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A CLASSIFICATION SYSTEM FOR POTTERY SHAPE AT PREHISTORIC SITES IN LOWER EGYPT

Abstract: *Pottery data from prehistoric sites in Lower Egypt has been reported using different classification systems dependent on the site where it was discovered. This makes comparative analysis of pottery from different locations highly problematic. The significant majority of pottery excavated at these sites is either incomplete or consists of pot sherds that cannot be reconstructed. This paper will consider the problems that exist in publishing data concerning pottery shape and examine the classification systems adopted in earlier reports. Bearing these earlier systems in mind, the report will consider what the most feasible general classification system would be for the recording and classifying of pot sherd shape data from all Lower Egyptian sites, which would also be able to integrate together even with pottery shape data in the earlier reports as accurately as possible. There might be the feasible system or a prototype of it amongst the systems already in use.*

Keywords: *Pot sherds; pottery shape; morphological classification system; structure; integrating*

Introduction

Pottery data from prehistoric sites in Lower Egypt has been reported using different classification systems dependent on the site where it was discovered. This makes comparative analysis of pottery from different locations highly problematic. It is therefore difficult to both clearly distinguish an overall picture of pottery from the sites and to establish their social context.

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This paper will consider the problems that exist in already published pottery shape data and analyse the classification systems that were used in earlier reports. Taking these into account, the report will consider what the most feasible general classification system would be for the recording and classifying of pot sherd shape data from all Lower Egyptian sites, which would also be able to integrate together even with pottery shape data in the earlier reports as accurately as possible.

Background

The major problems in integrating pottery shape data from prehistoric sites in Lower Egypt may be taken up as follows:

Differing publication styles in earlier reports

There are several problems in the earlier published reports to integrate the pottery shape data as accurately as possible:

Classification

Pottery data from prehistoric sites in Lower Egypt has been published using various classification systems developed at each individual site by different researchers. That means that every site has adopted a different manner in which to present pottery data (for example on form, ware and decoration) in their publications.[1] In some cases, multiple classification systems have been adopted to describe pottery data at the same site, because the excavations were undertaken by different excavators (or excavation teams) over the years.[2] As a result, there is no universal classification

[1] Although there are a few exceptions, almost the same classification was used in reports from Maadi and Wadi Digla (Rizkana and Seeher 1987; Rizkana and Seeher 1990).

[2] In the case of ware classification at Sais, pottery ware excavated in Excavation 3 is classified into five groups (Wilson 2007, 97–98) and the percentage of each ware as part of the whole is shown in detail by a table. However, pottery ware excavated in Excavation 8 is classified into a different set of five groups (Wilson *et al*. 2014, 92–96), although the percentage of each ware is still shown by a table. It should be noted that even though Excavation 3 is regarded as 'preparatory work for Excavation 8' (Wilson *et al*. 2014, 2), the team studied and excavated the same prehistoric layers at the same sites in both Excavation 3 and Excavation 8 (Wilson *et al*. 2014, 153). Another example of this can be found at Buto, where Faltings *et al*. (2000, 131–179) published a report based on the excavations she conducted there from 1995 to 1996 following a series of excavations by von der Way. In Falting's report, she explains and describes the pots and pot sherds from layers I and II, but she seldom uses terms from the classification system developed by von der Way (1997); she does not use the terms 'ware 1a' or 'ware 1b' at all, and only once refers to forms G1b

for published reports on prehistoric Lower Egyptian sites. Data on form from pots and pot sherds has not been distinguished between and they have both been published in the same way as other pottery data.

Selected data

Detailed data is only shown in reports for a limited number of selected pots and pot sherds. In general, information on the fabric used, surface treatment and shape can all be considered to be important pottery data that should be included in a report. It is therefore to be expected that this detailed information should be recorded for every single pot and pot sherd that is excavated and published. However, this data is only published for a selection of them. As a result, limited 'general data' on site pottery as a whole or on each classification group is all that is sometimes provided.

Drawings represent the most reliable and clear data concerning shape in a report. If a pot or pot sherd is drawn, relatively detailed data generally seems to accompany it. On the other hand, if drawings do not appear, specific individual data is not normally given. It is most common for only drawings of a limited number of pots to be recorded and published. Only well-conserved pots and pot sherds[3] that are close to their original shape are illustrated, alongside pot sherds that have key diagnostic characteristics in terms of shape or decoration. However, there is no objective standard by which pots and pot sherds are selected to become plate drawings in publications. It may even sometimes be the case that only the ones that best suit a researcher's own classification are chosen. This means that the drawings of some complete pots may even have been omitted.

'General data/information'

As has already been mentioned, detailed individual data on pots is not available in reports. Although 'general data/information' is given on the pottery of a site to present its 'general' characteristics (or that of particular layers), it is unclear whether the unselected pots and pot sherds are properly reflected by the 'general' data provided.

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and O3a. In other reports on pottery from layers I and II at Buto, Faltings (1998a; 1998b) does not make any use of von der Way's classification system. In these pieces, Faltings discusses the pots and pot sherds from Buto layers I and II in terms of their connection with Palestine, but the lack of any reference to Way's system is nevertheless worthy of note.

[3] In this paper, 'selected pots' and 'selected pot sherds' refers to pots and pot sherds of which the drawings and detailed data have been presented in a report.

‘General data.’ Numbers

When the number of pots belonging to a certain group is stated in a report, the figure should be treated with caution. If a damaged pot sherd is considered to have been preserved in a condition that permits it to enter a classification group, it is classified and counted in the same group as the complete ones.

Obviously, all complete pots are included in the total number of pots belonging to each shape group in the classifications. However, the criteria for judging which damaged sherds should be counted and which ruled out are not explained clearly.

In the Maadi report, the following cautionary lines appear: ‘there was no possibility of recording and storing every sherd and flake, so a representative collection had to be chosen. This consisted of complete vessels and of interesting fragments, such as decorated sherds, handles, etc. At the same time, it was not possible to mend and preserve the broken vessels,’ ‘the collection preserved from the old excavations is a biased sample, as it consists almost solely of complete vessels,’ and ‘like fig. 5, fig. 6 is also the tabulation of a biased sample, as the sherd material of the excavation is not taken into account. It is therefore no precise statistical record, but is only intended to give a general idea about the quantitative distribution of types’ (Rizkana and Seeher 1987, 19, 23, 34 respectively).

‘General data.’ Shapes

Although damaged pot sherds are classified and their number is included in the count of a certain classification group, their drawings are most often not shown in reports. In addition, the criteria are not clear in terms of which sherds should be included and which ruled out.

As a result, it is sometimes the case that the only way to discover the shape of a damaged but counted pot sherd is to either refer to the general data/information for the shape group into which the pot sherd has been classified or to look at drawings of pots belonging to the same shape group. However, both of these methods do not really guarantee the exact shape of the pot sherds. Moreover, it is not possible to determine the condition of the pot sherd, for example which part of the pot has been conserved.

In the Buto report (von der Way 1997, 93–94), O5 (open form 5) is described as a form group that can be divided into two sub-groups, O5a and O5b, with 21 and eight sherds (for a total of 29 sherds) coming from each respectively. The number of sherds identified as ‘open form 5’ is also shown in a table in the report (see Fig. 1), which presents how many sherds have been excava-

G (closed forms)		1a	1b	2a	2b	3a	3b	3c	3d	3e	4	5	6a	6b
Ware	1a	26	15	48	18	3		2	1	6	1			11
	1b	11	5	11	15	13	2	2	5	1	6	2		1
	1c	15	9	17	37	65		7	11	5	2	1	1	11
	1d													2
	1f-g			1										2
	2													18
	3												3	

O (open forms)		1a	1b	2	3a	3b1	3b2	4	5
Ware	1a	55	8	21	40	19	29	8	18
	1b	38		2	7	5			1
	1c	39		1	10	2	1	1	8
	1d			1					2
	1f-g		30	10	1				
	2	1							
	3								

Fig. 1. Correlation between type and ware.
Reproduced from von der Way 1997, 93, table 5

ted from the site categorised by form and fabric (ware). However, only eight of the 29 sherds are drawn and explained in the catalogue. The actual shape of the remaining 21 sherds is thus impossible to ascertain. The same registration method was also used with other form groups. As a result, although a total of 770 examples were discovered at the site, it is impossible to reclassify them, as the precise shape of each individual sherd was not recorded.

The problems with earlier reports cause difficulties in further study

The methods used in earlier reports cause major difficulties for current researchers, who are unable to ascertain the exact shape of the vast majority of pots and pot sherds that were not selected for individual registration. It also prevents them from checking if the classification developed and employed in reports was authoritative and objective, from confirming whether the generalisations made were reasonable and from reclassifying or modifying pottery data.

Therefore, researchers who wish to conduct comparative studies with other sites are forced to use data which is biased to a certain extent, which in turn makes their study a little misleading and not entirely objective.

Uneven treatment of pot sherds as primary and secondary source data

To integrate pottery shape data from already published reports as accurately as possible, some issues also arise in the treatment and preservation of data.

Badly preserved pot sherds have often been discarded,[4] even though they account for the vast majority of the ceramics excavated and even when pots and pot sherds have been kept, they have often been poorly or inadequately recorded. As a result, it is often difficult to confirm if a site's classification system and general pottery data is objective, since many of the primary sources (i.e. pots or pot sherds) and some of the secondary sources (i.e. records of pots and pot sherds) are not accessible for the purposes of reanalysis.

In the case of Heliopolis, Debono (Debono and Mortensen 1988, 7) declares 'I participated in many other projects and it was not until now, 35 years later, that I was offered by the German Archaeological Institute in Cairo with the assistance of Bodil Mortensen to write the final report. In order to prepare this publication it was necessary to re-study the objects… Not only the finds but also the documentation had suffered from the passing years. The paper had turned yellow and become brittle, the writing had faded so that it was difficult to read, but with the help of a photocopier the writing became legible again. The photos and negatives had also faded.'

In the case of Maadi, only complete vessels were kept, as pot sherds were not considered to provide data worthy of publication. Moreover, the pots excavated here were stored separately and some published in the report (Rizkana and Seeher 1987) have since fallen victim to theft and illegal trafficking (e.g. Brodie 2005; *ICE* 2008).

Examinations

In this section, we will consider what kind of classification system would be the most appropriate for the recording, classifying and integrating

[4] From my experience at a few prehistoric sites in Lower Egypt, every pot sherd discovered is first quickly checked. If the body sherds have neither decoration nor a distinctive feature, they are discarded after being added to the appropriate layer (location where the sherd was found) and ware (fabric) counts. Sometimes they are discarded very soon after the initial check.

of pot sherd shape data from all Lower Egyptian sites. We will also examine if a classification system already in existence may be suited to this challenge.

What kind of classification system would be the most feasible for pottery from prehistoric sites in Lower Egypt?

Firstly, I would like to clarify the current state of pottery excavated from prehistoric sites in Lower Egypt, as this is necessary to determine which classification would be the most suited not only to record and classify pot sherd shape data, but also to integrate this information with shape data from earlier reports as accurately as possible.

The great majority of pottery is excavated as fragments and complete vessels (including pot sherds that may be reconstructed) are limited in number. It is also highly possible that the contents of assemblages of well-preserved vessels are slightly biased, since particular forms tend to often be present, such as miniature vessels.

This situation exists at every prehistoric site in Lower Egypt and must therefore be taken into consideration when discussing typology. Although the problem has been mentioned in previous studies on Neolithic pottery in surrounding regions as a major issue (Mesolithic and Neolithic pottery at Khartoum, e.g. Arkell 1949, 81, Neolithic pottery in the Nabta-Kiseiba area, e.g. Nelson 2002, 9 and late Chalcolithic pottery in Upper Egypt, e.g. Hoffman and Berger 1982; Friedman 1994, 217), it seems that studies of prehistoric pottery in Lower Egypt have dismissed or underestimated its serious nature. No pottery shape classification system had confronted the situation head-on until very recently. We will now examine the kind of data that has been used for developing the pottery shape classification systems for each late Chalcolithic site[5] in Lower Egypt.

At Maadi (Rizkana and Seeher 1987), Wadi Digla (Rizkana and Seeher 1990) and Heliopolis (Debono and Mortensen 1988), the pottery shape classification systems were developed based on data from complete and reconstructed vessels (Fig. 2). At Minshat Abu Omar (Groups I and II), no pottery shape classification system for pottery shape has been created. However, a drawing of each pottery vessel is given and brief explanations are provided for each pit (Kroeper and Wildung 1994; Kroeper and Wildung 2000). Since very few pot sherds are drawn and described, it can be assumed that some were included in the data and diagrams of restored or complete

[5] Here, classification systems dealing with pottery data from layers which were formed before Naqada IId2 at prehistoric sites in Lower Egypt are specifically referred to.

Sites	Reference	Kind of data used for developing the classification system
Maadi	Rizkana and Seeher 1987	Complete vessels
WadiDigla	Rizkana and Seeher 1990	Complete vessels
Heliopolis	Debono and Mortensen 1988	Complete vessels
Buto (Layer I and II)	von der Way 1997, 88–96	Pot sherds (mainly rim sherds)
Minshat Abu Omar (MAO I and II)	Kroeper and Wildung 1994 Kroeper and Wildung 2000	
Tell el-Farkha (Phase 1)		
Tell el-Iswid (Buto II-IIIa/Phase A)	Guyot 2014, 99–117 van den Brink 1989	Pot sherds
Sais (Sais III)	Wilson *et al*. 2014, 99–109	Pot sherds

Fig. 2. Type of data used for developing the classification system at different sites

vessels without an explanation being provided. At Tell el-Farkha (Phase 1), a pottery shape classification system has not yet been established. At Buto (Layers I and II) (von der Way 1997, 88–96), a classification system was developed based on data from fragmented pot sherds and at Sais (Sais III) (Wilson *et al*. 2014, 99–109) the classification system uses the same basis. At Tell el-Iswid (south) (van den Brink 1989; Guyot 2014, 99–117), van den Brink did not devise a classification system, but one has been built using new data from recent excavations.

We can therefore see that pot shape classification systems for pot sherds have only been developed at three out of eight sites: Buto (von der Way 1997, 88–96), Tell el-Iswid (Guyot 2014, 99–117) and Sais (Wilson *et al*. 2014, 99–109). If it is possible to find an appropriate system to be used for all prehistoric sites in Lower Egypt amongst those already in use, it must therefore be one of these three. We will now focus on the nature of these systems for classifying pot sherds in more detail.

The Buto classification system

Von der Way (1997, 88) states that 'while the classification systems for pottery shape were created with complete vessel data at some prehistoric sites in Lower Egypt, such as Maadi and Heliopolis, the vast majority of excavated pottery is fragmented at Buto; only 32 of 1348 pieces are complete vessels.'

He also notes that 'the typology designed at Buto is almost exclusively limited to the assessment of pot sherds, in particular the parts of the mouth.' The criteria here therefore seem to put the most emphasis on the rim shape of pot sherds in their classification.

In the Buto classification system (Fig. 3), 'ovoid and globular jars' are divided into seven groups (jar types 2a, 2b, 3a, 3b, 3c, 3d and 3e) purely based on the presence or absence of neck and rim shapes. In the Maadi classification system, however, 'ovoid and globular jars' are classified into six groups (jar types 2, 3a, 3b, 5a, 5b and 5c[6]) with the main emphasis on the bottom's shape, but also taking the rim shape into account. It should be stressed that bottom shape is barely taken into consideration at Buto.

Another notable feature of the Buto classification system is that many groups and sub-groups in the system are created by combining the factor of body contour with the shape of the neck and/or rim. The number of possible body contour and neck and rim pairs is very high, which is why only the combinations that are encountered most frequently are included as groups or sub-groups. As these groups and sub-groups are designed to specifically reflect the characteristics of pot sherds at Buto, they cannot easily be applied to pot sherds from other sites in Lower Egypt. In general, the creation of groups and sub-groups that present a combination of factors in terms of vessel shape is not conducive to the integration of fragmented pot sherd data from a number of sites.

The Tell el-Iswid classification system

The classification system at Tell el-Iswid (Guyot 2014, 99–117) consists of three parts, each of which reflects a contiguous typological feature. The first is a digit (1–4) that indicates the basic contour of the vessel and clarifies whether it is of open or closed form. The second (a–b) denotes whether the vessel has a rim or not. The third is a number that 'refers to the last level of subdivision according to the criteria relating to each group.' This final digit must therefore indicate multiple morphological types of vessel, as can be seen below. Fig. 2 shows the classification system for open forms used at Tell el-Iswid (Guyot 2014). The first and the second characters are clearly objective codes for grouping pot sherds, but the third digit indicates various elements: rim shape, diameter and depth (e.g. 1a2)

[6] The six groups are as follows (Rizkana and Seeher 1987, 34–54): jar type 2a is 'ovoid jars with a pointed base', jar type 3a is 'bottle-like ovoid jars with pointed bases', jar type 3b is 'bottle-like ovoid jars with flat bases', jar type 5a is 'jars with small, flat or flattened bases, and everted rims', jar type 5b is 'jars with small, flat or flattened bases and neck-like restricted openings' and jar type 5c is 'larger jars with v-shaped bottoms'.

G (closed forms)			
	G1	Oblong to ovoid jars	
		G1a	Jars with narrow necks
		G1b	Jars with wider necks
	G2	Ovoid to globular jars without necks	
		G2a	Jars with rounded rims
		G2b	Jars with straight rims
	G3	Ovoid to globular jars with necks	
		G3a	Jars with vertical necks and edged or overhanging rims
		G3b	Jars with vertical necks and vertical rims
		G3c	Jars with strongly outwardly inclined necks
		G3d	Jars with inwardly inclined necks
		G3e	Large jars with strongly rolled lip
	G4	Large jars with moderately inclined walls inwardly	
	G5	Small jars with moderately inclined walls inwardly	
	G6	Large storage jars or cooking pots	
		G6a	Oblong to spherical jars with outwardly folded and thickened rims
		G6b	Jars with horizontal grooves under the rims
O (open forms)			
	O1	Bowls with straight or slightly convex walls	
		O1a	Bowls with thick walls
		O1b	Bowls with thin walls
	O2	Bowls with concave walls	
	O3	Bowls with redesigned rims	
		O3a	Bowls with grooves under rims and slightly (partly horizontally) everted rims
		O3b	Bowls with widely everted rims
	O4	Large bowls with thick walls	
		O4a	Bowls with drop shaped thickened rims
		O4b	Bowls with straight rims
	O5	Vats and pans	
		O5a	Vats (open form vessels with thick and medium slope walls and straight rims)
		O5b	Pans (open form vessels with flat bottoms and walls which are between 1,8–4.5cm in thickness and between 1.9 to 6.6cm in height)
Miniature vessels			

Fig. 3. The Buto classification system. Reproduced from von der Way 1987, 88–96

and fabric (e.g. 1a3), the last of which is not a morphological element at all. Furthermore, it should be noted that the same code used in the third character does not always indicate the same morphological characteristics. For example, '2' in 1b2 indicates a 'modelled rim', whilst '2' in 1a2 signifies '30–40cm in diameter and shallow'.

If one were to try to apply the Tell el-Iswid classification system to pottery from other prehistoric sites in Lower Egypt, it is clear that this intermingling of multiple morphological features in the third character and the lack of consistency in its meaning would pose a significant problem that would have to be overcome.

Guyot (2014, 117) suggests that 'the first phase (or layer) of occupation at Tell el-Iswid can be dated to the end of the period of Buto II or the beginning of the period of Buto III' in his chronological study. However, we must remember that it is believed[7] that transitional layers (or gaps) were formed in Naqada IId2 (Buto IIIa) at many sites in Lower Egypt and that changes in the composition of ceramic and lithic assemblages and the introduction of mud brick architecture can be observed both before and after their creation. This means that the first phase (layer) at Tell el-Iswid was formed at the same time that transitional layers (or gaps) were being formed at many other sites in Lower Egypt and it is precisely pottery from this layer that was used to create the Tell el-Iswid classification. As a result, any usage of this classification for recording and classifying the shape data of pot sherds from other prehistoric sites in Lower Egypt must be approached with extreme caution.[8]

The Sais classification system

In the Sais classification system, vessels are divided into 21 groups, as can be seen in Fig. 5. At Sais, the number of sherds with decoration and sherds made of imported fabric is limited. Therefore, even though 'decoration' and 'fabric' are not morphological elements, it is understandable that separate groups were created for these features, so as to distinguish them from other sherds. Moreover, seeing that each sherd at Sais is rather small and most bottom sherds do not have body parts, it is perfectly reasonable that a 'base' group was created, purely for base sherds.

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[7] E.g. Köhler 1992; Hendrickx 1999; Mączyńska 2003; Hendrickx 2006.

[8] Special care must be taken when using this system for data from layers that were formed before transitional layers or gaps, because this pottery is thought to be of a Lower Egyptian character. Pottery from the transitional layers or after is thought to have both a Lower Egyptian and Upper Egyptian nature.

1	Open form with convex wall		
	1a	Open form with convex wall without rim	
		1a1	simple and everted rim inwardly or outwardly, less that 30cm in diameter, 4–8cm in depth
		1a2	30–40cm in diameter and shallow
		1a3	thick wall, only inner surface is smoothed and outer surface is coarse
	1b	Open form with convex wall with rim	
		1b1	ledge rim, 30–40cm in diameter and shallow
		1b2	modelled rim
2	Open form with straight or concave wall		
	2a	Open form with straight or concave wall without rim	
		2a1	simple and everted rim inwardly or outwardly, less that 30cm in diameter, 4–8cm in depth
		2a2	12–25cm in diameter, this group is called as ‘plates’ in the report and the drawings in the report show shallow in depth
	2b	Open form with straight or concave wall with rim	
		2b1–a	everted rim, sometimes there is an external groove under the rim
		2b1-b	everted rim with pointed top
		2b2	modelled rim and there is and external groove under the rim, 20–40cm in diameter
		2b3	modelled rim, large in diameter and deep in depth, this group is called as ‘basin’ in the report

Fig. 4. The Tell el-Iswid classification system for open forms.
Reproduced from Guyot 2014, 103–114

Two main dividing criteria are present in this system. The first is based on whether the sherd is of open form or closed form and the second on the rim shape. One of the reasons why the division of closed forms seems to be slightly obscure whilst the division of open forms appears to be objective is the usage of certain expressions, such as ‘small jar’, ‘narrow jar’ and ‘broad jar’, the parameters of which are not clearly defined.

For instance, a group that is labelled ‘small jars’ (group 13) does not have its size defined. Instead, it is explained (Wilson *et al*. 2014, 105) that these jars equate to ‘bag-shaped’ or ‘lemon-shaped’ jars. Even though some of the pots classified as ‘lemon-shaped’ or ‘bag-shaped’ in reports from Tell el-Farkha are slightly larger than 5cm in rim diameter (e.g. Mączyńska 2011, 891, fig. 2; Mączyńska 2012), Mączyńska (personal communication, 13 May 2014) describes them as small. From this information and reference

Open forms	
	1. Bowls with conical contour and direct rims
	2. Bowls with concave contour
	3. Bowls with carination
	4. Bowls with everted rims
	5. Bowls with everted and thickened rims
	6. Deep bowls with everted rims
	7. Bowls with ledge rims
	8. Vats; wide diameter, deep, thick-walled bowls
	9. Platters; thick-walled, shallow or flat dishes and plates
	10. Pot-stands
	11. Bread moulds
Closed forms	
	12. 'Hole-mouth' jars and ovoid storage vessels
	13. Small jars and beakers
	14. Cylinder jars
	15. Narrow diameter rims and shouldered jars with various rims
	16. Wide diameter rims and broad shouldered jars with various rims
	17. Jars with thickened rims
	18. Broad jars with thickened rims
Others	
	19. Bases
	20. Decorated sherds
	21. Imported sherds

Fig. 5. The Sais classification system.
Reproduced from Wilson *et al.* 2014, 99–109

to the drawings from the Sais reports (Wilson *et al*. 2014), it can nevertheless be estimated how small the 'small jars' of group 13 in the Sais classification system are. The main distinguishing feature between narrow and broad jars (Wilson *et al*. 2014, 106) is the fact that the latter have distinctly wide shoulders and that the angle of the shoulder of the base of the neck to the central axis of the vessel is between 90 and 140.

A lack of terminological clarity is also present in the description of rim shapes. For example, the difference between 'broad jars with various rims (group 16)' and 'broad jars with thickened rims (group 18)' is not made clear. 'Broad jars with thickened rims' (group 18) from the Sais III period, are described (Wilson *et al*. 2014, 107) as pots that sometimes have necks. On consulting the drawings from the report (Wilson *et al*. 2014, pl. 58), however, the presence or absence of a neck actually seems to be one of the key differentiating factors. In addition, if the pots do not have necks, it still seems to be difficult to determine whether they belong to 'broad jars with various rims' (group 16) or 'broad jars with thickened rims' (group 18). Although it is not explained in the text, the drawings of these two groups (Wilson *et al*. 2014, pl. 58) demonstrate that 'broad jars with thickened rims' have thicker walls and rims (*c*. 1.5–2.5cm in the section) than 'broad jars with various rims' (*c*. 1–1.5cm in the section). This observation may help to clear up this terminological ambiguity.

It has been reported (Wilson *et al*. 2014, 99) that the variation of forms in prehistoric pottery at Sais is somewhat limited, particularly in the Neolithic period. Therefore, if this system were to be applied to pottery data from other prehistoric sites in Lower Egypt, further sub-groups may need to be added to account for the wider diversity present.

The prehistoric layers at Sais are divided into three categories: Sais I, Sais II and Sais III. Sais I and II are said to come from the Neolithic period, whilst Sais III dates to the Predynastic and Early Dynastic periods (Wilson 2007, 83; Wilson *et al*. 2014, 101). It can therefore be stated that material from Sais III includes pottery from before, during and after the period when transitional layers were formed at sites in Lower Egypt during Naqada IId2.

Discussion

We will now examine the structural distinctions between the three classification systems, as well as their advantages and disadvantages.

In all three classification systems, the distinguishing feature is whether the vessel is of open or closed form at first (at the first digit), and this in each case creates the two main groups.

In the Buto and Tell el-Iswid systems, the next division is created by considering the combination of the vessel's contours with its rim and/or neck shape secondly (at the second digit). And then, as the third step, further details such as rim shape and thickness of walls are considered to organise sub-groups. In the second and third steps of both of these

systems, groups and sub-groups are created to reflect the characteristic shapes found at each site, allowing them to be classified and described in detail. In the Sais classification system, however, after the first step to divide open forms and closed forms, other distinguishing features such as the contour of vessels, the existence or absence of rims, the thickness of walls, and the depth of vessels are considered in the second step, and groups are set up for them. Then, the step (the third digit) remains unused. The vessel's contours, the presence or absence of a rim, the thickness of the walls, and depth are all considered in the second step and groups established accordingly.

These differences in the structure of morphological classification systems give us a good indication of what must be considered when creating a classification system to record, classify and integrate the shape data of pot sherds from prehistoric sites across Lower Egypt.

Groups and sub-groups that are created based on multiple factors of vessel shape (such as body contour, shape of neck/rim) allow pottery data from a specific site to be classified and described in greater detail. However, it is not at all suitable for the integration of fragmented pot sherd data from various sites. It would be highly contentious to alter a classification system structure that has been created to describe a specific site's pottery character merely in order for it to also be applied to pot sherds from other sites.

Instead of creating rigid sub-groups that reflect characteristic shapes at a specific site in the second and third steps of classification, it would be better to create pliable groups in the second step that are applicable to data from all sites. This system would allow sub-groups to be created the further sub-groups in the third step later on to describe and classify shapes that are characteristic of other sites or a specific site.

Bearing all these considerations in mind, the Sais classification system is perhaps the most appropriate model for the morphological classification of pottery vessels and sherds from all the prehistoric sites of Lower Egypt, even though some modifications would be necessary.

Suggestions

A classification system that can reflect data from the vast majority of damaged pot sherds would be the most feasible for recording and classifying shape data of pot sherds from all Lower Egyptian sites. It should also be able to integrate together even with pottery shape data in the earlier reports as

accurately as possible. Of the classification systems used at prehistoric sites in Lower Egypt, the one adopted at Sais could serve as a prototype for such a system, although modifications would have to be made.

Another important point that can be gleaned from this study is that the morphological classification system should be elastic structurally and objective terminologically in order to be applicable for various sites. In other words, if the system is impartial and non-partisan, it may be applied to data of pot sherds from various sites occupied by different cultural units (at least similar in terms of social level), although it may be necessary to add further sub-groups to describe and classify characteristic shapes of a specific site. However, it should still be kept in mind that it must remain a morphological classification system which was developed from pot sherd data. This means that the same code letter, code number, group or sub-group will not necessarily imply any similarity in the complete shape of the vessel nor in terms of its use in a morphological classification system developed by data of pot sherds.[9] If this aspect is forgotten, the system cannot be properly applied and used to the data at various sites. Considered in parallel with other factors concerning both elements of pottery vessels (fabric, manufacturing technique, decoration and surface treatment) and other factors which affect those elements (climate, fauna, flora and geological features), a morphological pot sherd classification system may serve as a very useful tool when interpreting the meaning and function of pottery vessels.

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[9] Friedman (1994, 222–223) makes the following statements on the Hierakonpolis system: ‘several different shapes that would be considered separate types in a whole vessel typology are included in one subjective shape class’ and ‘the use of the same code letter does not necessarily imply any similarity in the complete vessel shape.’

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