century



Figure 1. The tell of Elkab, drawn by NESTOR L'HÔTE in 1828-1830 (HARLÉ & LEFEBVRE 1993: 243).

sources, the settlement area covered by the tell can be reconstructed as more or less oval in shape, measuring about 300 by 170 meters. The northeastern to northwestern border of that area is defined by the so-called 'Double Walls' of Elkab, which date back to the late Old Kingdom (HENDRICKX & HUYGE 1989: n° 17; HENDRICKX *et al.* 2010: 160-164). The enormous quantity of sherds left on the site by the *sebakhin* was largely removed for the construction of the Luxor-Aswan railroad in 1898 (SOMERS CLARKE 1921: 59). The remaining large depression immediately west of the temple area looked rather more like a lunar landscape than a settlement area (HENDRICKX & HUYGE 1989: n° 18). Considering the extreme disturbances and destruction in this area, it is not surprising that this portion of the settlement did not attract the attention of many archaeologists during the 20th century.

However, a number of early archaeological finds attest to the presence of both Old Kingdom and Predynastic settlement remains. Small scale test excavations in this area, carried out in 1902 by GREEN (1905: 262-264) and in 1904 by SOMERS CLARKE (1905: 270-271), demonstrated the existence of Old Kingdom and possibly older archaeological material up to a depth of almost 4 meters below the actual surface. In 1938, CAPART unearthed a number of 'archaic' granaries below the temple of Nekhbet and at the northwestern corner of the temple enclosure (HENDRICKX & EYCKERMAN 2009: 2-3). Moreover, at the same time, a significant number of seal impressions from the late 2nd/early 3rd Dynasty were found (REGULSKI 2009). However, research in this area was not continued until 1955. During the 1955 excavations, an early Old Kingdom storage site was discovered on which only a brief preliminary report was published (GILBERT 1958). The limited information available from the old excavation notes has recently been reanalysed, but this only revealed a very general interpretation of the site (HENDRICKX & EYCKERMAN 2009). Part of the area excavated in 1955 was reinvestigated in 1968-1969 by VERMEERSCH, but this did not result

in a better understanding of the chronology (DEMUYNCK & VERMEERSCH 1978). However, VERMEERSCH (1978: pl. VI) noticed the occurrence of Black-topped and rippled sherds. The latter indicate the presence of the Badarian at Elkab, which is also confirmed by a typical Badarian greywacke cosmetic palette that was found reused in the early Old Kingdom storage site (HENDRICKX & EYCKERMAN 2009: fig. 14). A Naqada I or early Naqada II occupation of the site is in evidence through Nile silt sherds with vegetal temper, PETRIE's (1921) Rough ware, and a few reused Predynastic palettes also discovered within the early Old Kingdom storage site (HENDRICKX & EYCKERMAN 2009: figs. 15, 24). Black-topped sherds of similar age, among them sherds with modelled rims, have occasionally been observed within the temple area.

These various finds, clearly indicating a Predynastic presence and suggesting a possible Predynastic habitation at Elkab, are not at all unexpected. The abundance of Predynastic rock art in the desert hinterland of Elkab (HENDRICKX & HUYGE 1989; HUYGE 2002) and the important Naqada III cemetery that was excavated in 1968-1980 (HENDRICKX 1994) have made it amply clear that the Elkab area was intensively frequented during Predynastic times.

2009 AND 2010 CAMPAIGNS, TEST PIT 1 (TP 1)

The excavation campaigns in 2009 and 2010 focused almost exclusively on the late Early Dynastic and early Old Kingdom settlement (ROWLAND *et al.* 2009; HENDRICKX *et al. in press*) (trenches T 1, T 2B and T 3A-D indicated in Fig. 2). Part of the area excavated in 1955 was once more investigated in 2009 (T 1), which confirmed the interpretation of the locality as a storage zone and its dating to the early Old Kingdom (Rowland *et al.* 2009: 24-26). Directly south of the storage site, within the confines of T 1, a 2 by 2 meter test pit, TP 1, was opened in 2009 (Fig. 2); its excavation was not completed until 2010 (Fig. 3). Worked flints, stones, bones and ceramics were discovered within a yellowish brown aeolian sand deposit, situated directly below the early Old Kingdom level. This material is clearly Predynastic in nature and was dispersed over a depth of almost 2.50 meters. On the basis of the ceramics present, several chronologically distinct Predynastic occupation horizons have been distinguished¹. Moreover, at different levels, several hearths and burnt spots were identified.

The first upper Predynastic layer within TP 1 is characterised by fragments of storage jars with very wide apertures made with Nile C fabric (NORDSTRÖM & BOURRIAU 1993: 173-174). They belong to PETRIE's types R81-R84² (PETRIE 1921: pl. XLI-XLIII) (Fig. 4) and are most characteristic for the Naqada IIC-D period. They were found in connection with a number of Marl A1 sherds of PETRIE's Late class, which confirms a Naqada IIC-D

¹ It is to be noted that the limited number of diagnostic sherds from the test pits on occasion hampers the attribution of the archaeological material to the relative chronological phases of the Naqada culture as defined on the basis of seriation and horizontal distribution studies of cemeteries (HENDRICKX 2006). The attributions in the present article are therefore to be considered preliminary.

² The rim diameter of R84 is considerably smaller than that of R81 but the rims of these jars are generally irregular. It is therefore hardly possible to differentiate the two types on the basis of rim sherds.



Figure 2. Map of the Elkab settlement area indicating the location of test pits TP 1 (excavated 2009-2010) and TP 2, 3, 4 and 5 (excavated 2012).

date (see HENDRICKX 2006: 78-81). Furthermore, this layer also contained a large hearth of more than 0.90 meters wide and 0.25 meters thick. Charcoal from this feature was sampled and radiocarbon dated to 4685 ± 35 BP (Tab. 1), which perfectly corroborates the Naqada IIC-D age indicated by the pottery assemblage from this layer.

The pottery most frequently found in the layer below are Nile C sherds from storage jars. Although similar to those from the previous level, they were not found in combination with Marl A1 sherds, but with fine Nile wares and a few shale tempered sherds. Unfortunately, no characteristic vessel shapes could be identified, but this layer most likely dates to the early Naqada II period.

The third layer is dominated by shale fabric sherds (30 sherds) and contains only one Nile C sherd. The shale fabric is not entirely uniform and, in some cases, the random position of the shale particles indicates that they were added as temper to a Nile silt matrix. In other cases, the shale seems to have been a natural inclusion in the silt. Although

Table 1. AMS ^{14}C age determinations from test pits in the settlement area of Elkab. BP, radiocarbon years before present; σ , standard deviation; cal BC, calibrated calendar years before Christ (calibration using OxCal Version 3.10; BRONK RAMSEY 1995).

| PROVENANCE OF SAMPLE | HEIGHT A.S.L. | LAB NO. | BP | σ | CAL BC | |
|----------------------|---------------|------------|------|----------|--|---------------------------------------|
| | | | | | 68.2% PROBABILITY | 95.4% PROBABILITY |
| TP 1 | 81.47 m | KIA-44326 | 4685 | 35 | 3520 (15.1%) 3490 3470 (53.1%) 3370 | 3630 (9.8%) 3590 3530 (85.6%) 3360 |
| TP 3 | 80.18 m | RICH-20414 | 5446 | 31 | 4340 (27.8%) 4315 4295 (40.4%) 4260 | 4350 (95.4%) 4240 |

no distinct shapes could be recognized, the sherds seem to be fragments of large cooking vessels (see MIDANT-REYNES & BUCHEZ 2002: 262, fig. 2.14). Other sherds from this layer belong to the Black-topped and Polished-red categories. A date in the Naqada I period is proposed for this layer.

The fourth layer, at a depth of ca. 2.70 meters below the surface, contained only a few sherds. Judging from the extremely limited information available, the amount of shale tempered pottery is less frequent than in the previous layer. Furthermore, a rippled sherd was found in this layer, which should date to the Badarian or the early Naqada I period. Based on the significant difference in depth from the previous layer, the Badarian, however, seems to be the most likely option. A single shale tempered sherd was found associated with a concentration of cobbles, small flint flakes and chips at the base of the aeolian sand and on top of a clayey deposit, indicating the lowest level of this layer. These artefacts were situated within a small depression that was covered by a thin layer of coarse sand. The presence of a single hammer stone, with a diameter of ca. 8cm, suggests that this feature can be identified as a stone knapping area. However, no tools or larger fragments of flint were discovered in the immediate vicinity.

The stratigraphically intact occupation levels in TP 1 clearly suggest that the site of Elkab was continuously inhabited from the early Naqada I or, even more probably, the Badarian period, straight through into the Old Kingdom.

2012 CAMPAIGN, TEST PITS 2-5 (TP 2-5)

The main aim of the 2012 season at Elkab was to explore the Predynastic occupation of the site further.³ For that purpose, four additional test pits (TP 2, 3, 4, and 5), each measuring 2 by 2 meters, were opened about 10 meters south of TP 1, in an area that was

³ Fieldwork started on February 21, 2012 and ended on March 15, 2012. The team consisted of DIRK HUYGE (director), WOUTER CLAES (field director), MORGAN DE DAPPER (geomorphologist), STAN HENDRICKX (ceramicist), SALIMA IKRAM (archaeozoologist), ANNE DEVILLERS, ELIZABETH HART and KARIN KINDERMANN (archaeologists), and GEERTRUI STORMS and CARLA SWERTS (draughtswomen). Funding for the 2012 campaign was provided by the WILLIAM K. and MARILYN M. SIMPSON Endowment for Egyptology of the Department of Near Eastern Languages and Civilizations, Yale University (New Haven). In addition, the Netherlands-Flemish Institute in Cairo (NVIC) and Vodafone Egypt offered administrative and logistical support.



Figure 3. South profile of TP 1 showing the thick aeolian sand deposit (light grey) beneath the Old Kingdom level (dark grey). At the base of the sequence are the alluvial silt (floodplain) deposits.

not covered by the spoil heaps of the 1937-1938 temple excavations (Fig. 2). The objective was twofold: to gain a better insight into the stratigraphy of the area and to document the extent and nature of the Predynastic habitation at Elkab.⁴ The line of test pits runs from east (TP 2) to west (TP 5) with an interval of 13 meter between them; they were laid out in accordance with the general topographic grid positioned at Elkab in the late 1960's (DEPUYDT 1989). All four test pits were excavated to a depth of over 3 meters, at which level sterile Nile alluvium was reached in all pits. The strata, identified as, grouped or subdivided in loci (Lc), could be relatively easily distinguished in the different pits, and although most layers occurred in all four pits, some stratigraphical differences could also be observed (Fig. 5).

All four test pits were overlain by a dense surface layer of mixed ceramics (0.10 to 1.00 meter thick), dating to every possible chronological phase between the Old Kingdom and Roman periods, which resulted from 19th century *sebakhin*

disturbance and/or was composed of spoil of the 1937-1938 temple excavations (Lc 1 in Fig. 5). Below this surface layer, several intact archaeological horizons were found attesting to different phases of occupation. The most recent ones date to the early Old Kingdom, but they are not of equal importance in all the test pits. The pits to the west (TP 4 and 5) revealed several successive early Old Kingdom floor levels that can be associated with a number of mud-brick walls from several construction episodes. Given the limited size of the test pits, it is unclear for the time being what the precise lay-out or function of these constructions was, but they represent an archaeological context that is comparable to the situation in the trenches that were excavated in 2009 and 2010. The two test pits to the east (TP 2 and 3) contained only one early Old Kingdom horizon (Lc 2 in Fig. 5), suggesting that they are probably situated on the outskirts of the early Old Kingdom settlement. Although we will not discuss the early Old Kingdom finds in detail, it is nevertheless worth

⁴ The results and interpretations presented below should be considered preliminary because part of the excavated material has not yet been studied in detail.

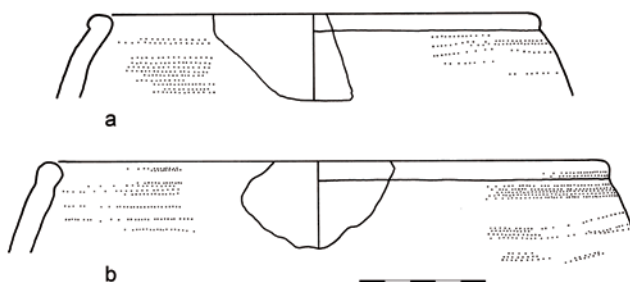


Figure 4. Rim sherds of large jars with very wide aperture, Nile C fabric: a) E09/T1/C15/02 (Nile C, rim diam. 18.0cm); b) E09/T1/C15/05 (Nile C, rim diam. 22.7cm).

mentioning that two superimposed *in situ* cooking installations were found in TP 4 (Fig. 6). The upper one was located inside a room formed by two perpendicular mud-brick walls, running northwest-southeast and southwest-northeast. Close to the southwest-northeast wall, a large ovoid jar was found, positioned inside a large fireplace. The upper level of the fireplace ashes match a burnt area on the surface of the vessel. Although obviously a cooking installation, a copper chisel was placed inside the jar. A bifacially retouched flint knife with a handle was also found lying against the same wall and close to the jar. The second cooking installation was excavated only some 0.2 meters west of the first one, but at a slightly lower level. In this fireplace, which also consisted of large quantities of ash, a bowl was placed upside down. In TP 3, a heavily damaged greywacke palette, possibly in the shape of a fish, was found in the early Old Kingdom level, providing additional evidence for, and confirming, the reuse of Predynastic palettes in an Old Kingdom context, as was previously mentioned with regard to the storage site excavated in 1955.

These early Old Kingdom layer(s) rest on a layer of aeolian sand that ranges in thickness from 1.50 to 2.00 meters and seems to gradually decrease in thickness towards the west. Archaeological material was scarce in the upper levels of this layer, possibly indicating that this part of the site was only lightly occupied for some time. Two fragments of marl ware Decorated vessels (Fig. 7) are among the few archaeological materials that were excavated from the upper part of the sand layer (Lc 4) in TP 3 (Fig. 5). They are decorated with groups of three short vertical strokes in the characteristic purple-black colour of Decorated pottery. Both fragments can be compared with PETRIE's type D26g, characteristic for Naqada IIIA1-A2.⁵ The presence of this Naqada phase at Elkab is no surprise. As has been mentioned above, an important Naqada III cemetery was excavated only 300 meters east of the settlement area (HENDRICKX 1994).

⁵ For type D26g several examples are known from cemeteries: Naqada tomb 666 (BAUMGARTEL 1970: pl. XXVI), Meseaed tomb 230 (REISNER 1936: 374, fig. 181), Elkab tombs 5 and 9 (HENDRICKX 1994: pl. XXXII-XXXIII), Adaiima tomb 664 (BUCHEZ 2007), Abu Zeidan (NEEDLER 1984: 127, n° 50) and Deir Tasa (GABRA 1930: pl. IV.29). Furthermore, two examples from Abu Umuri are on display in the Cairo Museum. For the shape of the jars, the undecorated type L53k is very similar. Most examples can be dated to Naqada IIIA1-A2.

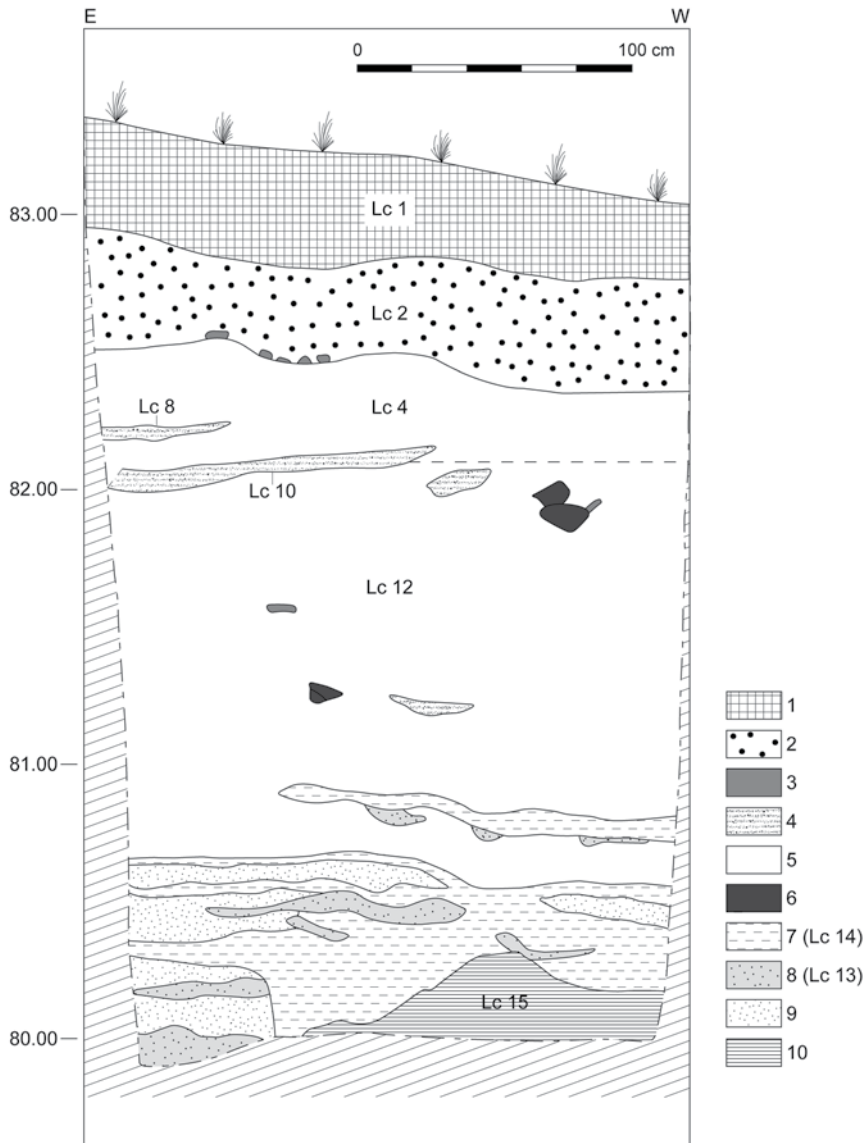


Figure 5. Drawing of the south profile of TP 3.

1: surface layer, 2: dark brown sand, 3: ceramic, 4: hearth, 5: yellowish brown aeolian sand, 6: stone, 7: clayey sand, 8: coarse sand, 9: fine sand, 10: Nile alluvium.



Figure 6. Cooking installations with *in situ* vessels in TP 4.

At a lower level in the aeolian sand, the same occupation phases were found in all four test pits, although the archaeological material was far more dense in the two easternmost ones (TP 2 and 3). In TP 3, a series of discontinuous patches of prepared mud flooring (Lc 9) were exposed at a height of ca. 82.10 meter. This flooring consists of a fine layer of hardened grey sandy silt, containing lots of small white inclusions, gravel and charcoal fragments. Sherds, worked flints (mainly chips) and a small fragment of red ochre were found on top of this floor level, all lying in a horizontal position. Despite the fact that this layer was only 2cm thick, it contained 94 sherds, with a total weight of 1.4kg. Moreover, two small hearths (Lc 10-11) seem to be associated with this floor level. The ceramic assemblage is strongly dominated by Nile C fabric (Tab. 2, Lc 6-9). Furthermore, a limited number of Black-topped and Polished-red sherds are present, together with an occasional marl ware sherd. The most frequently occurring types of vessel in this level, both in TP 2 and 3, are the large Nile C fabric jars with very wide aperture (PETRIE'S R81-R84), also already mentioned with regard to TP 1 (Fig. 8). A few large rim sherds confirm the presence of R81. These jars occur frequently both in settlement sites and in cemeteries (see HENDRICKX 1996: 45, tab. 3) and, although they have a long chronological range, they are most characteristic for Naqada IIC. They were found in association

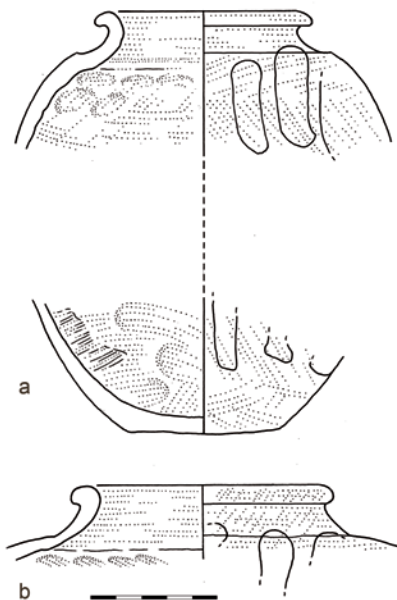


Figure 7. Pottery: a) E12/TP3/06/01 (Marl A1, rim diam. 8.6cm); b) E12/TP3/06/02 (Marl A1, rim diam. 10.4cm).

with a few fragments of bottles with rounded/pointed base (PETRIE'S R91a-c), manufactured with the same fabric (Fig. 8). Such bottles are characteristic for Naqada IIB-C (HENDRICKX 1989, vol. 2: 98; BUCHEZ 2011: fig. 2), which confirms the proposed date for this level in the Naqada IIB-C period.

About 0.50 meter below this Naqada IIB-C level, the density of the archaeological material increased considerably in TP 2 and TP 3. Black-topped pottery becomes more common, while the presence of Polished-red pottery remains limited (Tab. 2, Lc 12/34-46). Most importantly, a shale tempered fabric appears in the ceramic assemblage and becomes increasingly frequent. Among the pottery types are Black-topped jars and large beakers with flaring rim (PETRIE'S B18-B22) (Fig. 9). Modelled rims, however, are exceptional. Furthermore, Polished-red bowls (PETRIE'S P22a) occur regularly. They are all made of Nile silt (Nile A-B1) and are, in most cases, carefully

slipped and polished both on the inside as well as on the outside. A cup with a flaring rim from the same level in TP 4 is slipped on the inside only and polished on the upper few centimetres (Fig. 9a). This type of finish treatment is found on many White Cross-lined cups. It seems to have disappeared together with this type of pottery, meaning that it no longer occurs from Naqada IIB onwards. Based on the ceramic evidence, a date in the late Naqada I/early Naqada II period should be accepted as most plausible.

Predynastic shale tempered ware seems to have had a limited geographical distribution in the Nile Valley. It occurs mainly in southern Upper Egypt and, based on our current knowledge, especially in the wider Hierakonpolis area. It has been described for Hierakonpolis (FRIEDMAN 1994: 154), Adaiima (MIDANT-REYNES & BUCHEZ 2002: 175-176) and Naq' el-Qarmila (GATTO *et al.* 2009: 195-201).⁶ Vessels made from shale tempered pottery are characterised by simple shapes, without necks or modelled rims (MIDANT-REYNES & BUCHEZ 2002: 233-235). The fabric was especially favoured for cooking vessels, probably because of its heat transfer properties. At Hierakonpolis, shale tempered pottery seems to have disappeared during the early Naqada II period (FRIEDMAN

⁶ See also GATTO 2013.

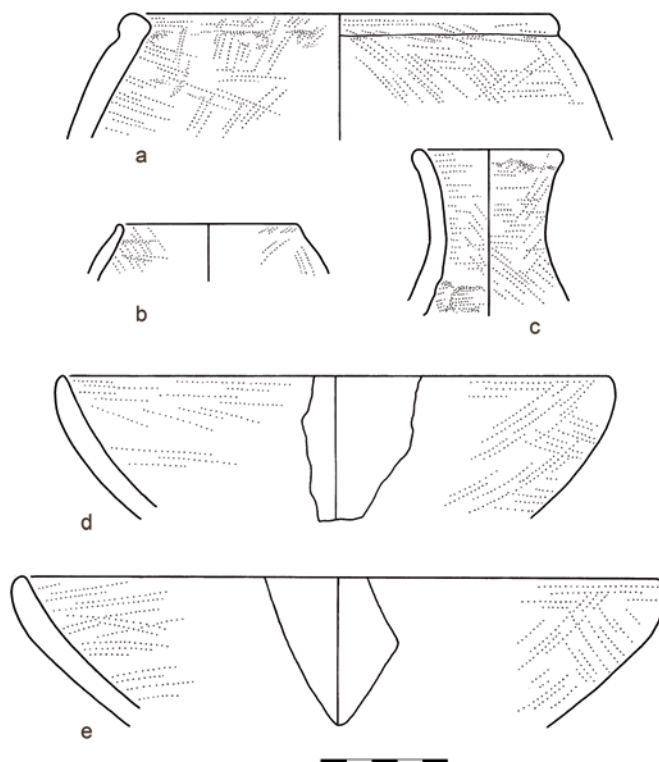


Figure 8. Pottery: a) E12/TP2/28/28 (Nile C, rim diam. 17.5cm); b) E12/TP3/25/3 (Black-topped, Nile A, rim diam. 7.2cm); c) E12/TP2/25/2 (Nile B2, rim diam. 6.0cm); d) E12/TP2/28/2 (Polished-red, Nile A, diam. 22.3cm); e) E12/TP2/28/1 (Polished-red, Nile A, diam. 25.2cm).

1994: 735-736), while in the Adäima settlement, it is characteristic for Naqada IC-IIb, taking into consideration that earlier periods are not represented at Adäima (MIDANT-REYNES & BUCHEZ 2002: 234).

At the lowest level of TP 3 (Lc 13-14), which represents the base of the aeolian sand and the contact zone with the sterile alluvial deposits (Lc 15), a number of pottery fragments were found which can readily be distinguished from those in the overlying level. Most sherds are shale tempered and both shape and surface treatment can be determined from a few large fragments. Two large, deep, restricted bowls can be identified as cooking vessels because of the fire stains visible on their outer walls (Fig. 10). Their surface has been compacted, showing clear marks and traces of fingers and scraping, as well as a number of short and long burnishing strokes. The latter are not characteristic

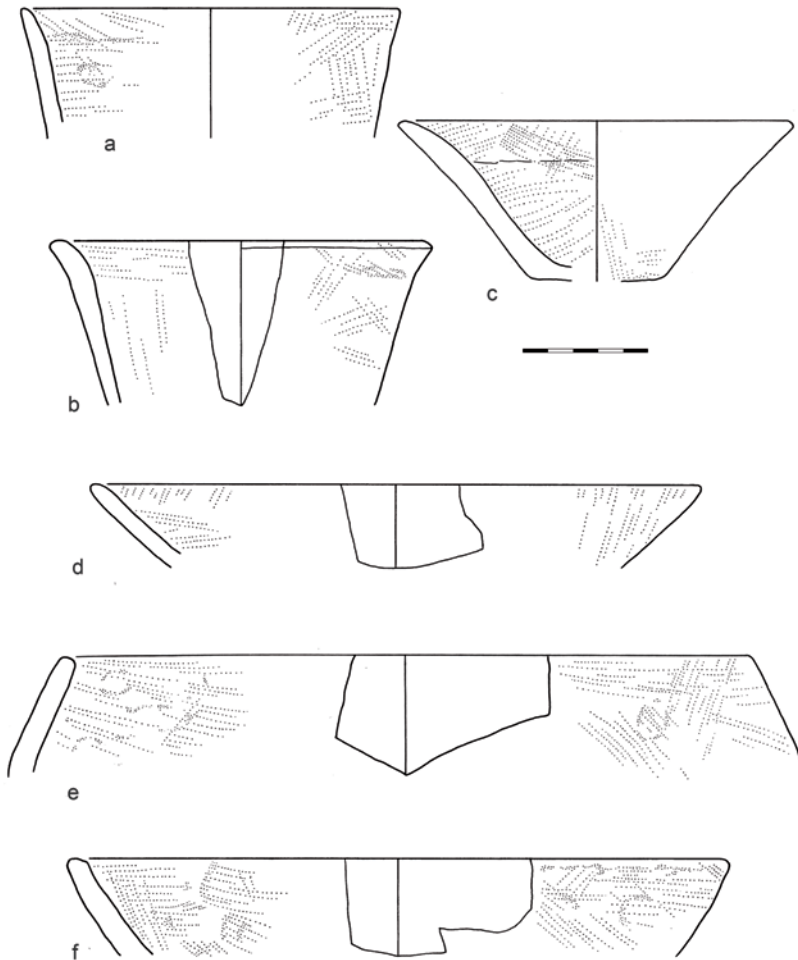


Figure 9. Pottery: a) E12/TP3/46/1 (Black-topped, Nile A, diam. 15.0cm); b) E12/TP4/74/02 (Polished-red, Nile B1, diam. 15.7cm); c) E12/TP3/43/2 (Polished-red, Nile B1, diam. 15.2cm); d) E12/TP3/43/3 (Polished-red, Nile A, diam. 24.2cm); e) E12/TP3/43/17 (Nile C, rim diam. 27.8cm); f) E12/TP3/43/18 (shale tempered, diam. 26.2cm).

at all for Naqada I ceramics, but can frequently be found on Badarian pottery. A single radiocarbon date from charcoal that is associated with the context in which these shale tempered sherds were found (at height of 80.18 meter), provides an age of 5446 ± 31 BP (Tab. 1), which confirms the attribution to the Badarian period. Most recently, the Badarian has been radiocarbon dated between 4350 and 3750 BC (DEE *et al.* 2013), its ending date being more recent than previously accepted. The single date from Elkab, however, clearly situates the occupation within the early phase of the Badarian.

Table. 2. Fabric distribution for TP 3. # = number of sherds. Lc 6-9: Naqada IIB-C level. Lc 12: late Naqada I/early Naqada II level.

| Lc/ LOT | NILE BT | | NILE RP | | NILE A-B1 | | NILE B2 | | NILE C | | SHALE | | MARL | | TOTAL | |
|------------|---------|------|---------|-----|--------------|------|---------|-----|--------|-------|-------|------|------|-----|-------|-------|
| | # | % | # | % | # | % | # | % | # | % | # | % | # | % | # | % |
| 6/14 | | | | | | | | | 7 | 100,0 | | | | | 7 | 100,0 |
| 7/16 | | | | | | | | | 2 | 100,0 | | | | | 2 | 100,0 |
| 8/21 | 1 | 5,0 | 1 | 5,0 | | | | | 17 | 85,0 | | | 1 | 5,0 | 20 | 100,0 |
| 9/25 | 2 | 2,1 | 5 | 5,3 | | | | | 87 | 92,6 | | | | | 94 | 100,0 |
| 12/34 | 4 | 1,9 | 3 | 1,4 | 2 | 1,0 | 2 | 1,0 | 196 | 93,8 | 2 | 1,0 | | | 209 | 100,0 |
| 12/37 | 19 | 9,6 | | | | | | | 163 | 82,7 | 14 | 7,1 | 1 | 0,5 | 197 | 100,0 |
| 12/40 | 29 | 8,4 | 10 | 2,9 | 23 | 6,6 | 4 | 1,2 | 242 | 69,9 | 37 | 10,7 | 1 | 0,3 | 346 | 100,0 |
| 12/43 | 43 | 10,8 | 9 | 2,3 | 13 | 3,3 | 2 | 0,5 | 203 | 51,1 | 127 | 32,0 | | | 397 | 100,0 |
| 12/46 | 38 | 27,7 | 2 | 1,5 | 18 | 13,1 | 11 | 8,0 | 29 | 21,2 | 37 | 27,0 | 2 | 1,5 | 137 | 100,0 |

LITHIC ANALYSIS

Although the analysis of the lithic material from TP 1-5 is far from complete, a number of preliminary observations can be made. The majority of the recovered stone artefacts are manufactured from local flint, which was readily available in the gravel deposits of the Wadi Hilal, situated immediately east of the settlement area in the desert hinterland of ElKab. For the production of exceptional artefacts (*e.g.* bifacially retouched knives), a more homogeneous type of flint was used, which provides possible indications of wider regional contacts.

The early Old Kingdom layers in TP 1-5 comprise characteristic stone artefacts of this period, such as bifacially retouched knives and numerous regular sickle blades, often bearing sickle gloss. The Predynastic layers below are essentially characterised by side-scrapers, end-scrapers, and a substantial number of burins. The high amount of more than 28 burins and about 70 burin spalls that were found in the late Naqada I/early Naqada II horizon (Lc 12) of TP 3 could indicate a specialized workshop in proximity to the test pit. The practice of harvesting is also clearly attested by the presence of a large fragment of a bifacial sickle with clear sickle gloss that was recovered from the late Naqada I/early Naqada II horizon in TP 2. The same horizon also revealed some other remarkable finds. In Lc 12 of TP 3, a hollow-based flint arrowhead and a fragment of an obsidian flake were found. For the obsidian flake, which was recovered from the upper part of Lc 12, a date in the early Naqada II period seems likely. Obsidian is extremely exceptional in Predynastic contexts and all examples of which the provenance has been investigated, originate from the African Rift volcanic system, either from Ethiopia or the southern part of the Arabian Peninsula (BAVAY *et al.* 2000). The flake from ElKab constitutes one of the earliest examples of the use of obsidian in Egypt (ZARINS 1989). In Upper Egypt, obsidian has also been found in an early Naqada II context at Hierakonpolis (R. FRIEDMAN *pers. comm.*; FRIEDMAN 2004).

FAUNAL ANALYSIS

All the faunal material from TP 2-5 was analysed. The animal bones, the majority of which were recovered from the early Old Kingdom levels, were collected by hand and, in the case of TP 3, also recovered by sieving through a 5mm mesh sieve. A total of 370 specimens were collected and examined. Discounting the specimens that could not be identified to species (*i.e.* small, medium, and large mammal, large fish, fish, and bird), the most plentiful species were *ovis/capra* (sheep and goat, 75 bones), closely followed by different types of fish (72 bones), and finally cattle (15 bones) and pig (14 bones).

In general terms, it would seem that the animal economy at Elkab during the Predynastic and the early Old Kingdom was based on easily managed small ruminants (ovicaprids) and, unsurprisingly, fishing, due to the proximity of the Nile. The diet was augmented by cattle and pigs, and very rarely, hunted animals, as indicated by the one gazelle bone that was identified. The presence of Nile turtle (8 fragments of a single carapace), Nile oyster (10 fragments), freshwater mussel (10 fragments) and ostrich eggshell (4 fragments) does not necessarily indicate the consumption of these animals; these materials may have been used for a variety of other purposes, as well as for food.

GEOMORPHOLOGY

In addition to the archaeological excavations, a geomorphological study of the larger settlement area was initiated. The aim was to gain better insight into the landscape formation and the natural environment in which the habitation at Elkab developed during the Predynastic period and the Old Kingdom.

A total of 27 manual drill core samples were taken, and they confirmed the hypothesis that the Predynastic settlement initially developed on top of a large sand dune that slopes down towards the Nile. The start of the accumulation of this thick aeolian deposit seems to coincide with the increasing aridification in Egypt during the early mid-Holocene, which is believed to start between about 7000 and 6000 BP. The radiocarbon date of 5446 ± 31 BP that was obtained from the lowest archaeological level of TP 3 (Tab. 1) corroborates the onset of this important climatological shift. The formation of the dune at this particular location can be explained by the presence of a Pleistocene wadi gravel terrace that served as a natural barrier against which the aeolian sand, transported by the dominating northern winds, accumulated.

It can be speculated that the late Early Dynastic or early Old Kingdom settlement was initially built on top of the Predynastic habitation, and extended, in a later phase, further down into the floodplain. The so-called 'Double Walls' (or an earlier similar wall) were probably constructed to protect the expanded settlement during the time of the inundation. Drillings have indeed shown that the floodplain is situated at a considerably higher level outside the 'Double Walls' than inside, suggesting that this wall, probably purposefully, served as a dam against the annual flooding.



Figure 10. Pottery: a) E12/TP3/53/01 (shale tempered, max. diam. 38.4 cm),
b) E12/TP3/53/02 (shale tempered, max. diam. 30.0 cm).

CONCLUSIONS

Although a rather long list of Predynastic settlements is known for Upper Egypt (HENDRICKX & VAN DEN BRINK 2002; TRISTANT 2004), most of these are of limited size and generally hardly investigated. The main exceptions are, from south to north, Naq' el-Qarmilla (GATTO *et al.* 2009), Hierakonpolis (HOFFMAN 1982; FRIEDMAN 1994), Adaïma (MIDANT-REYNES & BUCHEZ 2002), the Naqada region (VERMEERSCH *et al.* 2004), el-Amra (HILL & HERBICH 2011) and Mahasna (ANDERSON 2006; 2011). Stratified habitation sequences running over several meters are even more exceptional. The best example is the 'town site' of Nekhen at Hierakonpolis, where HOFFMAN revealed the presence of up to 4 meters of stratified Predynastic occupation. Because of the groundwater table, the deepest occupation levels could only be investigated in a limited manner by coring (HOFFMAN *et al.* 1986). The lowest level was identified as Badarian, although a detailed argumentation for this attribution has never been published. Although the location of the settlement may have shifted over time, the Elkab finds now confirm that at least some Upper Egyptian sites have been inhabited permanently over a very long period of time, *i.e.* from early Predynastic times onwards. It is likely that this was the case for a good number of Upper Egyptian sites, but most of their early occupation layers are situated well below the groundwater table and covered up by thick layers of alluvium, later pharaonic settlements and/or modern towns and cities. This seems, for example, to be the case at Tell Edfu, for which early Predynastic finds (*e.g.* WEIGALL 1907) and a possible Tasian beaker (LUGN 1931) have been reported. Moreover, Naqada III tombs were found in an area that was previously covered by the tell (LECLANT & CLERC 1994: 427).

The recent discoveries at Elkab also confirm the presence of the Badarian culture far south of the Badari region. Given the already mentioned isolated Badarian artefacts that were found at Elkab prior to the recent excavations, this comes as no surprise. Moreover, other Badarian and Tasian sites have been discovered during the last decades both in the Nile Valley (Hendrickx *et al.* 2001) and the adjoining deserts (FRIEDMAN & HOBBS 2002; KOBUSIEWICZ *et al.* 2010; BRIOIS *et al.* 2012). However, finds within the Nile Valley itself remain exceptional because of the above-mentioned practical difficulties. Furthermore, most, if not all, Badarian settlement sites were temporary installations, related to specific economic activities, such as fishing during the period of the low Nile (HENDRICKX *et al.* 2001). At Elkab, however, the situation may be different. Although, at present, it cannot yet be demonstrated beyond doubt, there is a very good chance that the Predynastic settlement at Elkab was permanently occupied, perhaps from Badarian times onwards. The existence of permanently occupied Badarian settlements has always been assumed, but it has never been proven. Elkab may offer tangible evidence for this, but given the depth at which the Badarian layer(s) is located, extracting the evidence will be a difficult and long term undertaking. Nevertheless, the newly revealed early occupation horizons and the seemingly uninterrupted early human presence at Elkab for at least 1500 years offer outstanding research opportunities. Egyptian prehistoric settlement patterns, organisation, and transformation are still very poorly documented and our understanding of these phenomena is extremely limited and biased. As such, Elkab presents a unique research case for the study of both a Predynastic settlement and an early pharaonic town. Even more importantly, it may clarify how the prehistoric settlements of Upper Egypt gradually evolved and transformed into the fully urbanized society of historic times.

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