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(Upper Egypt)**

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Introduction

The Predynastic site of Adaïma is located on the west bank of the Nile, about 8 km south of the modern town of Esna and 30 km north of Hierakonpolis. The site was discovered and partly excavated in 1908 by Jacques de Morgan, and then rediscovered by Fernand Debono in 1973. The most recent excavations were carried out from 1989 until 2005 under the direction of Béatrix Midant-Reynes as part of the activities of the French Institute of Archaeology in Cairo (Crubézy, Janin and Midant-Reynes 2002; Midant-Reynes and Buchez 2002).

The site consists of a badly plundered cemetery called the “Western Cemetery”; an intact cemetery, containing mainly children’s graves, called the “Eastern Cemetery”; and a settlement, which appears as a large area with artefacts scattered over the surface, extending for about 1 km along the edge of the cultivated land. The site covers about 40 ha (settlement: 35 ha; cemeteries: 5 ha). In all, 881 graves were discovered and excavated. From a chronological point of view, the Western Cemetery is older; its use is recorded from the Naqada IC period until Naqada IIID–Dynasty 3. While burial continued in the Western Cemetery, the first graves were dug in the southern part of the Eastern Cemetery in the Naqada IIC–IID transition period and continued until Dynasty 3 (Crubézy, Duchesne and Midant-Reynes 2008; Buchez 2008). Thus, there was activity across the site spanning from Naqada IC to the end of Dynasty 3 (3700–2600 BC). Since the site includes cemeteries and a contemporary settlement, comparisons between the two areas are possible.

Recent results of a topographic and chronological analytical approach based on the study of ceramics show the stages of development of the site, which can be summarized as follows (Buchez 2008):

Naqada I–IIB/IIC: Maximum expansion:

- A possibly permanent settlement, which was steady or expanding over at least two centuries.
- The site was comprised of groups of dwellings incorporating several entities; a family-based arrangement appears in the settlement pattern as well as in the cemeteries.
- There is no specialised production unit.
- Naqada IIC is interpreted as a phase of full development in the cemeteries with the presence of “elite” tombs.

Naqada IIC/IID–IIIA1: Decline:

- Certain areas are abandoned including areas along the edge of the floodplain.
- There is a concomitant gradual abandonment of some areas of the cemeteries.
- The children’s cemetery presents palaeo-demographic data in favour of a reduced population.

Naqada IIIA1/IIIA2–Dynasty 3: Occupation limited to a single production unit:

- Smaller community.
- Possibly specialised production with implications for a large-scale production and redistribution system.

Occupied from 3700 to 2600 BC, the site represents the settlement of a small community without marked social differentiation. The major stages in the site's development appear to be closely correlated with those of the "urban centres" and, in this case, to the economic and political growth of Hierakonpolis. According to Buchez (2008), the decrease in population may indicate an exodus towards the "cities" such as Hierakonpolis. The result, for the Naqada III period, is the persistence of the site in the form of a single production unit until the end of its occupation.

The analysis was based on the study of the entire ceramic corpus. This involved 120,000 sherds and 1240 complete vessels, of which 89 came from the settlement and 1151 from the cemeteries (Buchez 2008). All vessels deposited in graves had been used previously in domestic contexts and not all of the vessel forms used in settlement areas were found in graves (Buchez 2004b).

Part of this corpus of pottery bore incised signs on their exterior or interior surface. The corpus of pre- and post-firing potmarks comprises a total of 999 signs: 662 pre-firing potmarks called "marks," and 337 post-firing potmarks called "graffiti." This paper deals with the pre-firing potmarks.

The majority of the pre-firing signs were incised into the wet clay with a blunt instrument or finger (Total Number 'N' = 651; 98.3%) prior to firing, but were sometimes painted (N = 11; 1.7%).¹ A total of 581 marks were placed on the exterior of the containers, 81 on the interior.

The carriers are of different forms and fabrics: jars, bowls and others shapes, with and without a neck in Marl ware, more rarely in straw tempered Nile silt and Nile ware (see Fig. 1; 2; 3; 5:1–2, 6); cooking pots (see Fig. 4), terrines, porringers, basins (see Fig. 5:3–6) and bread moulds (see Fig. 7) in straw tempered Nile silt, shale tempered Nile silt and Marl clay with inclusions of nummulites.²

Pre-firing marks do not appear in the early phases of the site. The most ancient sign was placed on the interior rim of a jar from a tomb in the Eastern Cemetery dated to Naqada IID–IIIA1 (Fig. 1:5); it is a cross-like sign (Bréand 2008). The signs were in use until the end of the occupation of the site at the end of Dynasty 3.

Out of a total of 662 marks, 280 (42.3%) are considered complete; the others are fragmentary, but the study of their carriers can provide some information about their utilisation. A total of 520 marks (78.5 %) come from the settlement, but unfortunately all were found on sherds. Most of these marked sherds come from a specific area on an alluvial terrace spread out along the edge of the floodplain and date mainly to the Naqada III period (N = 486). The remains of the archaeological structures in the settlement appear as features dug into the terrace, and no mounds or *in situ* middens have been preserved. The entire Naqada period is represented, but the elements dating to periods earlier than the end of the Predynastic vary according to

¹ The letter N is used here to signify Total Number.

² Nummulites are microfossils included in the clay (Buchez 2004a).

the area, either as a result of an irregular distribution from the very beginning, or differential erosion due to post-depositional disturbances (Buchezy 2004b).

A total of 142 marks (21.4 %) come from the cemeteries, the majority of which were found on complete vessels. The Western Cemetery spreads out from the top of a small mound formed by a rise in the bedrock covered with sand, approximately 200 m to the west of the Predynastic settlement. This cemetery was mainly for adults and was badly plundered during the Predynastic period; 301 tombs were studied, and the organisation and boundaries of the cemetery have been determined. Although it seems topographically very homogeneous, with a majority of adults (both men and women), it is actually a palimpsest of groups whose status was different from one period to the next (Crubézy, Duchesne and Midant-Reynes 2008).

Only two marks were found in the Western Cemetery. One is a short rectilinear stroke placed on the exterior neck of a jar made of Marl clay deposited as an offering in a tomb dated to the Naqada IIIA1–IIIA2 transition (Fig. 1:4). The other mark is a rectangle on a body sherd of Marl clay that was collected from the surface.

All of the other signs known from a funerary context come from the Eastern Cemetery, which can be divided into two sections: north and south. In all, 580 graves have been excavated. The graves located to the south and those to the north are very different, both with regard to the occupants and the grave goods. To the south, there are only children's graves (in baskets, coffins, simple pits dug in the sand, or in ceramic jars) dating from the Naqada IID–IIIA2 (IIIB–C1) period, the majority of which belong to the Naqada IIIA1 phase. To the north there are adults and children in graves dated to Naqada IIIC2–D, i.e., to the first two dynasties, with certain tombs of Dynasty 3. Here the demography is compatible with that of children in a natural population (Crubézy, Duchesne and Midant-Reynes 2008).

This necropolis contains 131 marked vessels distributed in 108 tombs and one cenotaph; two vessels were found in isolation, and five fragmentary pots were gathered in a surface collection. In 98 graves there is one marked carrier; six have two different marked carriers and four have three different pots with signs.

The main questions to be asked about these enigmatic potmarks are as follows: How did the system(s) of pre-firing marks work? What was their role during the time of the formation of the pharaonic state? How are they related to the emergence of the hieroglyphic writing system?

The signs and their carriers

Table 1 presents the signs classified³ into nine groups⁴ according to their formal appearance, chiefly geometric or figurative, in order to avoid introducing *a priori* interpretations with their immediate descriptions. Sub-groups appear within each main group in order to isolate the signs accurately.⁵

³The term “classified” employed here is not synonymous with the term “typology,” as the latter implies more than a simple formal description.

⁴Group 6 is not represented here because it only concerns post-firing signs, or “graffiti.”

⁵In Table 1, the total for each main group includes the number of fragmentary signs that could not be assigned to a sub-group.

In Table 2, the presence or absence of each sub-group of signs has been indicated according to their correlation with vessel groups I to VI in a simplified ceramic typology, which is as follows:

- Group I: Jars, the majority in Marl clay, for the transport and storage of goods (Fig. 1).
- Group II: Other small shapes with a neck in Marl clay used for storage and/or transport of goods (Fig. 2).
- Group III: Other small shapes without a neck in Marl clay used for consumption of goods (Fig. 3).
- Group IV: Cooking pots in shale tempered Nile silt and Marl clay with nummulites used for cooking and the preparation of food (Fig. 4).
- Group V: Bowls, terrines and porringers in Marl clay and straw tempered Nile silt for food preparation, presentation and consumption; basins in straw tempered Nile silt for the storage and preparation of food (Figs. 5 and 6).
- Group VI: Bread moulds in straw tempered Nile silt for cooking and the preparation of food (Fig. 7).

The complete vessels chosen for illustration are mainly those available from the cemeteries.

As shown in Table 2, a large number of sign sub-groups are commonly applied to four, five or six different ceramic vessel groups: 1A, 1B, 1C, 2A, 4A, 4B, 7A, 7B, 7C, 7F, 7G, 8B and 8C. Thus, it may be asked: why are there similar signs on vessels destined for the storage or transport of goods, such as jars, and also on shapes used for cooking, like bread moulds or cooking pots? First, we must bear in mind that, when we compare the total number of marked vessels with the sum of sherds and complete vessels recorded, the percentage of marked vessels equals only 0.55 % of the entire assemblage. Moreover, we must consider the time span during which the marks were used, from Naqada IID–IIIA1 until the end of Dynasty 3, or in absolute chronology, from c. 3300–2600 BC, thus approximately 700 years. From this vantage point, the average creation of marks would be less than one per year. In other words, the marking of pottery is far from a systematic practice.

In most cases only a single mark composed of a single sign occurs. A few examples with marks composed of two different signs were also found, but are of a singular type, which associates a geometric sign with one, two or three simple rectilinear strokes (Fig. 8).

Group I: Jars (N = 117)

The relative scarcity of the so-called “wine” jar must be interpreted as an indication of the provincial nature of the settlement. Indeed only one marked sherd belonging to this type of vessel has been identified. It bears the shape of a falcon head (Table 1: sub-group 10A) and was published by van den Brink (2001) as a part of a *serekh*. Thus, the wine transported in these jars seems to have been a rare commodity for the inhabitants of Adaïma, even though wine was being locally produced in Egypt from Naqada IIIB–IIIC and no longer imported from the Levant (Buche 2004b). The situation for the so-called “beer” jar is also notable. In contrast to the previous type, numerous fragments of beer jars (Petrie’s types R 81 and L 30) were found in dwellings, but no evidence of structures related to an industry for the

production of beer has been discovered at the site (Buechez 2004b). These jars never bear marks.

All of the jars bearing marks are made of Marl clay with the exception of two examples in straw tempered Nile silt, three that have fine to semi-fine vegetal particles and coarse mineral inclusions, and one in Marl clay with inclusions of nummulites. The shapes of jars on which signs are present are varied and include the following (Fig. 1):

- Ovoid rounded large (Fig. 1:1–2): Vessels with a large ovoid body, rounded shoulders, short neck, rounded lip, and small rounded base. The surface is smoothed.
- Narrow to almost conical (Fig. 1:3–5): Vessels with a narrow to almost conical/ovoid body, rounded shoulders, short neck, rounded lip, rounded or flattened base. The surface is smoothed.
- Globular (Fig. 1:6–8): Vessels with a more or less globular body, rounded shoulders, short neck, rounded lip and rounded base. The surface is smoothed.

The signs placed on this techno-morphological type belong to many sub-groups (Table 2) and are located on the jars preferentially on the upper exterior parts of the vessels: the lip (N = 10), neck (N = 61) and shoulder (N = 40), rarely on the body (N = 5), and never on or near the base. The location of one mark remains indeterminate.

Group II: Other shapes with neck (N = 15)

Different shapes compose this group, but the fabric is always Marl clay (Fig. 2).

- Rounded (N = 6) (Fig. 2:1): Vessels with rounded body, rounded shoulder, long neck, rounded lip and flattened base. The surface is smoothed and two examples have red painted decoration of parallel vertical lines over the entire height of the body.
- Pear-shaped (N = 7) (Fig. 2:2): Vessels with pear-shaped body, rounded shoulder, short neck, rounded lip and flattened or rounded base. The surface is smoothed and one example has red painted decoration of parallel vertical lines over the height of the body.
- Narrow (N = 1) (Fig. 2:3): Vessel with narrow ovoid body, short neck, rounded shoulder, rounded lip and flattened base. The surface is smoothed and this single example presents a red painted decoration of parallel vertical lines disposed over the height of the body.
- Large opening (N = 1) (Fig. 2:4): Vessel with ovoid body, rounded shoulder, short neck, rounded lip and flattened base. The surface is smoothed.

The location of the marks on the exterior surface of the vessels varies but is restricted to the upper parts of the vessels: the neck (N = 10), the body (N = 2), the shoulders (N = 2), and the lip (N = 2), but never on or near the base.

Group III: Other shapes without neck (N = 3)

The principal characteristic of this group is the small height of the vessels (Fig. 3). The fabric is Marl clay.

- Tubular (N = 1) (Fig. 3:1): Vessel with tubular body, no neck, rounded lip and flattened base. The surface is smoothed.
- Gourd-shaped (N = 2) (Fig. 3:2): Vessels with ovoid body, no neck, rounded lip and rounded base. The surface is smoothed.

The marks are located on the body (N = 2), and on the shoulder (N = 1).

Group IV: Cooking pots (N = 58)

The majority of the techno-morphological group of the so-called “cooking pots” is composed of a specific shape always made in Shale Ware. Their production can be dated from Naqada IIIA1 or IIIB–IIIC. At Adaïma, the persistence of a small additional production on a domestic scale using clay with small plates of shale has been observed for the entire Predynastic period (Buchež 2008). Eight examples of the same shape are found in Marl clay with inclusions of nummulites (their production can be dated from Naqada (IIIA2–IIIB–IIIC1). Unfortunately, no example of the carrier is complete. This kind of fabric may be local and the result of domestic production. Indeed, a spot for the potential extraction of this kind of clay has been located less than five kilometres from the site (Buchež 2008).

- Cooking pots (N = 58) (Fig. 4:1–2): Vessels with ovoid to globular body, no neck and lip, the rim is thickened and flattened, the base is rounded. The surface is smoothed.

The location of marks on these vessels is frequent under the exterior rim (N = 36), less so on the body (N = 8), and more rarely on the rim (N = 2), near the base (N = 1), or on the rounded base (N = 4). The location of a few remains indeterminate (N = 7).

Group V: Bowls, terrines, porringers and basins (N = 78)

This group combines various simple open shapes. Bowls and terrines were made of Marl clay, while porringers were fashioned from straw tempered Nile silt, with the exception of one in Marl clay. The basins were also made from straw tempered Nile silt. It can be assumed that their use differed according to shape and fabric.

- Bowls (N = 66) (Fig. 5:1–2): Vessels with ovoid to convex body, no neck and lip, and a flattened or (less frequently) rounded base. The surface is smoothed (N = 36) or red polished and partly slipped over the exterior or interior (N = 30). It is possible to identify five examples of *Meidum* bowls (Fig. 6), found in five different tombs all dated to Naqada IIID–Dynasty 3. This type exhibits a rounded body, carinated shoulder without neck, rounded lip and rounded base. The surface is smoothed and in one example red polished, and on two examples slipped or partly slipped on the exterior. In all cases marks are placed on the exterior of the rounded base. Only a few marked examples of this early form of Meidum bowl are known (see also Mawdsley this volume). In addition, one bowl also bears on its exterior body a mark made post-firing depicting a hieroglyphic *ankh* (Fig. 6:4), a sign with strong symbolic value in this funerary context. This vessel was the only offering deposited in the grave in the Eastern Cemetery containing an adult female, who was buried in a simple pit, the body covered with a mat. The bowl was found in an

upturned position on the pelvis.

- Terrines (N = 6) (Fig. 5:3): Vessels with ovoid to convex body, no neck, rounded lip and flattened base or, in one case, a rounded base. The surface is smoothed and three examples have been red polished and partly slipped. All vessels can be dated from the contents of the tomb in which they were found: four are dated to Naqada IIIA2 and one to Naqada IIID–Dynasty 3.
- Porringers (N = 3) (Fig. 5:4): Vessels with oblique to concave body, no neck and lip and a flattened base. The surface is smoothed but in one case red polished and partly slipped. Two of these are dated to Naqada IIIA1.
- Basins (N = 3) (Fig. 5:5–6): Vessels with ovoid to convex body, no neck, rounded lip, flattened base. The surface is smoothed and in one case red polished and partly slipped. One date of Naqada IIIA2 is available from a tomb.

The arrangement of the marks on the vessels recurs on the exterior of the body near the base (N = 35), directly on the base (N = 15), on the middle of the body (N = 16), and under the rim (N = 11). One is indeterminate.

Group VI: Bread moulds (N = 218)

This specific techno-morphological group comprises the greatest number of individual vessels bearing pre-firing marks. There are two reasons for this situation: firstly, this type of vessel is easily recognisable by its fabric—always Nile clay with coarse vegetal temper—and its quality of manufacture, which is rough and dented on the exterior. Thus, a sherd from the body or base can be easily ascribed to this group, in contrast to body sherds in others fabrics. Secondly, at Adaïma, bread moulds are the most abundant morphological category recorded for the Naqada III period (Buclez 2008). The huge increase in the number of bread moulds at the end of the Naqada III period at Adaïma and other sites demonstrate the spread of a new way of making bread. The development of this technology may very well be linked to a change in production levels. The potmarks on the bread moulds seem to indicate a production integrated in a more complex system than that of auto-consumption (Buclez 2004b).

Bread moulds appear at the end of the Naqada II period and were used until the end of the occupation of the site. Changes have been observed in their forms over time. During Naqada IIIA2–IIIB–IIIC1, shapes were shallow to almost flat with a continuous external profile, or with short or convex walls whose outer profile is discontinuous; at the end of the Predynastic period, the shapes became deeper with convex walls and a discontinuous outer profile (Buclez 2004b). The quantity produced seems to have exceeded the needs of the restricted community observed during this period. Indeed, from Naqada IIIA2 onwards, the occupied space in the settlement is progressively reduced. A location for the specialised production of bread has been identified; it functioned from at least Naqada IIIA–IIIB, and perhaps continued to be active on the edge of the domestic area until Naqada IIID–Dynasty 3 (Buclez 2008).

The shapes with marks are as follows:

- Almost flat profile (Fig. 7:1–2): Vessels with continuous profile, short convex body and wide flattened base. The surface is smoothed.

- Short discontinuous profile (Fig. 7:3–5): Vessels with short discontinuous profile, convex body and flattened base. The surface is partly smoothed.
- Short continuous profile (Fig. 7:6–7): Vessels with short continuous profile, convex body and rounded or flattened base. The surface is partly smoothed.
- Deep to very deep discontinuous profile (Fig. 7:8–9): Vessels with deep to very deep discontinuous profile, convex body and rounded or flattened base. The surface is partly smoothed.

The marks located on the interior and the exterior of these shapes belong to numerous sub-groups of signs (Table 3). Only 29.5 % (N = 66) of the potmarks are located inside the bread moulds. The marks on the inside were apparently meant for “marking” the bread, but in the absence of experimental tests to cook bread in such vessels, this function for the signs cannot be stated with certainty. In contrast, 69.5 % of the signs (N = 152) are found on the exterior of the moulds; in this case, it is possible to suggest that the marks relate to the mould itself. Various locations on the interior of the moulds can be discerned: on the body (N = 17), under the rim (N = 11), on the junction between the wall and the base (N = 10), and on the base (N = 4). Some remain indeterminate (N = 24). The locations on the exterior of the moulds are as follows: on the body (N = 70), under the rim (N = 30), more rarely on the base (N = 3) and on the rim (N = 1). Numerous arrangements remain indeterminate (N = 49).

The corpus of pre-firing marks and the vessels associated with them are peculiar in comparison with those known from other sites. In Adaïma, open and closed vessel forms bear potmarks that can be similar; the most striking fact is that these vessels are made from various fabrics, thereby suggesting different levels of pottery production. Pottery made of Marl clay was probably made by specialised workshops, although there are no remains of a pottery workshop for this type of fabric at Adaïma. It is reasonable to suggest that Adaïma is connected to centralised places like Hierakonpolis in a regional network of exchange for this type of material.⁶ On the other hand, vessels in straw tempered Nile silt, like bread moulds, or cooking pots in Shale ware or Marl clay with inclusions of nummulites may originate from local domestic production. Therefore, the signs cannot be considered to work within a unique system of pottery marking, but in several systems where their role has to be envisaged in direct relation to their carriers.

Discussion of the signs and their carriers

At present, the most ancient testimony for the existence of the practice of marking pots before firing is known from Hierakonpolis (Hendrickx 2008). In the elite cemetery at Locality HK6, Tomb 16A, dated to Naqada IC–IIA, has provided a group of over 66 jars of straw tempered Nile silt, of which about 30 examples could be reconstructed. The technological study has shown that the same movements shaped each vessel. It is therefore possible to suggest a provenance from a single workshop probably situated at the site (see Baba this volume), “although there is enough diversity to exclude the fact that they were made by a

⁶ And perhaps in the case of jars and others shapes with a neck, of course, the product they contained and transported.

single potter” (Hendrickx 2008, 71). Of these jars, 25 bear pre-firing potmarks of simple geometric design always arranged on the upper part of the vessel, mainly on shoulders “and certainly the percentage with potmarks may have been higher as many jars are only partially preserved” (Hendricks 2008, 72). As at Adaïma, the practice is not systematic and concerns only part of the pottery production.

In contrast to Hierakonpolis, Adaïma is a “village community” site. This status must be kept in mind with regard to its situation in a network of exchange, and the development of its means of production and supply. The variety of signs, the different types of functional categories on which they occur, and the different positions of the potmarks on the vessels point to the fact that the various markings do not all have a single meaning, and suggest that there were several systems involved. Their economic relevance no longer has to be demonstrated. For example, some groups seem to belong to an evolving system because of the repetition or addition of simple strokes or dots in a more or less complex pattern, as observed in groups and sub-groups 1, 2, 3, 4A, 4B, 9A.

The sub-groups belonging to groups 1 and 2 are clearly formed by the repetition of a minimal unit, such as a short or long rectilinear stroke.⁷ This kind of sign is the most abundant in the entire corpus (Table 1). This scalable system involving the addition of identical simple strokes may be evidence for the existence of a system of counting. But to count what? As Table 2 demonstrates, the more frequent sub-groups, such as 1A, 1B, 1C, 2A, are located on five and six different types of vessels made in different fabrics. Thus, this system of counting may therefore concern the vessels themselves. In this case, these signs could reflect the wish to control at least part of the production. It is most likely that the signs would have been useful to record not the pots one by one, but a group of pots ready to dry or fire.

Another evolving system seems more common to the bread moulds (Bucheze 2004b), although it appears also on jars, albeit more rarely. It includes some signs of the sub-groups 4A and 4B, which are made of parallel strokes in association with perpendicular lines and placed preferentially on the outside of the moulds. Completely preserved examples allow us to distinguish different recurrent associations: two perpendicular lines, an “H,” double “H,” treble “H” and so on into a crisscross pattern. The vertical lines are always incised before the horizontal lines. From the perspective of the existence of a system of counting, Fairservis (1983) suggested that the vertical lines could refer to simple numbers and one horizontal line could indicate the number ten. However, it remains difficult to verify this interpretation, although, at Adaïma, counting the production of bread moulds could have taken place.

Group 3 (Table 1; Fig. 9) provides a good illustration of one of these systems for counting pots.⁸ There are a total of 26 signs from this group divided into two sub-groups (Table 1). These signs are generally composed of the association of a long horizontal or vertical line and parallel short rectilinear strokes or dots, which can vary in number from one on each side (Fig. 9:3, 6) to two or three (Fig. 9:1, 2, 4, 8). Sometimes the short strokes are not symmetrically arranged (Fig. 9:7, 10). In one case, the mark is composed of two long vertical rectilinear lines framing two short vertical strokes which have been placed one above the other (Fig. 9:5).

⁷ This division into two groups for signs having the same formal appearance, but a difference in size is totally arbitrary. It was established initially because Group 3 combines short and long strokes. In the future, this division could be abolished.

⁸ Figure 9 illustrates ten examples representing the main range of marks that can be found in Group 3.

The vessels that bear these signs are from different morphological types belonging to three groups (Fig. 9; Table 2): jars, other shapes with a neck, and bowls. The signs are arranged on the upper parts of the vessels with a neck and on the base or the body of the open forms. The carriers are always made in Marl clay except for one case in Nile silt (Fig. 9:8). The surface is smoothed and sometimes partly or totally red slipped. One is decorated with red painted parallel strokes arranged in two rows over the body (Fig. 9:6). The date range for graves from the Eastern Cemetery containing some of these pots indicates utilisation of these signs since Naqada IIIA1 for the most ancient (Fig. 9:6, 9), continuing through Naqada IIIA2 (Fig. 9:5, 7) and running until Naqada IIID–Dynasty 3 and Dynasty 3 (Fig. 9:2, 8, 10).⁹

This kind of sign is found at other contemporary sites mainly situated in the northeastern Delta: Tell el-Farkha (Jucha 2008), Kafr Hassan Dawood (Tassie et al. pers. comm.) and Minshat Abu Omar (Kroeper 2000). There is only one example from Tell el-Farkha, which came from a grave dated from the end of Dynasty 0 (Naqada IIIB–C1) to Dynasty 1 (Naqada IIIC1–IIIC2) (Jucha 2008, 133). The sign occurs on a tall jar (“wine jar”) with three applied rope bands, while the fabric is a very fine Marl clay (Jucha 2008, 135). The mark is composed of a long vertical rectilinear line with two short strokes placed parallel to it, one on each side (Jucha 2008, 145, table 4B). Another example is known from Kafr Hassan Dawood. From Minshat Abu Omar, twelve examples are known (Kroeper 2000, 212–213). The formal composition of short and long strokes is varied and marks appear mainly on different types of jars: “wine jars” made of medium-fine Nile clay mixed with much lime (Kroeper 2000, 192); small ovoid jars with flat bases and conical jars in both Marl and Nile clays; and small ovoid, rounded-based jars mostly of Marl clay, although some are made of Nile clay (Kroeper 2000, 190). The date of the graves containing the carriers ranges between 3200–2900 BC or Naqada IIIB–IIIC (Kroeper 2000, 187).

In comparison, the signs from Adaïma were in use before those at northeastern Delta sites and continue to be used thereafter. Is this sufficient evidence to suggest that this kind of sign first emerged in Upper Egypt? The answer is probably no, since the number of examples at each site is too small and the dating depends on the length of occupation of the sites.

If we continue to examine the interpretations proposed by different scholars (van den Brink 1992, 276 n. 4), we will see that in some cases, such as the one described here, we must deal with something other than what was initially considered. First, this kind of sign cannot identify a product transported and/or stored because similar signs occur on bowls (e.g., Fig. 9:1, 2) and jars (e.g., Fig. 9:8). By definition, an open form, like a bowl, cannot be used for the transport or the storage of goods. For the same reason, it cannot be the measure of a quantity or a capacity of goods contained in the vessel.

As this kind of mark is found at Adaïma, Tell el-Farkha, Kafr Hassan Dawood and Minshat Abu Omar, this distribution makes it difficult to envisage these signs as identifying a single owner. The scalable aspect of the marks and their occurrence on (at least) four different

⁹ There is a hiatus in the presence of graves in the Eastern Cemetery in the Naqada IIIB period, and this period is represented by only a small number of tombs. This situation may explain the absence of vessels bearing signs for this period and should not be interpreted as a rupture in the utilisation of this sign group. However, we must note that there is no example dating to the Naqada IIIC period at Adaïma. Nevertheless, one example dating to Naqada IIIB–IIIC exists at Tell el-Farkha (Jucha 2008), and those found in Minshat Abu Omar are also dated to Naqada IIIB–IIIC (Kroeper 2000).

contemporary sites, more or less distant from each other, eliminate the possibility that they are an indication of the provenance¹⁰ or destination of the vessels.

After eliminating these different propositions, the suggestion that the signs are directly connected with their carriers remains to be examined. As the marks are incised before firing, they must have been applied by the potters themselves. The first use of the signs can be identified during the specific sequence of production within the *chaîne opératoire*. This moment takes place between the drying and the firing of the pots. The scalable aspect shaping the various compositions of the marks indicates clearly the intention of counting the pots. Nevertheless, it remains unclear whether the marks are to be considered as a counting system for pre-fired pottery or an indication for stacking in the kilns.

Concerning the question of the relation of these kinds of signs to the emergence of hieroglyphic writing, we first have to note that the signs appear at Adaïma at the same time as the numerals depicted on labels in ivory and bone from Tomb U-j at Abydos (Dreyer 1998, 138–139; pl. 28; Anselin 2008); that is to say Naqada IIIA1. However, the two systems of counting seem to work differently, as the long strokes do not appear on the labels from Tomb U-j. In this respect, the Group 3 signs from Adaïma (Fig. 9) cannot be considered as an “official” system of counting and as an “official” transcription of numerals, and therefore cannot be identified as hieroglyphic signs. The word “official” is employed here following Regulski’s suggestion that “... the creation of a writing system was a conscious court initiative in a time when many clusters of alternative systems of communication existed” (Regulski 2008, 1001–1002). To define these marks, we prefer to employ the term “*aide-mémoire*” taken from Bottero (1982), who applied it to the archaic signs used in Mesopotamia at the same time as the emergence of writing in Egypt. We are not able to decipher them as they do not belong to the official method of counting, and they are not readable as signs encoding the language. In other words, the reading of these signs would not have been possible outside of their context of usage.

Finally, the small number of signs of this type currently observed at different sites¹¹—26 at Adaïma, 12 at Minshat Abu Omar, and only one each at Tell el-Farkha and Kafr Hassan Dawood—highlights the fact that their use is far from systematic, as is the case for potmarks in general. Thus it seems clear that these signs were probably used only on particular occasions (see also Wodzinska this volume) that we are not yet able to define more precisely.

Conclusion

Excavations at Adaïma have provided a total of 662 pre-firing potmarks from the settlement area and both cemeteries. Adaïma was a “village” occupied from the end of Naqada I (3700 BC) until the end of Dynasty 3 (2600 BC). The most ancient pre-firing sign is dated to Naqada IID–IIIA1, and the signs continue to be used until the end of the site’s occupation. It has been demonstrated that the marking practice is far from systematic; the percentage of marked pots is less than 1% during an average of 700 years of utilisation of potmarks.

¹⁰ This does not exclude the possibility of a single provenance, but the signs do not provide this information.

¹¹ We may expect relevant new discoveries from ongoing excavations at Tell el-Iswid in the northeastern Delta which commenced in 2007.

The study of the correlations between the signs and their corresponding carriers has shown that similar signs are arranged on various techno-morphological types; for example, similar signs can be observed on open and closed forms. The signs are placed on the surface of vessels in Marl clay and those of straw tempered Nile silt, equally in Shale Ware or more specifically in Marl clay with inclusions of nummulites. These different fabrics suggest the existence of at least two different levels of pottery production, the first coming from (a) workshop(s)—which has not been identified on the site—and the other related to continuous domestic production, especially with regard to cooking pots and bread moulds. In order to understand the role of the marking practices on pottery in the context of the formation of the State and the emergence of hieroglyphic writing, it has been necessary to reconsider the different interpretations of their function proposed thus far. The study of the sign groups demonstrates their association with not one but several systems. For example, some groups of signs evolved according to a scalable system, chiefly constructed by the addition of a minimal unit.

Examining each proposition, the result is that some groups of signs have to be considered in direct relation to the production of their carriers as a means of counting the manufactured pots. The scalable nature of some signs and the fact that they are inscribed on both open and closed shapes (which are not destined for the same functions) imply that the role of these marks should be understood within the *chaîne opératoire* of pottery production, and can be placed more specifically between drying and firing operation stages. Following this contextualisation, it is possible to define these signs as an *aide-mémoire* used by the potters themselves in order to control part of the production. Within the framework of the contemporary emergence of hieroglyphic writing—which is concomitant with the formation of a central court that uses an official system of counting, which the tags containing numerals in Tomb U-j attest—this example of a non-official system of counting has evolved as an alternative system of communication which cannot be deciphered outside of its context of use, and therefore cannot be considered as a transcription of hieroglyphic signs. The rarity of these signs, which have been found thus far at four different sites located in both Upper and Lower Egypt, indicates an occasional aspect in the usage and production of the signs.

The corpus of pre-firing potmarks from Adaïma allowed us to explore new questions about these enigmatic inscriptions and, step by step, to address certain aspects of the organisation of pottery production during the Naqada III period.

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Cover image: Adaïma 2005, sunrise on ceramics tent (photo: Luc Staniaszek)

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<p>Group 1 : <u>Short strokes</u> bet. 0, 4 cm and 4 cm Total : 156</p>	1A N=38	1B N=29	1C N=26	1D N=1	1E N=1			
<p>Group 2 : <u>Long strokes</u> more than 4 cm Total : 63</p>	2A	N=21	2B N=15	2C N=4				
<p>Group 3 : <u>Long and short strokes</u> Total : 26</p>	3A	N=18	3B N=1					
<p>Group 4 : <u>Perpendicular strokes</u> Total : 121</p>	4A N=22	4B N=12						
<p>Group 5 : <u>Rectangular strokes</u> Total : 19</p>	5A N=9	5B N=2	5C N=1					
<p>Group 7 : <u>Divergent and convergent strokes</u> Total : 150</p>	7A N=14	7B N=23	7C N=16	7D N=5	7E N=7	7F N=14	7G N=31	7H N=6
<p>Group 8 : <u>Curvilinear strokes</u> Total : 95</p>	8A N=11	8B N=8	8C N=30	8D N=13	8E N=3	8F N=7		
<p>Group 9 : <u>Cupule signs</u> Total : 13</p>	9A	N=13						
<p>Group 10 : <u>Figurative and particular signs</u> Total : 18</p>	10A N=7	10B N=3	10C N=2					

Table 1: Classification of pre-firing marks according to their formal appearance. Not to scale. The totals for each main group include fragmentary signs not represented here. (Illustrations by C. Hochstrasser-Petit and Gaëlle Bréand.)

	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	4A	4B	5A	5B	5C	7A	7B
I	X	X	X		X	X		X	X		X	X	X			X	X
II	X	X				X			X		X	X				X	X
III	X		X			X											
IV		X	X			X	X					X				X	X
V	X	X	X			X		X	X	X	X		X		X	X	X
VI	X	X	X	X		X	X	X			X	X	X	X		X	X
	7C	7D	7E	7F	7G	7H	8A	8B	8C	8D	8E	8F	9A	10A	10B	10C	
I	X	X	X	X	X	X		X	X	X	X			X			
II				X				X									
III																	
IV	X			X	X		X	X	X	X	X	X					
V	X	X	X	X	X	X		X	X			X		X			
VI	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	

Table 2: Correlations between sub-groups of signs and their carriers. Areas highlighted in grey: sign sub-groups that occur on four, five or six different types of carriers.

	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	4A	4B	5A	5B	5C	7A	7B
Inside	1	1	0	1	0	1	1	0	0	0	1	0	0	0	0	1	1
Exterior	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	1	0
	7C	7D	7E	7F	7G	7H	8A	8B	8C	8D	8E	8F	9A	10A	10B	10C	
Inside	0	1	0	1	1	1	1	1	0	1	0	0	1	1	1	1	
Exterior	1	0	0	0	1	0	1	0	1	1	0	1	1	1	1	0	

Table 3: Presence (1) or absence (0) of each sub-group of pre-firing marks on the interior and exterior surfaces of the bread moulds.

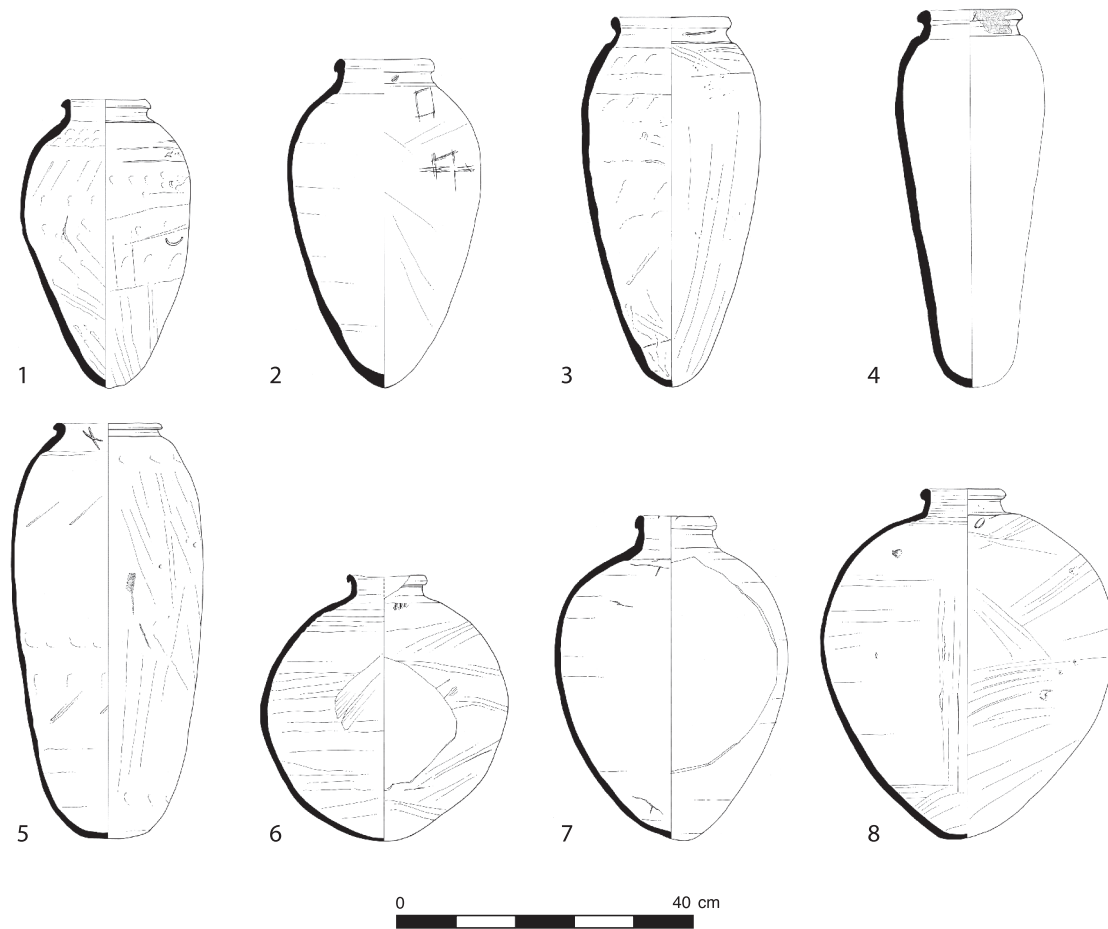


Fig. 1: Shapes of Techno-morphological Group I: Jars bearing pre-firing marks (Illustrations: C. Hochstrasser-Petit):

Large, ovoid jars with rounded base: 1: from Eastern Cemetery grave S644/1 (Naqada IIIA1?); 2: from Eastern Cemetery grave S513/2 (Naqada IIIA1-III A2). Note that the two rectangular signs on the body are post-firing graffiti.

Narrow to almost conical jars: 3: from Eastern Cemetery grave S669/1 (Naqada IIIA1); 4: from Western Cemetery S628/1 (Naqada IID-III A1); 5: Eastern Cemetery S85/4 (Naqada IIIA1-III A2 transition).

Globular jars: 6: from Eastern Cemetery S964/1 (date indeterminate); 7: Eastern Cemetery S410/3 (Dynasty 3); 8: Eastern Cemetery S963/2 (date indeterminate).

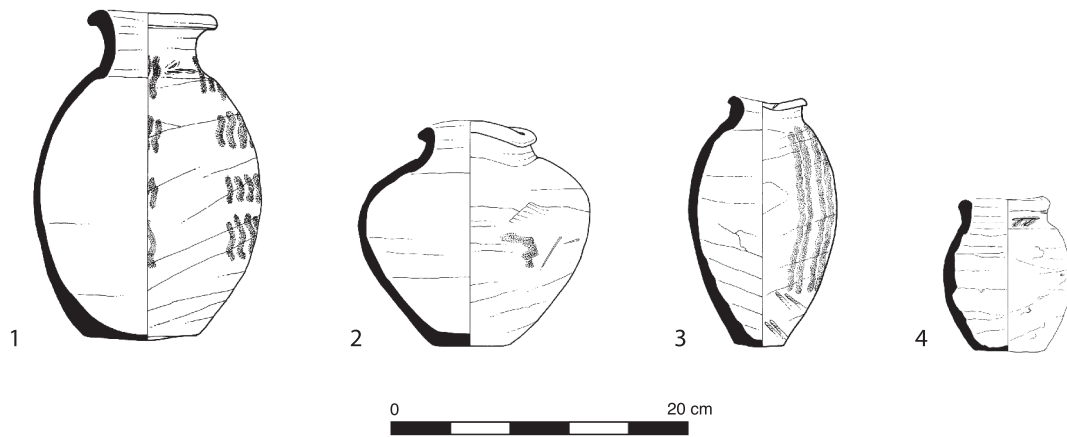


Fig. 2: Shapes from Group II: Other shapes with a neck bearing pre-firing marks
(Illustrations: C. Hochstrasser-Petit):

1. Rounded body, from Eastern Cemetery S558/1 (Naqada IIIA2).
2. Pear-shaped, from Eastern Cemetery S660/2 (Naqada IIIA1).
3. Narrow, from Eastern Cemetery S617/3 (Naqada IIIA2?).
4. Large diameter opening, from Eastern Cemetery S501/1 (date indeterminate).

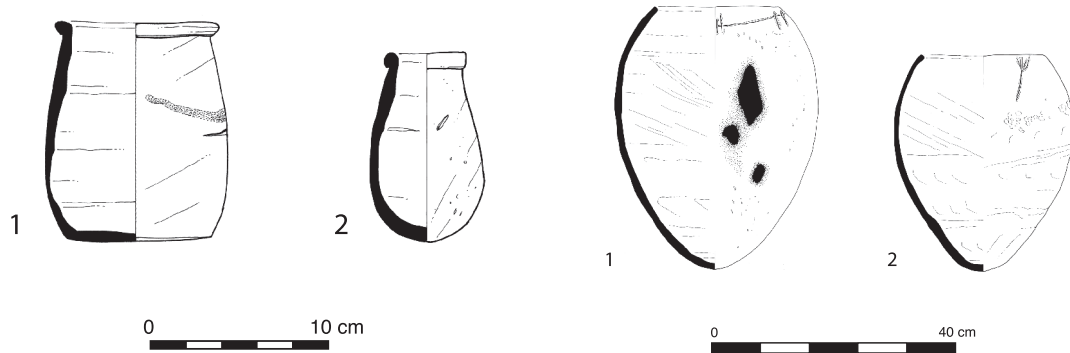


Fig. 3: Shapes from Group III: Other shapes without neck bearing pre-firing marks

- (Illustrations: C. Hochstrasser-Petit):
1. Cylindrical-shaped, from Eastern Cemetery S650/2 (Naqada IIIC).
 2. Gourd-shaped, from Eastern Cemetery S692/1 (Naqada IIIA2?).

Fig. 4: Shapes from Group IV: Cooking pots bearing pre-firing marks

- (Illustrations: C. Hochstrasser-Petit).
1–2. Cooking pots, from Eastern Cemetery: S653/1 and S697/1 (dates indeterminate).

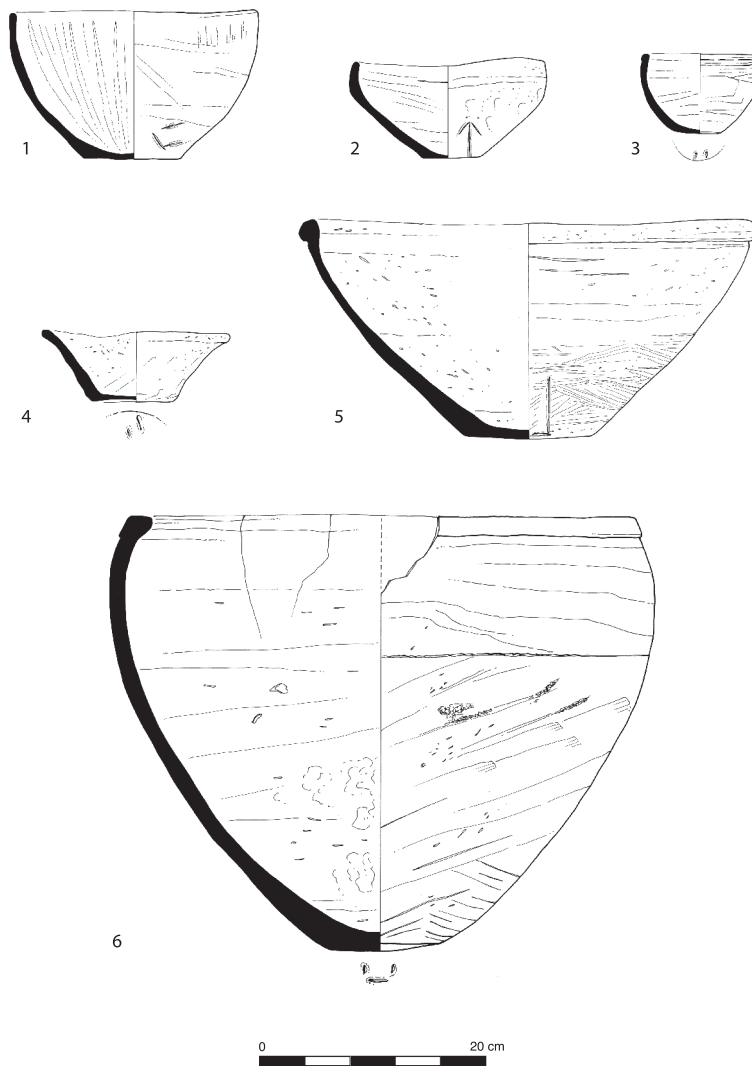


Fig. 5: Shapes from Group V: Bowls, terrines, porringers and basins bearing pre-firing marks (Illustrations: C. Hochstrasser-Petit):

1–2. Bowls, from Eastern Cemetery S561/3 (Naqada IIIA2); S590/2 (Naqada IIIA1).

3. Terrine, from Eastern Cemetery S834/1 (Naqada IIIA2).

4. Porringer, from Eastern Cemetery S597/4 (Naqada IIIA1).

5–6. Basins, from Eastern Cemetery S630/2 (Naqada IIIA2); S987/1 (Naqada IIIC–IIID).

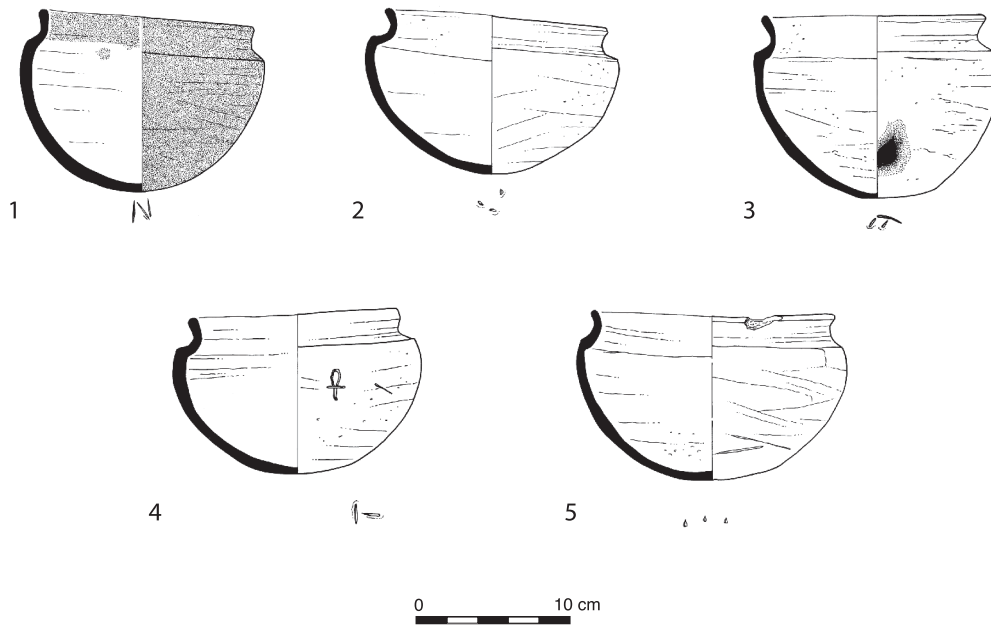


Fig. 6: Shapes from Group V: Meidum bowls bearing pre-firing marks (Illustrations: C. Hochstrasser-Petit):
 1–5: Meidum bowls from Eastern Cemetery graves S476/22; S484/2; S847/1; S850/1; S873/1a.
 (All are dated to NIID-Dynasty 3). Note that on No. 4, the hieroglyphic ankh sign is a post-firing
 graffito.

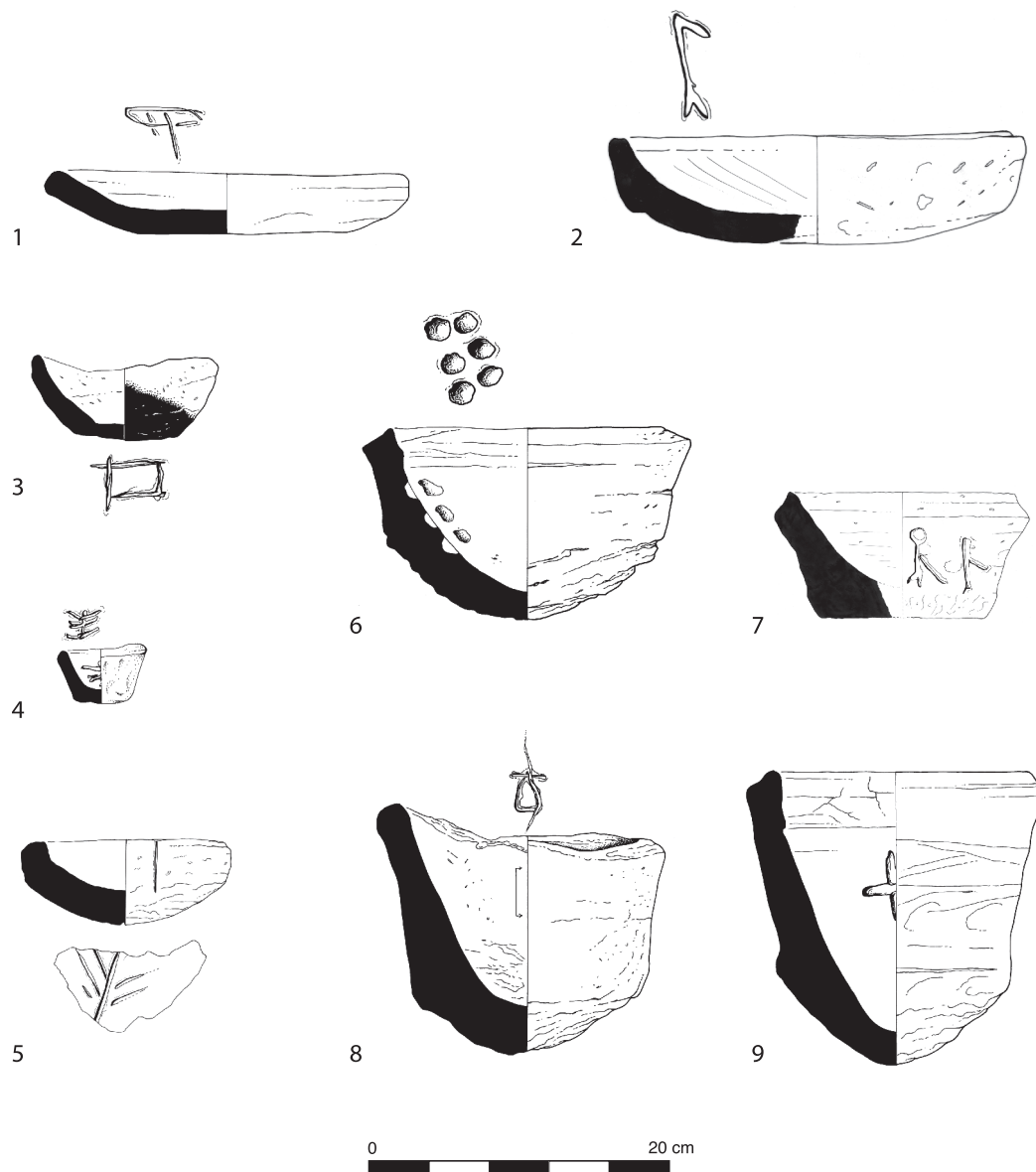


Fig. 7: Shapes from Group VI: Bread mould types bearing pre-firing marks

(Illustrations: C. Hochstrasser-Petit):

1–2. Almost flat profile, from Eastern Cemetery S513/1 (Naqada IIIA1–IIIA2) and from settlement AD99.0690 (date indeterminate).

3–5. Short discontinuous profile, from Eastern Cemetery S608/8 (Naqada IIIA1); S161/1 (Naqada IIIA1). No. 5 is from surface collection (date indeterminate).

6–7. Short continuous profile, from Eastern Cemetery S476/25 (Naqada IIID–Dynasty III) and from settlement AD90.0186 (date indeterminate).

8–9. Deep to very deep discontinuous profile from Eastern Cemetery S959/5 (Dynasty III); S998/2 (Dynasty III).

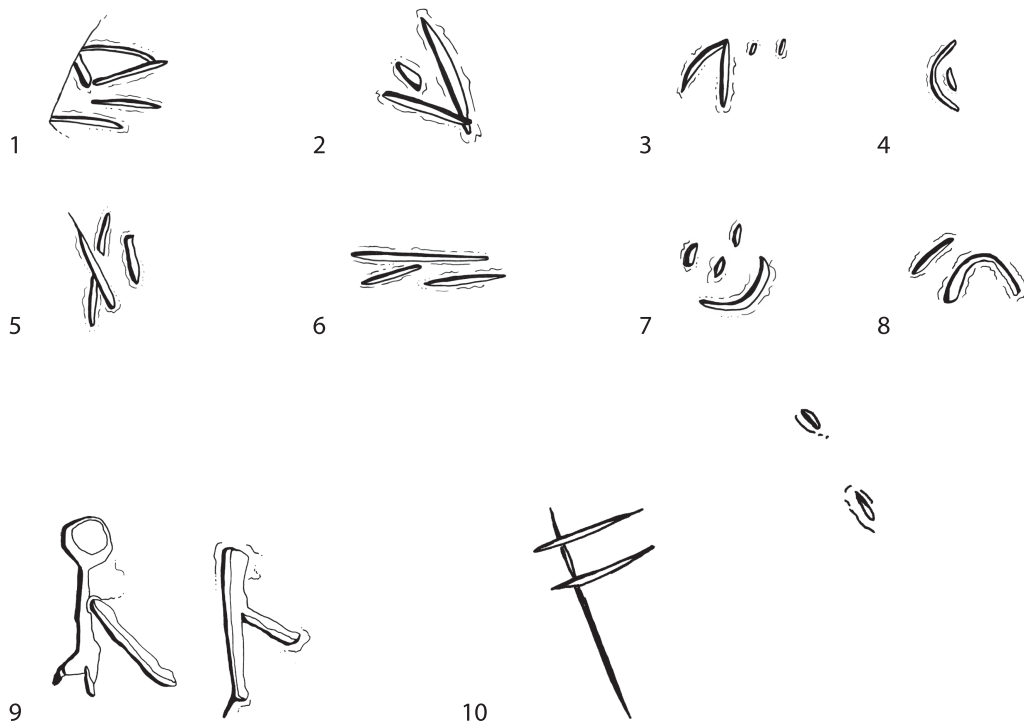


Fig 8: Examples of associated signs. Not to scale (Illustrations: C. Hochstrasser-Petit and Gaëlle Bréand):

- 1: Sub-group 7H, placed on the exterior neck of a jar fragment in Marl clay with smoothed surface (settlement AD98.0610; date indeterminate).
- 2: Sub-group 7B, placed on the exterior body of a bowl sherd in Marl clay with smoothed and partially red slipped surface (settlement AD00.0616; date indeterminate).
- 3: Sub-group 7B, placed on the exterior neck of jar fragment in Marl clay with smoothed surface (settlement AD00.0565; date indeterminate).
- 4: Sub-group 8C, placed on the exterior body of a bowl in Marl clay with smoothed and partially polished surface (Eastern Cemetery S643/3; Naqada IIIA2).
- 5: Sub-group 7G, placed on the exterior shoulder of an ovoid rounded-base jar in Marl clay with smoothed surface (Eastern Cemetery S471/11; Naqada IIID–Dynasty 3).
- 6: Sub-group 7A, placed on the exterior neck of a jar sherd in Marl clay with smoothed surface (settlement AD99.1164; date indeterminate).
- 7: Sub-group 8C, placed on the flat exterior base of a sherd of indeterminate shape in Marl clay with smoothed and red polished surface (settlement AD99.0168; date indeterminate).
- 8: Sub-group 8C, placed on the exterior neck of a jar sherd in Marl clay with smoothed surface (settlement AD99.0385; date indeterminate).
- 9: Sub-group 7A, placed on the exterior body of short continuous profile bread mould in straw tempered Nile silt with surface partially smoothed (settlement AD90.0186; date indeterminate).
- 10: Sub-group 7F, placed on the exterior shoulder of an ovoid rounded large jar in Marl clay with smoothed surface (Eastern Cemetery S901/1; Dynasty 3?).

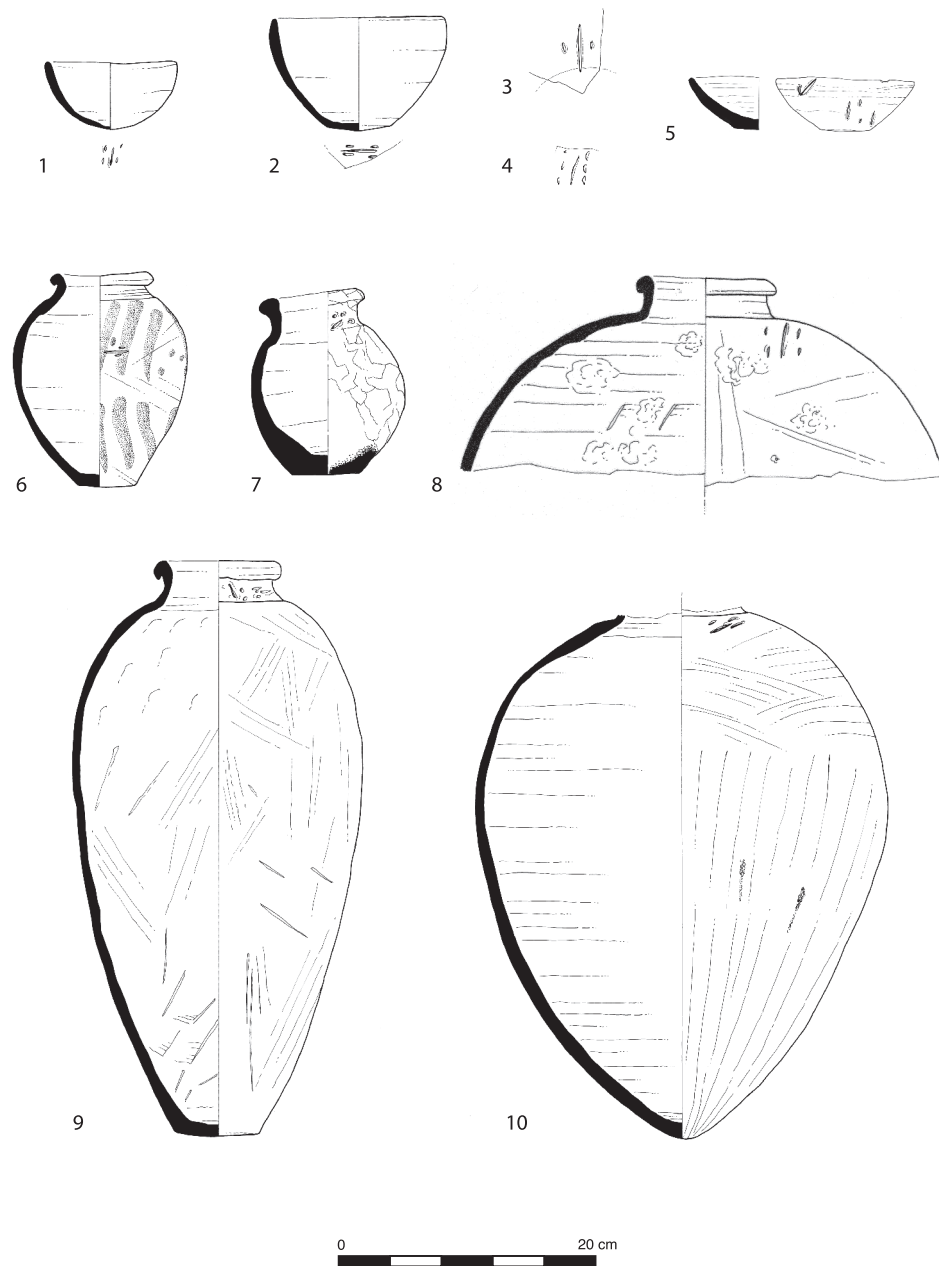


Fig. 9: Signs from Group 3 and their carriers (Illustrations: C. Hochstrasser-Petit):

Bowls (Vessel Group V) from Eastern Cemetery: 1: S458/1 (date indeterminate); 2: S476/1b (Naqada IIID–Dynasty 3); 5: S762/3 (Naqada IIIA2).

Bowls from settlement: 3: AD98.0757; 4: AD90.0089 (dates indeterminate).

Other shapes with neck (Group II) from Eastern Cemetery: 6: S597/2 (Naqada IIIA1); 7: S647/1 (Naqada IIIA2?).

Jars (Group I) from Eastern Cemetery: 8: S948/1 (Dynasty 3?); 9: S774/1 (Naqada IIIA1); 10: S981/1 (Dynasty 3).