


Potmarks on Early Dynastic and Old Kingdom Bread Moulds from the Settlement Layers of Tell el-Murra

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Abstract: Early Dynastic and Old Kingdom bread moulds belong to the type of vessels on which potmarks appear the most often, which is a phenomenon recorded during works conducted at different sites. Excavations carried out at the Tell el-Murra between 2011 and 2019 produced a significant number of vessels of this type with various marks. This paper is devoted to the 118 pre-firing marks from Early Dynastic and Old Kingdom bread moulds from the settlement layers at the Tell el-Murra. The paper comparatively analyses marks from two subsequent chronological periods, with the aim to test the validity of theories regarding their function and meaning, based on examples from Tell el-Murra. The study concludes that the high frequency of potmarks on bread forms was not accidental, but related to certain economic processes and changes, as also indicated in this paper.

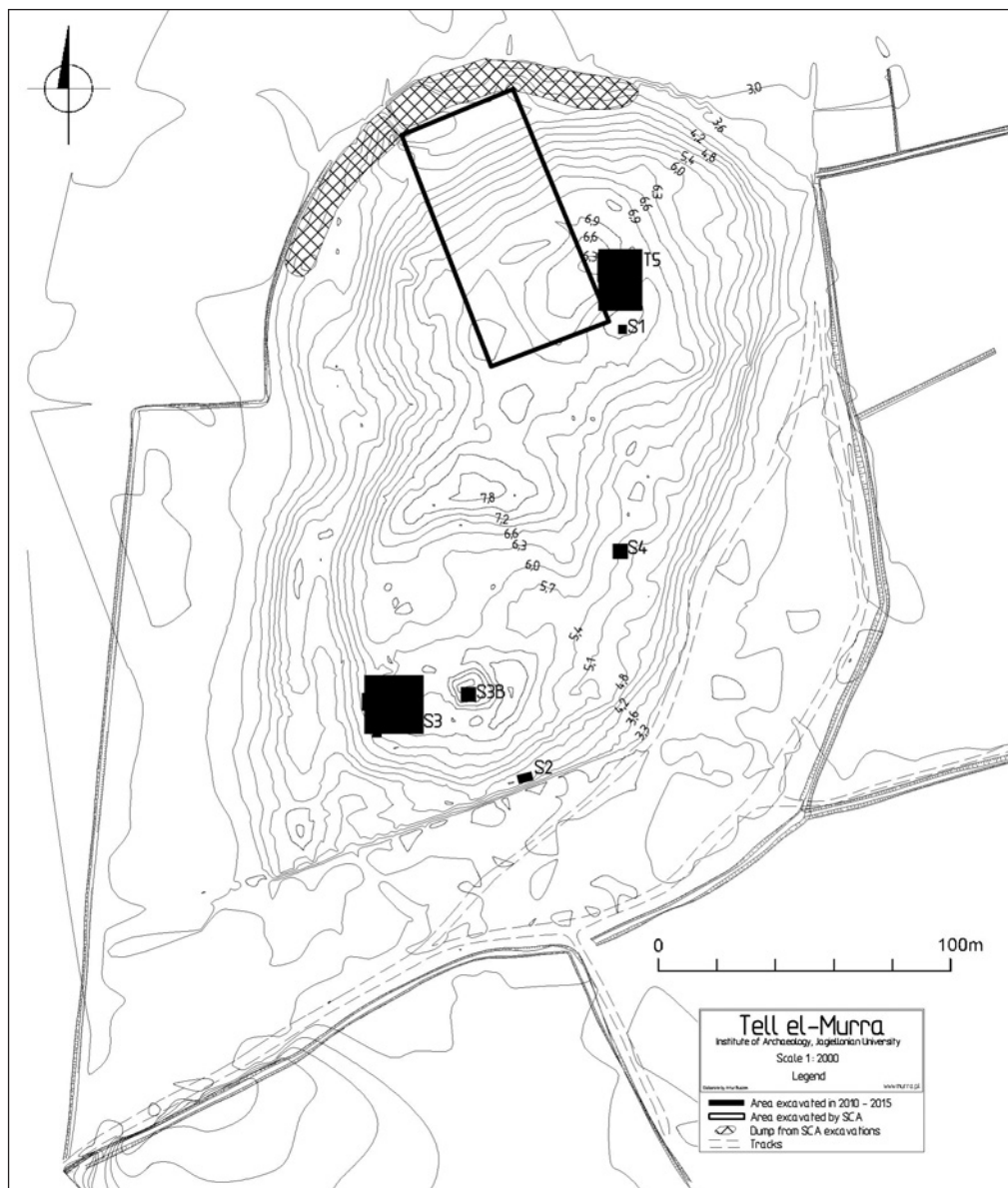
Keywords: Tell el-Murra, Nile Delta, Early Dynastic period, Old Kingdom period, bread moulds, pre-firing potmarks

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The First Dynasty witnessed a clear increase in the occurrence of vessels inscribed with potmarks¹ throughout the Egypt.² Among the various types of vessels with potmarks discovered both in graves and in settlements, the most frequent are bread moulds. This applies to many Early Dynastic and Old Kingdom sites, including Tell el-Murra. A relatively large – compared to other types of vessels – collection of marked vessels belonging to one type gives the opportunity for their in-depth analysis. This paper examines pre-firing marks on bread moulds discovered at the Tell el-Murra, originating exclusively from settlement. The material included in the work was obtained from two areas explored on the tell: trench S3 and trench T5 (**Fig. 1**) and was collected from levels dated to the Early

¹ In this paper the following terminology was adopted: the term ‘mark’ and ‘potmark’ is used to indicate the whole pot-mark, while the term ‘sign’ refers the single, individual elements creating the mark/potmark.

² Van den Brink 1992: 260, 271, Fig. 5; Kroeper 2000: 215; Tassie *et al.* 2008: 201; Mawdsley 2009: 201.



1. Tell el-Murra. Plan of the site (Drawing: A. Buszek).

Dynastic and Old Kingdom periods. The aim of this paper is to present the potmarks and analyse them from different points of view, including a diachronic one. It attempts also to verify hitherto proposed theories and interpretations on potmarks, especially in view of material from Tell el-Murra.

A BRIEF INTRODUCTION TO THE TELL EL-MURRA SITE

The site of Tell el-Murra, located in the north-eastern part of the Nile Delta, about 100km north-east of Cairo and about one km south of the modern village of Abu Umran (**Fig. 2**), has been the subject of excavations led by archaeologists from the Institute of Archaeology of the Jagiellonian University in Kraków since 2008.³



2. Map of the Nile Delta
(Drawing: M. Jucha).

Based on systematic excavations, it has been determined that the activity on the site could be dated from the Predynastic period/Lower Egyptian Culture through the Proto- and Early Dynastic, until the end of Old Kingdom (Sixth Dynasty).⁴ During the work

³ Jucha 2009: 86–88, Figs 40–41; Jucha, Buszek 2011; Jucha *et al.* 2013; Jucha, Bąk-Pryc, Czarnowicz 2014; Jucha, Bąk-Pryc, Małeczka-Drozd 2015; Jucha *et al.* 2016; 2017; 2018.

⁴ Jucha *et al.* 2016: 87–88, Table 1.

carried out on the tell, a cemetery and a settlement were discovered. The cemetery, where forty-two graves dated to the Proto- and Early Dynastic periods have been excavated so far,⁵ was uncovered in the south-eastern part of the tell, within trench S3 (**Fig. 1**). In this area, settlement layers of the same date have also been explored. Settlement remains were recorded also in trench T5, situated in the north-eastern part of the tell (**Fig. 1**). Work carried out there has revealed levels dated to the Old Kingdom and Early Dynastic periods.⁶

BREAD MOULDS FROM TELL EL-MURRA

Bread moulds are open-form vessels with vertical or divergent sides, a slightly convex or straight profile in the upper part, and a flattened or rounded bottom. The walls of bread moulds are very thick, ranging in Tell el-Murra from 2 to 6cm. The thickest part is usually in the lower portion of the vessels.

The vast majority of bread moulds identified so far at Tell el-Murra represent type A1 according to Helen Jacquet-Gordon's classification.⁷ It includes forms occurring from the Proto- and Early Dynastic periods (from Naqada IIIA to the end of Naqada IIID) to the Old Kingdom period (**Table 1**). During this time, their shape and proportions evolved from the broad and very shallow forms dated to the Naqada IIIA-B period, through medium shallow vessels with rounded bases⁸ to the progressively narrower and deeper moulds from the Naqada IIID period. They then acquire the shape of an inverted bell, which later became characteristic of the Old Kingdom period.⁹ The vessels from Tell el-Murra represent most stages of this development line, falling into the Proto- and Early Dynastic periods (from Naqada IIIB) and the Old Kingdom period (**Fig. 3**). Therefore, the set of bread moulds from Tell el-Murra includes both older, wider and shallower examples, with a rounded bottom and a rim diameter in the range of 25 to 30cm (from the Proto- and Early Dynastic periods/Naqada IIIB-C), as well as later, narrower and deeper forms of quite standardised sizes and with a rim diameter of about 25cm (end of Early Dynastic period and Old Kingdom/Naqada IIIC2-D and Third–Fourth Dynasties).¹⁰

⁵ Jucha, Bąk-Pryc, Małecka-Drozd 2015: 200–208; Jucha *et al.* 2016.

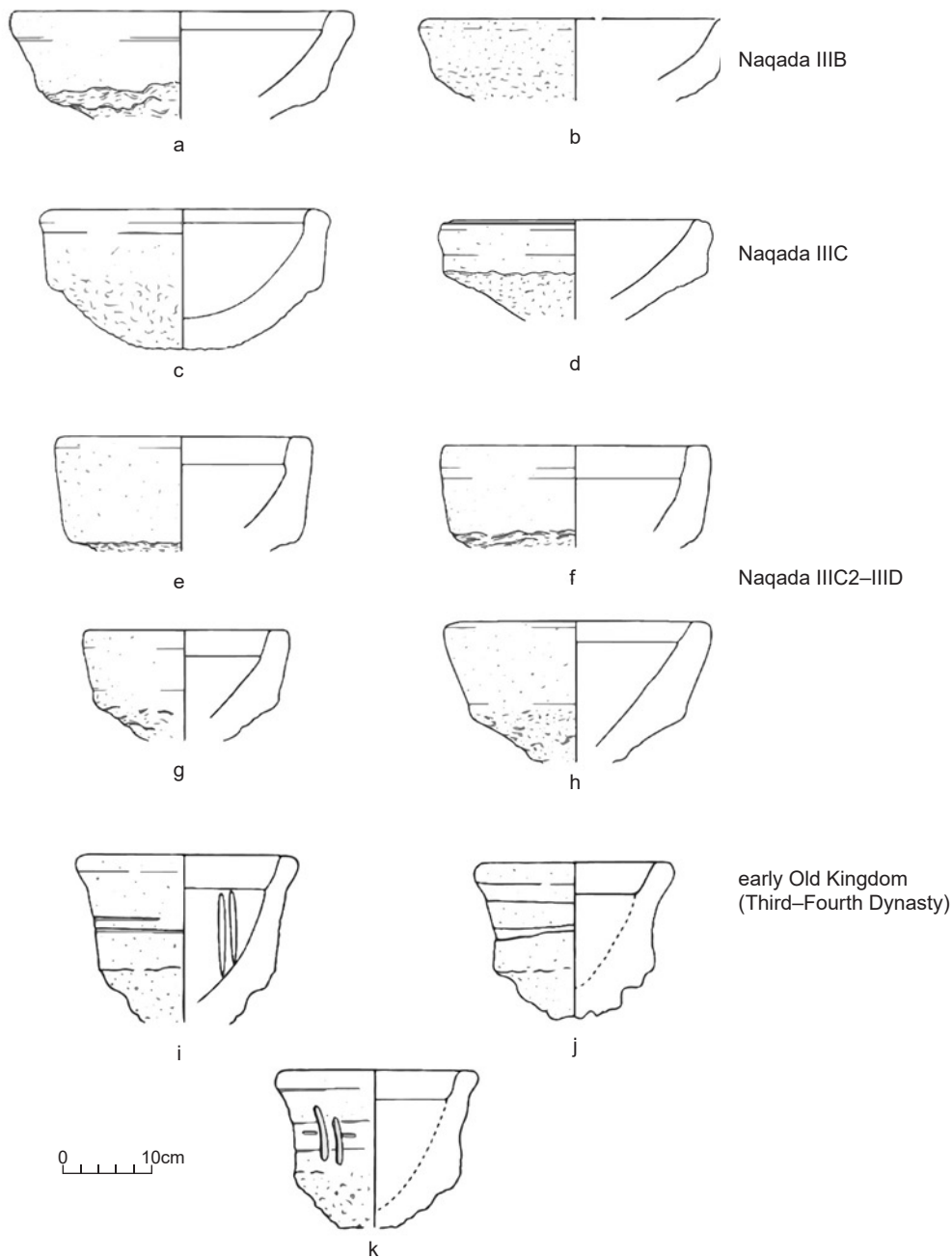
⁶ Jucha *et al.* 2013: 108–110; Jucha, Bąk-Pryc, Czarnowicz 2014: 146–149; Jucha *et al.* 2016: 101–113.

⁷ Jacquet-Gordon 1981: Fig. 1. At Tell el-Murra, only several pieces of bread moulds of Jacquet-Gordon's type A2 (deep with flat bases), typical for the second part of the Old Kingdom period, were noted. They are not discussed here as none of them attest potmark.

⁸ Petrie 1953: Pl. III: 8e-g; Jacquet-Gordon 1981: Fig. 1: 1–4; Hendrickx *et al.* 2002: 294; Mączyńska 2012: 135–137, Fig. 18: 4–5; Sobas 2012: 186, 190, Fig. 2: 19, 37, 39.

⁹ Jacquet-Gordon 1981: Fig. 1: 5–6; Hendrickx *et al.* 2002: 294.

¹⁰ In the case of fragments of rims, it is not always easy to determine what form they belonged to. It can be assumed that those with a smaller diameter were also deeper and vice versa. However, this is not always the case and smaller diameter did not always imply a deeper form, but could simply mean a smaller vessel.



3. Diachronic changes in bread mould forms from Tell el-Murra: a. 18-VC-75; b. 22-VC-56; c. 15-VC-BM2; d. M-G42-VC-6; e. 18-VC-6; f. 18-VC-90; g. 18-VC-145; h. 18-VC-141; i. M-VC-27; j. M-VC-26; k. M-VC-25 (Drawing: U. Båk).

Table. 1. Periodisation and absolute chronology of Naqada III period according to Stan Hendrickx (based on: Hendrickx 1996)

Period	Naqada III period phasing	Approximate dates BC / Dynasty
Protodynastic	Naqada IIIA1–IIIA2	3300–3200
	Naqada IIIB (first half)	3200–3150
	Naqada IIIB (second half) until IIIC1 (beginning)	3150–3100 Dynasty 0
Early Dynastic	Naqada IIIC1–IIIC2 Naqada IIID (beginning)	3100–2890 First Dynasty
	Naqada IIID	2890–2686 Second Dynasty
early Old Kingdom	–	2686–2625 Third–Fourth Dynasty
late Old Kingdom	–	2625–2200 Fifth–Sixth Dynasty

Early Dynastic bread moulds from Tell el-Murra were made of Nile silt containing numerous inclusions, mainly of straw and sand of large grain size. Specimens collected from Old Kingdom layers were also made of coarse-category Nile clay with a lot of straw and, characteristically, a large amount of sand as well as rounded quartz. The sand content in this case is much higher than in the material used for bread moulds from the Early Dynastic period.¹¹

Among the bread moulds discovered so far at Tell el-Murra, many have an angular transition dividing the body into two zones (**Fig. 3g-k**). The interior walls are regular and smooth. The upper parts of the outer surfaces are slightly smoothed, although fragments of negatives of the tempering material (mostly straw), as well as irregularities (grooves after forming), are visible on the surfaces of the walls. The lower parts of the outer surfaces of vessels with rounded bases are left very rough and irregularly formed. All these features are because most of the bread moulds were probably shaped over a hump.¹² Most of the fragments also have thickened internal rims, what is usually considered especially typical of the second part of the First Dynasty to the beginning of the Old Kingdom. At Tell el-Farkha, similar examples occur in Phase 6 and especially 7 (Early Dynastic and the beginning of the Old Kingdom period).¹³ They are also known from other sites, including Saqqara,¹⁴ Buto¹⁵ and Elephantine.¹⁶

¹¹ The above-mentioned differences may indicate, for example, different workshops or a change in production technology. However, this topic needs further studies.

¹² Arnold, Bourriau, Nordström 1993: 20–21.

¹³ Jucha 2011a: 962–963, 965–966, 968–969, Figs 2: 30, 3: 37, 4: 27.

¹⁴ Emery 1954: 160, Fig. 222: EE1.

¹⁵ Köhler 1998: 27, Pl. 45: 2–4.

¹⁶ Kaiser *et al.* 1999: 174–175, Fig. 34: 3.

Bread moulds were vessels intended for baking bread. After beer, bread was the product most often consumed on a daily basis by the Egyptians of the time.¹⁷ Satisfying these needs required the regular baking of bread in large quantities. The moulds appear to have been considered disposable, to be broken after baking in order to remove the bread.¹⁸ Therefore, no attention was paid to their durability, and the walls were poorly fired, brittle and breakable. This high in demand and short-lived pottery type was therefore produced in very large quantities.

At Tell el-Murra bread moulds were also discovered in the funerary context, but in much more limited numbers. Fragments of these vessels were associated with the following graves dated to the Early Dynastic period: nos 33,¹⁹ 39,²⁰ 40²¹ and 42.²² Only some pieces from grave no. 40 may have marks, but their state of preservation (very worn surfaces) does not allow for final conclusions on this point. No potmarks were noted on the other fragments from the rest of the graves.

Bread moulds of similar chronology are also numerous at other sites, primarily in settlement context. They are especially popular at Early Dynastic sites: at Tell el-Farkha, they occur from Phase 4 to Phase 7,²³ at Buto in layers from IIIc to VI,²⁴ at Tell Ibrahim Awad in phase 6,²⁵ at Tell el-Iswid in phase B,²⁶ as well as at Mendes,²⁷ Tell el-Akhdar,²⁸ Tell Abu el-Halyat,²⁹ Tell Gezira el-Faras,³⁰ Tell el-Gabarra³¹ and even in the southern Levant, at Tel Erani, for example.³²

In the Early Dynastic period in the funerary context, bread moulds are known from Heluan³³ and necropolises located in Upper Egypt, including Mostagedda,³⁴ Qau,³⁵ El Kab,³⁶ Bet Khallif³⁷ and Abydos.³⁸

¹⁷ Breasted 1906: 103; Drenkhahn 1975; Samuel 2000: 537.

¹⁸ Warden 2014: 2–7.

¹⁹ Jucha *et al.* 2018: 153–154.

²⁰ Jucha *et al.* 2018: 153.

²¹ Jucha *et al.* 2018: 153–155.

²² Publication in preparation.

²³ Jucha 2005: 51–52; Mączyńska 2012: 135–136, Figs 18: 4–5, 19: 2, 20: 7.

²⁴ Köhler 1998: 27, 47, 90, Pls 42–46.

²⁵ Van den Brink 1992: 45, 51–53, Fig. 7: 3.

²⁶ Van den Brink *et al.* 1989: 71–78, Fig. 13: 4–9.

²⁷ Friedman 1992: 199–200, Fig. 1a.

²⁸ Jucha 2012: 51.

²⁹ Jucha 2011c: 68, Fig. 2.

³⁰ Jucha 2011b: 186, Fig. 39: 4–5, 7.

³¹ Rampersad 2008: 98, Fig. 3: 3–6.

³² Czarnowicz 2016: 77, Fig. 2; Gamrat 2019: 37, Pl. 4.

³³ Köhler 2005: 55, Pls 32: 5–6, 33: 10–11.

³⁴ Brunton 1937: 105.

³⁵ Brunton, Caton-Thompson 1928: 5.

³⁶ Quibell 1898: 19.

³⁷ Garstang 1903: Pl. 30: 17.

³⁸ Petrie 1902: Pl. XIX: 57–62; Peet, Loat 1913: 17.

In the Old Kingdom, bread moulds are attested at settlement and cemeteries. In the settlement context, they were noted rather in large quantities at Giza,³⁹ Tell el-Farkha⁴⁰ or Elephantine.⁴¹ Among burial sites, at Saqqara⁴² and Abusir⁴³ they were recorded in large quantities, while at Herakleopolis Magna,⁴⁴ Dayr al-Barsha in significantly lower quantities.⁴⁵

POTMARKS

The analysis includes 118 potmarks from both complete or almost complete vessels, diagnostic fragments (mostly rims) and non-diagnostic pieces, which, based on technological features (coarse-grained porous ceramic fabric, rough surface, thick, fragile walls), can be considered most probably to be from this type of vessels. It should be noted that most of the potmarks under analysis come from fragments of vessels, so they may represent only some signs from a whole sequence of signs which could originally have formed a single potmark. Interpretation and identification of potmarks from fragmentarily preserved vessels may be incorrect. In addition, some signs are ambiguous and their attribution to a given group is quite subjective.

At Tell el-Murra, among the marks attested on vessels from the Early Dynastic and Old Kingdom period, ten groups can be distinguished (**Table 2**). Most of the potmarks are recorded in both periods, although their frequency varies. Both chronological sets are of similar size and internal diversity.

The most common marks on bread moulds from the Early Dynastic period consist of one, two or three straight vertical and diagonal lines (Group 3). Quite often, there is a combination of straight and curvilinear lines (Group 5) in various arrangements and circles/dots (Group 9).

In the Old Kingdom, the straight lines (Group 3) are also definitely the most frequently attested group. In addition, circles and dots (Group 9) as well as a combination of straight and curvilinear (Group 5) lines are also relatively common.

Early Dynastic and Old Kingdom marks could be found on the outer or inner surface (**Table 2**). However, in both periods they are much more often attested on the interior of vessels.⁴⁶ This is a feature characteristic of bread moulds from Tell el-Murra. On other vessel types, both from the settlement and grave context, the marks appear mostly, if not exclusively, on the outer walls. This may be due to their open form since it is much easier to make a mark inside the vessel of such a form than in the case of closed ones.

³⁹ Wodzińska 2009a; 2009b.

⁴⁰ Mączyńska 2009.

⁴¹ Kaiser *et al.* 1999: 174–175.

⁴² Rzeuska 2006.

⁴³ Kytmarova 2011.

⁴⁴ Bader 2009.

⁴⁵ Vereecken *et al.* 2009.

⁴⁶ Other sites show that this was not always the case: Sobas 2014: 67; Bréand 2015: 200.

Table 2. The frequency of the occurrence of particular potmarks on Early Dynastic and Old Kingdom bread moulds from Tell el-Murra

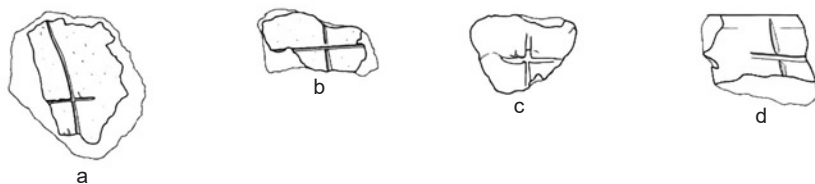
Group number and description	Number of signs					Illustration
	Early Dynastic		Old Kingdom		Total	
	Interior	Exterior	Interior	Exterior		
Group 1 Cross	2	2	2	2	8	Figs 4a-d, 7a-d, 10a, 11a-b
Group 2 Criss-cross	7	0	0	2	9	Figs 4e-k, 7e-f, 10b-c, 11c
Group 3 Straight lines	15	6	9	8	38	Figs 4l-z, 5a-f, 7g-w, 10d-e, 11d
Group 4 Curvilinear lines	5	1	2	0	8	Figs 5g-l, 8a-b, 10f, 11h
Group 5 Combinations of straight and curvilinear lines	10	3	6	2	21	Figs 5m-x, 8c-j, 11e-g
Group 6 Harpoon-like shape (?)	0	0	2	0	2	Figs 8k-l, 11i
Group 7 Arrow-like shape (?)	3	0	0	0	3	Figs 6a-c, 10g
Group 8 Arch-like shape (?)	1	1	0	1	3	Figs 6d-e, 8m
Group 9 Circles/dots	6	5	10	2	23	Figs 6f-p, 9a-l, 10h-k, 11j-l
Group 10 Semi-circles	1	1	1	0	3	Figs 6q-r, 9m, 10l
Total	50	19	32	17	118	
	69		49			

One must however note that on bowls and plates, which also belong to open forms, potmarks are predominantly found on the outer surface. So perhaps, in the case of bread moulds, this may have been related to their function, if indeed, as some believe,⁴⁷ the marks on the inner surface were deep enough to leave imprints on the bread. In the material from Tell el-Murra, one bread mould from the Early Dynastic period has marks placed on both the inner and outer surfaces (**Fig. 5x**), which is not an isolated case, as material from other sites shows.⁴⁸

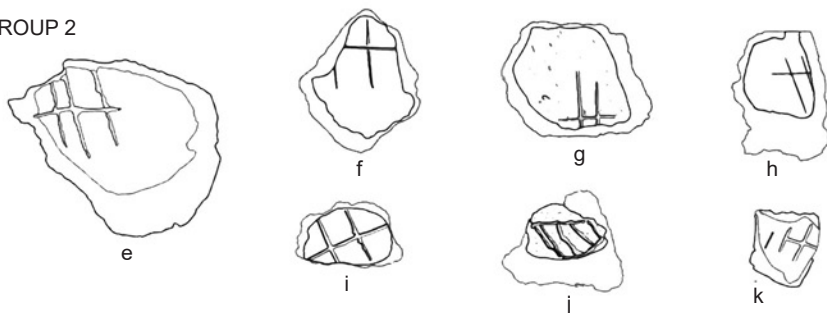
⁴⁷ Arnold, Bourriau, Nordström 1993: 20; Mączyńska 2009: 106.

⁴⁸ At least four such specimens are known from Adaima: Bréand 2015: 200, Fig 14.

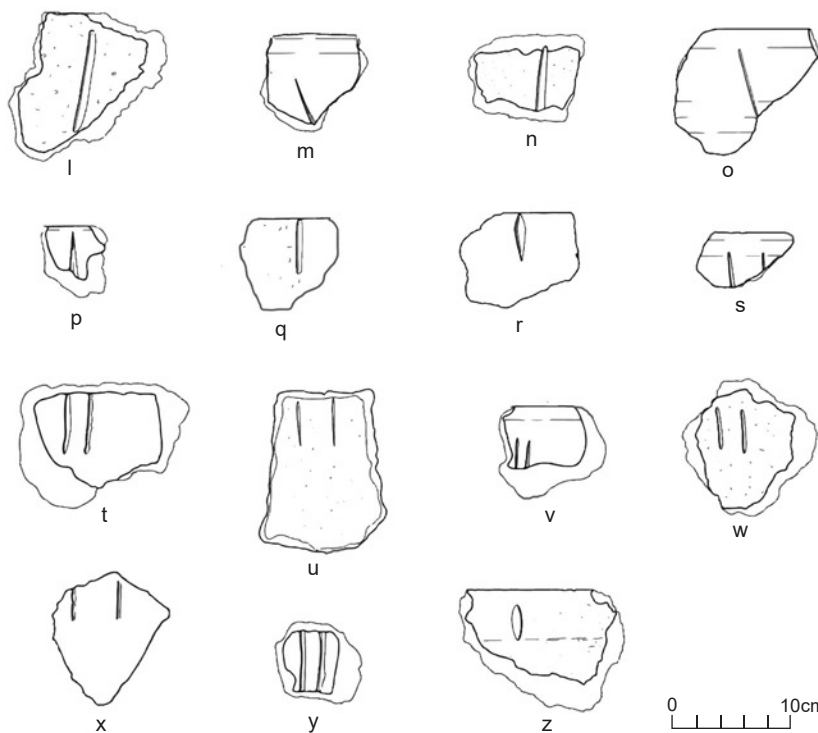
GROUP 1



GROUP 2

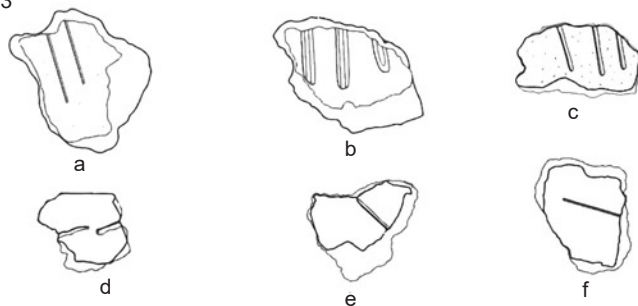


GROUP 3

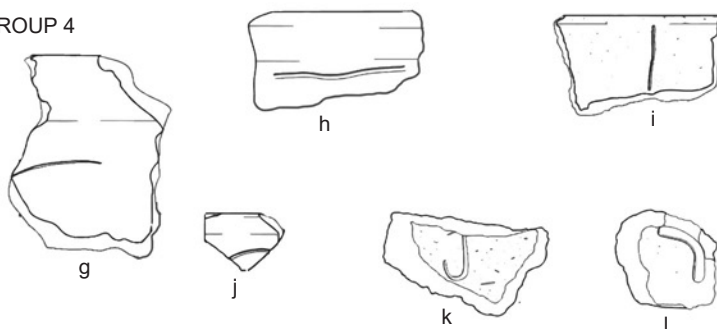


4. Potmarks on Early Dynastic bread moulds from Tell el-Murra: a. 15-VC-143; b. 12-VC-326; c. 16-VC-43; d. 11-VC-23; e. 16-VC-149; f. 12-VC-323; g. 17-VC-28; h. 12-VC-64; i. 16-VC-60; j. 17-VC-23; k. 16-VC-69; l. 15-VC-150; m. 11-VC-11; n. 15-VC-80; o. 12-VC-330; p. 12-VC-63; q. 15-VC-129; r. 12-VC-12; s. 11-VC-12; t. 15-VC-29; u. 12-VC-328; v. 15-VC-84; w. 16-VC-90; x. 11-VC-17; y. 15-VC-113; z. 18-VC-17 (Drawing: U. Bąk).

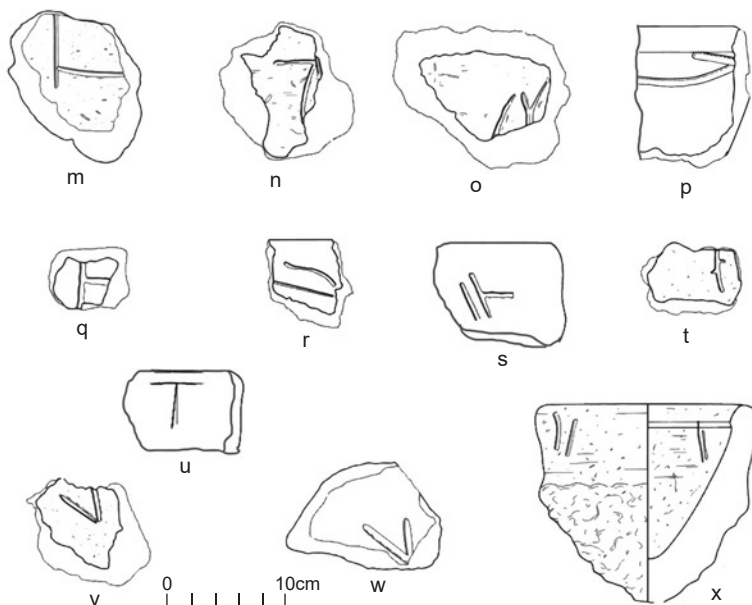
GROUP 3



GROUP 4

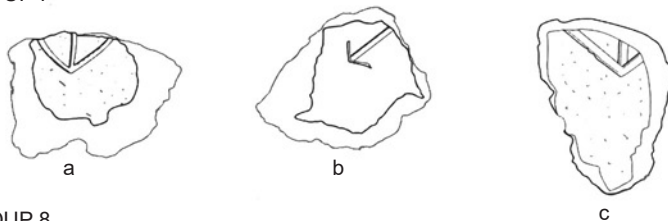


GROUP 5



5. Potmarks on Early Dynastic bread moulds from Tell el-Murra: a. 12-VC-324; b. 16-VC-98; c. 16-VC-43; d. 11-VC-18; e. 16-VC-10; f. 16-VC-11; g. 11-VC-4; h. 12-VC-325; i. 12-VC-329; j. 12-VC-116; k. 17-VC-23; l. 17-VC-98; m. 17-VC-91; n. 18-VC-139; o. 18-VC-92; p. 17-VC-99; q. 18-VC-31; r. 12-VC-331; s. 16-VC-13; t. 12-VC-50; u. 12-VC-322; v. 17-VC-122; w. 17-VC-56; x. M-VC-67 (Drawing: U. Båk).

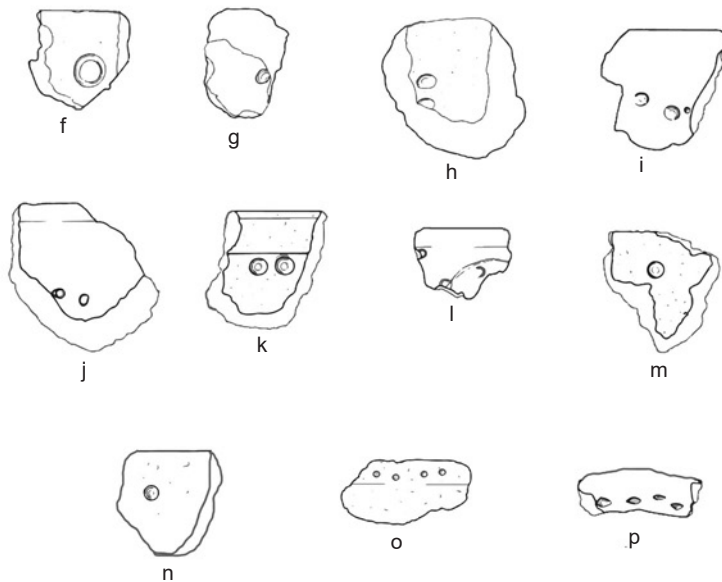
GROUP 7



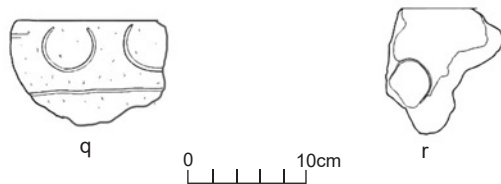
GROUP 8



GROUP 9

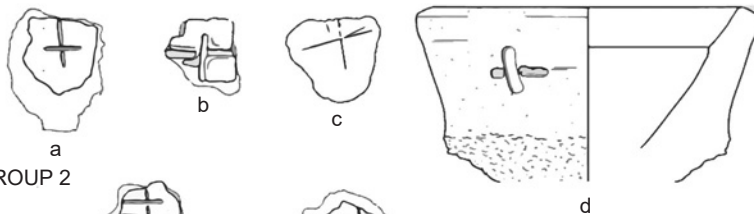


GROUP 10

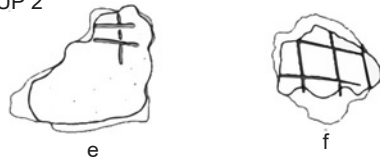


6. Potmarks on Early Dynastic bread moulds from Tell el-Murra: a. 16-VC-91; b. 16-VC-99; c. 18-VC-94; d. 11-VC-10; e. 18-VC-84; f. 15-VC-147; g. 16-VC-21; h. 18-VC-157; i. 12-VC-57; j. 15-VC-140; k. 15-VC-141; l. 11-VC-38; m. 15-VC-28; n. 16-VC-68; o. 15-VC-131; p. 12-VC-256; q. 15-VC-137; r. 12-VC-1 (Drawing: U. Bąk).

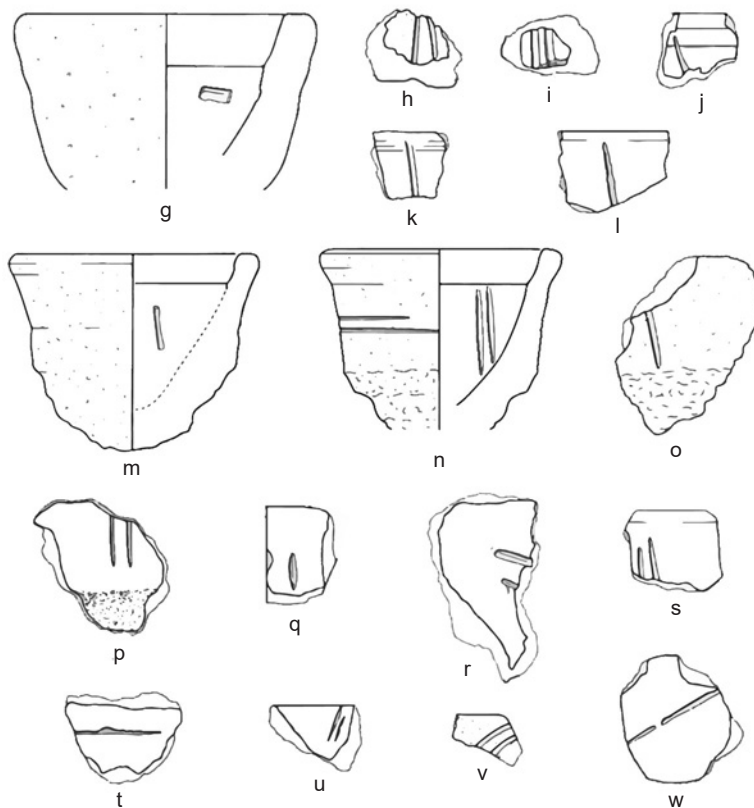
GROUP 1



GROUP 2



GROUP 3



7. Potmarks on Old Kingdom bread moulds from Tell el-Murra: a. 15-VC-110; b. 14-VC-174; c. 17-VC-13; d. 17-VC-113; e. 16-VC-55; f. 15-VC-66; g. 16-VC-65; h. 15-VC-107; i. 16-VC-71; j. 14-VC-153; k. 15-VC-58; l. 15-VC-95; m. M-VC-20; n. M-VC-27; o. 15-VC-122; p. 14-VC-140; q. 14-VC-165; r. 16-VC-54; s. 14-VC-171; t. 14-VC-168; u. 14-VC-167; v. 15-VC-50; w. 14-VC-16 (Drawing: U. Båk).

GROUP 4



a

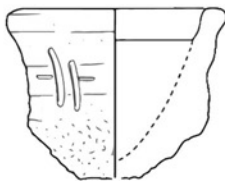


b

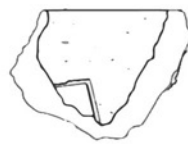
GROUP 5



c



d



e



f



g



h



i



j

GROUP 6



k



l

GROUP 7

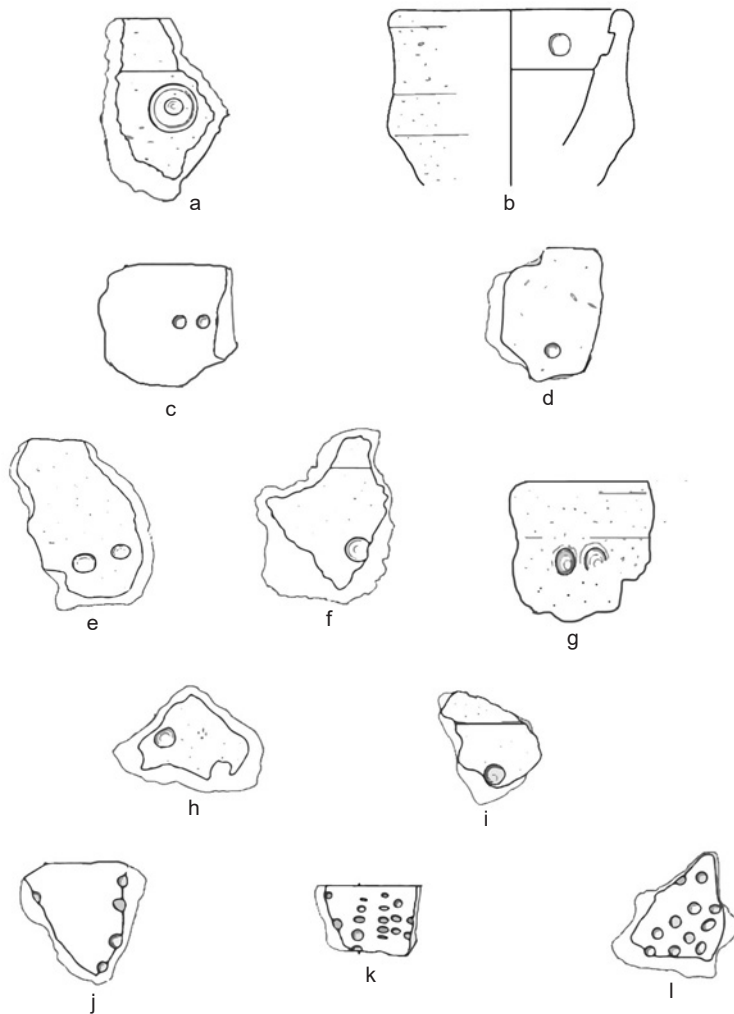


m



8. Potmarks on Old Kingdom bread moulds from Tell el-Murra: a. 14-VC-166; b. 15-VC-153; c. M-VC-24; d. M-VC-25; e. 15-VC-51; f. 15-VC-146; g. 17-VC-90; h. 14-VC-175; i. 16-VC-70; j. 14-VC-176; k. 15-VC-118; l. 15-VC-125; m. 13-VC-68 (Drawing: U. Bąk).

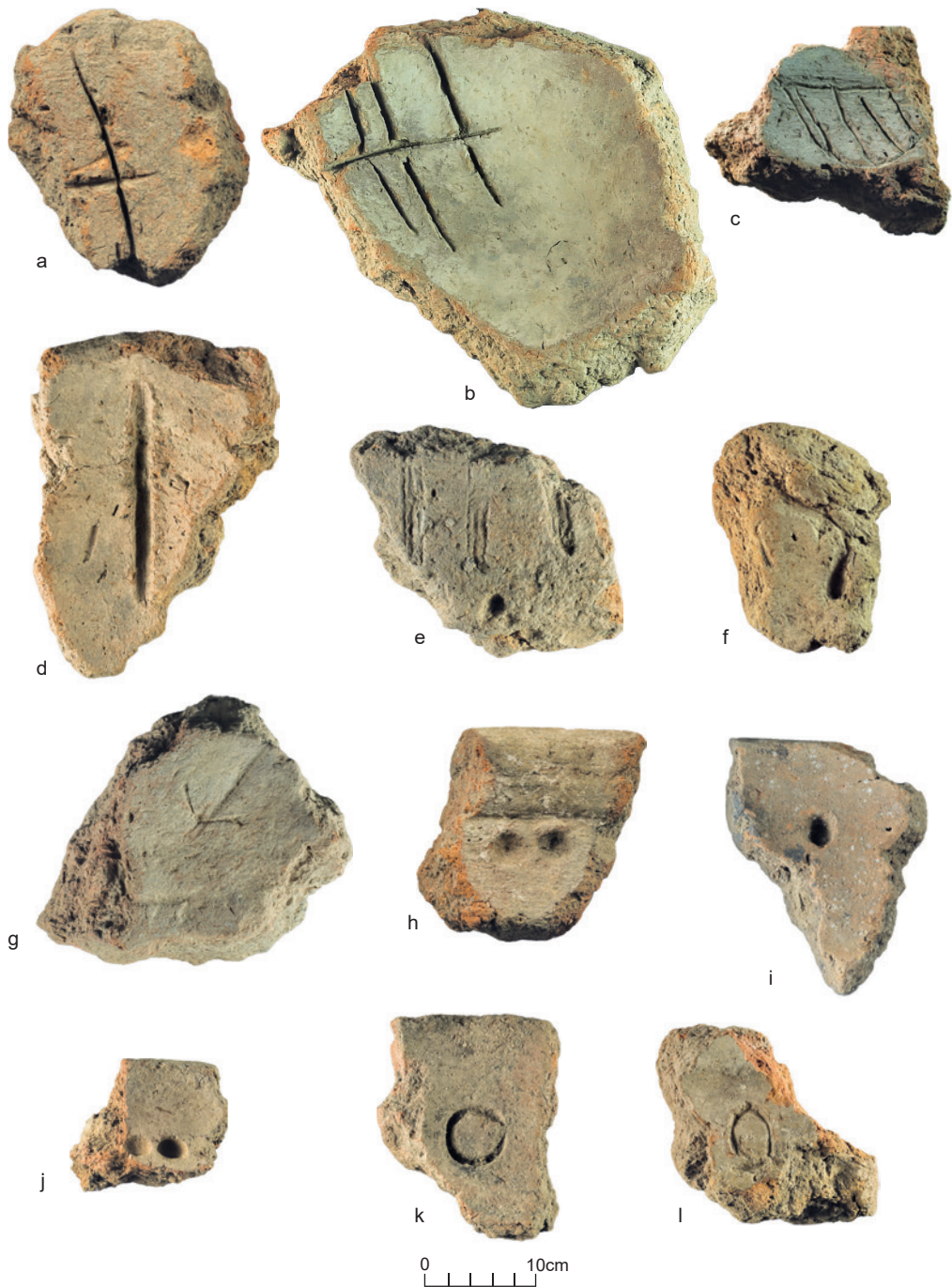
GROUP 9



GROUP 10



9. Potmarks on Old Kingdom bread moulds from Tell el-Murra: a. 15-VC-53; b. 14-VC-115; c. 15-VC-103; d. 14-VC-127; e. 13-VC-99; f. 15-VC-73; g. 16-VC-61; h. 14-VC-21; i. 11-VC-365; j. 14-VC-75; k. 14-VC-173; l. 14-VC-169; m. 14-VC-163 (Drawing: U. Båk).



10. Selected potmarks on Early Dynastic bread moulds from Tell el-Murra: a. 15-VC-143; b. 16-VC-149; c. 17-VC-23; d. 15-VC-150; e. 16-VC-98; f. 17-VC-98; g. 16-VC-99; h. 15-VC-141; i. 15-VC-28; j. 15-VC-116; k. 15-VC-147; l. 15-VC-135 (Phot. E. Kuciewicz).



11. Selected potmarks on Old Kingdom bread moulds from Tell el-Murra: a. 15-VC-110; b. 17-VC-113; c. 15-VC-66; d. M-VC-27; e. M-VC-25; f. M-VC-24; g. 15-VC-51; h. 15-VC-153; i. 15-VC-125; j. 15-VC-73; k. 15-VC-53; l. 14-VC-115 (Phot. E. Kuciewicz).

Hardly any marks occur only on inner or outer surfaces of the vessels. Although harpoon-like (Group 6) and arrow-like marks (Group 7) were noted only on the inner surface (**Table 2**), both are too rare to allow final conclusions in this respect.

The marks appear on various parts of the bread moulds: on the rim (upper or outer edge), in the upper part of the vessel, often just below the inner ledge, in the lower part of the vessel or on the smooth inner bottom. They are not placed on the outer very rough and uneven surface since marks would probably not be visible then.

Comparison of the marks on the moulds with those from other types of pottery from Tell el-Murra allows for some important observations. Some of the marks attested on bread moulds are also recorded on bowls, tall wine jars and other jars of different sizes.⁴⁹ These are, for example, straight and curvilinear lines, arrows, crosses and criss-crosses (Groups 1–4 and 7). The set of marks from bread moulds is not particularly extensive or varied in comparison to the marks from other types of vessels. There was no separate system of potmarks reserved only for bread moulds: although some occur so far only on this type of vessels (e.g. circles, Group 9), this could be due to the state of the research.

The potmarks on the bread moulds from Tell el-Murra are largely similar to the marks on the same type of vessels from other Early Dynastic sites, including Tell el-Farkha,⁵⁰ Buto,⁵¹ Tell el-Gabbara,⁵² Adaima,⁵³ and Tell el-Iswid.⁵⁴ Early Dynastic bread moulds, similar to those from Egypt, but made of local clay, with potmarks of the same type were also found in Tel Erani, in layers related to the Egyptian presence in this area.⁵⁵ Comparative material from the Old Kingdom is much less extensive, but bread moulds with similar marks are well attested at Tell el-Farkha,⁵⁶ Buto⁵⁷ and Giza.⁵⁸ Generally, the repertory of potmarks on bread moulds from Tell el-Murra is similar as at other sites, although the sets from Tell el-Farkha and Buto are more varied and contain marks unattested at Tell el-Murra.

All marks on bread moulds from Tell el-Murra were made before the firing and drying of the vessel, on the still moist mass, as evidenced by excess material visible on the edges of the marks. This suggests that they were probably made by the potter during the process of making the vessel.⁵⁹ The marks were made using a sharpened tool such as a bone, stick, flint or reed,⁶⁰ or impressed. In the latter case, however, the entire mark was not placed at once, but successive lines were gradually imprinted using, for example, an elongated thin

⁴⁹ Kazimierczak 2016: 8–13, Pls 1–2; 2022: 170–176.

⁵⁰ Jucha 2005: 57–58; Mączyńska 2009; Sobas 2014.

⁵¹ Köhler 1998: Pls 42–46; Wodzińska 2009a: 246–248.

⁵² Rampersad 2020.

⁵³ Bréand 2015: 200, Figs 11–12.

⁵⁴ Bréand 2015: 203–206, Figs 13–15.

⁵⁵ Gamrat 2019: 37, Pl. 4: 1.

⁵⁶ Mączyńska 2009.

⁵⁷ Hartmann 2011.

⁵⁸ Wodzińska 2009a: 240–246.

⁵⁹ Cf. Sobas 2014: 67; Bréand 2015: 210.

⁶⁰ Cf. Tassie *et al.* 2008: 220.

object. Closer observation of the potmarks, the arrangement of individual lines, and the way they intersect each other, allows us to reconstruct the order in which signs were applied to the vessel. The circular marks on the bread moulds could have been made with fingers or a narrow object with rounded smooth edges. In the case of some potmarks from Tell el-Murra, it is clearly visible that the tip or edge of the object with which they were made was not smooth but jagged or had grooves and indentations (**Figs 5b, 10e**).

The marks on the bread moulds were made by using much wider, thicker-ended objects than those used for making potmarks on other types of vessels, including wine jars. Marks on bread moulds are also relatively larger, and have wide and deep carvings or imprints (although the marks on individual moulds also differ in thickness) as opposed to marks on wine jars, which are usually much thinner and narrower. This was probably due to the quality of the vessel and the structure of its surface. On the uneven and rough walls of bread moulds, it was necessary to apply a larger, deeper engraved mark, also in order to make it visible on the surface of the bread itself.

INTERPRETATION

Bread moulds are not the only type of vessels among the ceramic material from the settlement that bear potmarks⁶¹ but they are the most numerous. A high number of marked bread forms was also noticed at other sites. This is probably related to the clearly visible significant increase in the number of these vessels at the end of the Naqada III period.⁶² It is possible that bread production during this period became more specialised as a result of the process of ‘increasing levels of social differentiation’.⁶³ It was suggested that quite numerous potmarks incised on bread moulds should be considered as a symbol of ‘economic relevance’.⁶⁴ Bread mould marks are often considered to be an element of organised, official bread production, for example for administrative purposes.⁶⁵

Despite many more or less extensive studies on pottery marks, not only from bread moulds but also from other types of vessels,⁶⁶ the function and meaning of marks is still not fully clear. The following interpretations appear most frequently in the literature:

a. potmarks as description of the contents of the vessels,⁶⁷ a way of identifying the specific product;⁶⁸

⁶¹ Potmarks have also been noted on very tall wine jars, very tall jars with broad shoulders, medium-sized ovoid jars, small jars with broad shoulders, bowls and very small jars: Kazimierczak 2022: 174–176, Pl. 197.

⁶² This could be related to the spread of a new method of making bread with the use of a preheated matrix (Adams 2009: 133, 146; Buchez 2004: 681; Mączyńska 2009: 97). Along with the mass production of bread moulds, their shape also underwent a change (as mentioned above).

⁶³ Hendrickx *et al.* 2002: 298.

⁶⁴ Buchez 2004: 682; Adams 2009: 137.

⁶⁵ Cf. Buchez 2004; Rampersad 2008; Adams 2009: 150.

⁶⁶ E.g. van den Brink 1992; 2011; Jucha 2008; Tassie *et al.* 2008; Mawdsley 2009; Wodzińska 2009a; Kroeper 2000; Sobas 2010; 2014; Bréand 2009; 2015; Rampersad 2020; 2022.

⁶⁷ De Morgan 1897: 165; Amélineau 1899: 199–200; Emery 1949: 154–156.

⁶⁸ Helck 1985: 635.

- b. marks indicating the capacity of the vessels, or the exact amount of product stored in the vessels;⁶⁹
- c. craft marks of individual potters, pottery workshops;⁷⁰
- d. marks indicate the final destination of the vessel to facilitate the distribution of goods to specific institutions: the palace, royal tombs, funerary complexes, temples, cult places and administrative centres;⁷¹
- e. marks indicating the place of production/origin of the vessels.⁷²

Gaël Bréand⁷³ noted that we cannot exclude the existence of more than one function of potmarks, as they appear on different types of vessels of varying functions found in different contexts and were made in different parts of the vessels (base, shoulders, rim, inner and outer surface). Therefore, it seems possible that potmarks could have had different meanings depending on, for example, the type of vessel on which they were impressed. Although certain marks on bread forms also occur on other vessel types, there are many that are attested only on specific vessel types. This applies, for example, to wine jars, which also usually have more complex potmarks, consisting of several signs.⁷⁴ Perhaps, therefore, some markings were indeed restricted only to certain types of vessels (e.g. wine jars) and carried information reserved only for such containers.

In the case of bread moulds themselves, it is also possible that more than one of the above interpretations is correct. As mentioned above, the markings on these bread moulds were placed on the inner or outer side, and, in very rare cases, on both. Thus, the marks on each side could carry different meanings.

If marks placed on the inner surface indeed left imprints on the bread,⁷⁵ which according to Bréand⁷⁶ could not be proven without experimental studies, they referred presumably to the bread itself. Potmarks made on the outer surface could have been markings of the bread mould itself as well as of the bread which was to be baked in it. In both cases most of the above-listed hypothesis seem to be plausible.

As these marks were made before firing, so certainly by the potter, it seems probable they were the workshop's marks (c). They could indicate the destination of the product (d)⁷⁷ as well as place of production (e). It seems least likely that the marks labelled the product that was placed inside the container (a), since they were made by the potters. However, such marks could denote the size of the loaf or the type of bread the mould contained (b).⁷⁸

⁶⁹ Brunton, Gardiner, Petrie 1927: 18, 68; Warden 2014: 131–168.

⁷⁰ Sobas 2014: 78.

⁷¹ Mawdsley 2009: 209; Wodzińska 2009a: 243–244.

⁷² Petrie, Quibell 1896: 44; Dreyer 1993; Kroeper 2000: 216; Wengrow 2006: 236–239.

⁷³ Bréand 2015: 208.

⁷⁴ Kazimierczak 2016: Pls 1, 4–6.

⁷⁵ Arnold, Bourriau, Nordström 1993: 20; Mączyńska 2009: 106.

⁷⁶ Bréand 2015: 210.

⁷⁷ Sobas 2014: 78.

⁷⁸ Hartmann 2011: 472.

Of particular interest are moulds with potmarks on both surfaces. One such specimen from Tell el-Murra has the same type of mark (Group 5) on both sides (**Fig. 5x**). This could suggest the same meaning of inside and outside marks: the ‘information’ given in the potmark could be read from the vessel itself or from the bread, when the mould had been removed or broken. However, examples of moulds from Tell el-Iswid with different types of marks on the inner and outer sides⁷⁹ seem to contradict this hypothesis.

Some of the above-listed hypotheses seem to be excluded by the previous analysis of bread moulds from other sites. Magdalena Sobas points out⁸⁰ that material from the Western Kom in Tell el-Farkha showed that the most common marking on bread forms was the criss-cross, which was also observed on other types of vessels (jars and miniature bowls).⁸¹ In Minshat Abu Omar, several dozen vessels marked in different ways were found, but all contained the remains of fish and animal bones.⁸² These two examples, as well as some others,⁸³ rule out the possibility that the marks indicated a product or were an indication of the capacity of the vessel, since marks were noted on vessels of different types, sizes and presumably different functions. These conclusions seem to be confirmed by the material from Tell el-Murra, where very similar potmarks were noted on vessels of various types. For example, the cross (Group 1), appears on bread moulds, wine jars, ovoid jars and bowls.⁸⁴

According to Bréand and Sobas⁸⁵ the occurrence of the same or similar marks on bread moulds from different sites casts doubt on the theory proposed in point ‘d’ and analysis of the material from Tell el-Murra tends to support such doubts. Circles, semi-circles, crosses, criss-crosses and simple lines appear on bread moulds from (among others) Tell el-Murra, Tell el-Farkha, Tell el-Iswid (all located in the Nile Delta) and Adaima (Upper Egypt). On the one hand, therefore, the marks do not seem to indicate the final destination of the vessel or goods. But on the other hand, it cannot be ruled out that the moulds with different marks found at the same site represent goods not yet shipped to their destination. However, in the case of mould and bread, long-distance transport seems very unlikely. First of all, the production of bread moulds and bread itself was so common and simple that each village/town could supply itself with these products, or possibly use a nearby workshop producing such vessels. Moreover, these vessels were so fragile that they probably would not survive being transported over large distances. It seems particularly unlikely that the bread moulds or even the bread were imported into the Delta from, for example, a remote Upper Egypt area or vice versa. For this reason, the point ‘e’ hypothesis should probably also be eliminated.

⁷⁹ Bréand 2015: Fig. 14.

⁸⁰ Sobas 2014: 79.

⁸¹ Sobas 2010: 407, Pl. I: 14; 2012: 187, Fig. 3: 4.

⁸² Kroeper 2000: 216.

⁸³ Bréand 2015: 209.

⁸⁴ Kazimierzczak 2016: Pls 4, 6–7; 2022: 174–179, Pls 175: 6–8, 197.

⁸⁵ Bréand 2015: 208.

The similarities of potmarks from different sites suggest that there was some universal system of marks common for a given region or even the whole of Egypt. Possibly therefore, it was a supra-regional system, perhaps with yet another meaning.

One more theory, proposed by Bréand, should be mentioned here:⁸⁶ '[potmarks] can be considered as a graphic expression of a system of counting pots during their manufacture, in the frame of an occasional overproduction of pottery and goods intended to be used at particular events which were periodic and shared by some inhabitants all over Egypt'. Bréand adds that at this stage it is difficult to determine exactly what kind of ceremonies or festivals these may have been, but possibly offerings to the gods, royal jubilees, commemorations of victories.

CONCLUSIONS

Studies of marked bread moulds from the site have shown that Tell el-Murra largely matches the patterns observed at other sites and presumably underwent similar processes and economic transformations as other centres. At all of them, at the end of the Early Dynastic period, the production of bread moulds and bread increases, and the number of marked bread moulds increases. Although the repertoire of potmarks on bread moulds from Tell el-Murra is relatively limited in comparison to other contemporary sites,⁸⁷ the discussed assemblage matches well some collections from other centres, including those from larger and probably of higher rank sites, such as Tell el-Farkha. This indicates that the Tell el-Murra did not have its own markings system, but used a cross-regional one.

Remains of a specialised area of bread production discovered at Tell el-Murra, where among well-preserved sets composed of complete vats and big bowls for mixing dough, were also marked bread moulds (**Figs 7m-n, 8d**),⁸⁸ indicate that bread baking may have taken place on the site. The bread production was certainly done primarily for local needs, but occasionally possibly also for external ones.

If one applies the highly persuasive Bréand hypothesis to Tell el-Murra, and agrees that the potmarks indicate production exceeding local needs, then one may suppose that in case of this small provincial site the overproduction of bread moulds and bread itself, was not necessarily related to major public festivals or events, as Bréand suggests. Overproduction could have been caused in this case by the needs of a larger neighbouring site, e.g. Tell el-Farkha, on which Tell el-Murra was probably somehow dependent. Perhaps Tell el-Murra occasionally helped supply other, larger, centres and the overproduction of baked goods for such centres was controlled by the same counting system as used for larger public events.

Finally, the similarity of potmarks on the Early Dynastic and Old Kingdom vessels from the Tell el-Murra, suggests that the system of marking bread moulds introduced on a larger scale in the Early Dynastic period, perhaps related to the intensification of bread

⁸⁶ Bréand 2015: 210.

⁸⁷ E.g. Mączyńska 2009; Wodzińska 2009a; Sobas 2014; Bréand 2015.

⁸⁸ Małecka-Drozd, Kazimierczak 2021: Fig. 4.

production at that time, was at least partially continued, and probably also developed in the following period.

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