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The Scale of Pottery manufacture during the Old Kingdom

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Pottery Manufacture in the Old Kingdom

Humble pots hold clues to the Pyramid Age, reports archaeologist Sarah L. Sterling.

Introduction

The existence of specialized craftsmen – including stonemasons, coppersmiths, carpenters, jewelers and potters – in ancient Egypt arises in part from the general industries spawned from the elaborate monumental constructions that characterize the Old Kingdom (ca. 2600-2100 BCE). Pottery vessels in particular are one of the most abundant kinds of artifacts known from ancient Egypt, with functions ranging from formal presentation to baking bread, to grains and olive oil storage. While not all pottery is associated with monumental architecture, the emergence of specialized or semi-specialized potters is likely due to the same socio-economic factors that gave rise to such famous monuments as the pyramids at Giza. As more materials and labor were required to build the necropoli of the Old Kingdom, pottery vessels played a role in tasks ranging from copper smelting to baking. Therefore, the “mass-production” of vessels and by extension the emergence of pottery specialists is to some extent a function of the economics of monumental constructions.

Evidence for pottery specialization comes in two forms: widespread similarity in vessel forms known throughout Egypt (see figure 1) and artistic representations, early examples being the 6th Dynasty (ca. 2300-2100 BCE) limestone statuette of a potter using a wheel at Giza; several tombs dating from the First Intermediate Period (ca. 2100-2000 BCE) and Middle Kingdom (ca. 2000-1650 BCE) at Beni Hassan; and the 5th Dynasty tomb of Ti (2450-2345 BCE) at Saqqara (Arnold and Bourriau 1993:41-49). Illustrations such as these have suggested to scholars that despite overall similarity in pottery types across Egypt, pottery production was organized at the level of household or *nome* (a political unit arranged around a collection of flood basins), as opposed to being mass-produced at one location (e.g. Arnold and Bourriau 1993; Bourriau 1981). To date, however, it has been difficult to quantify the differences between pottery assemblages to evaluate this widely held characterization of localized production. Digital photography and image analysis software, however, make it possible to assess differences between vessels precisely and allow otherwise costly analysis to be conducted outside an Egyptian field season. The examination of measurements taken on one particular vessel type, distributed throughout the Nile Valley and Delta, substantiates the existence of local manufacturing traditions hinted at in artistic depictions of potters at work.

Tomb of Ti

A well-known example of an illustration of pottery manufacture at the household level is in the 5th Dynasty tomb of Ti. Ti has been identified as a “royal hairdresser,” who also managed royal poultry and cattle farms and was involved with the maintenance of a variety of royal funerary monuments (Malek and Livet 2002). His tomb is singular in many ways beyond the illustration of a pottery workshop; the tomb walls feature illustrations of harvesting, fishing, statue manufacture, and cattle inspections, among other things (Malek and Livet 2002).

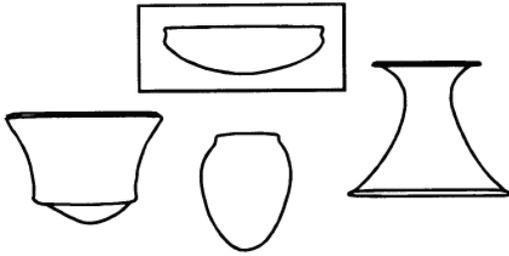
Figure 2 is a photograph of a scene depicting a pottery workshop in Ti’s tomb. While not as definitive as physical evidence, this illustration does suggest that while pottery was apparently manufactured on a local scale, the organization of the work within the workshop was formalized to some degree. In other scenes from the tomb (not shown) Arnold and Bourriau (1993:41) interpret the actions depicted: 1) coiling and smoothing the body of the pot; 2) first drying of the pot; 3) shaping the round base; 4) shaping the rim while turning the pot; and 5) second drying. Vandiver and Lacovara (1985/6) also observed that 4th and 5th Dynasty Meidum bowls (discussed in detail below) were made in two separate pieces. They describe the body of the bowl consisting of a sheet of clay that clearly overlaps at the juncture of the S-shaped rim and the lower body of the bowl. The addition of a rim to the vessel is a feature that seems to vary substantially across assemblages.

The scene from the tomb of Ti indicates specialization even within the pottery workshop. Individuals have specific tasks, such that no one individual is responsible for the production of particular pots. This fact doubtless plays a role in the apparent similarities across pottery types known from the Old Kingdom. The indication that pottery is manufactured on the household scale has implications as to how pots will vary; if the endeavor is primarily local, then variation in attributes, such as rim construction, should reflect that.

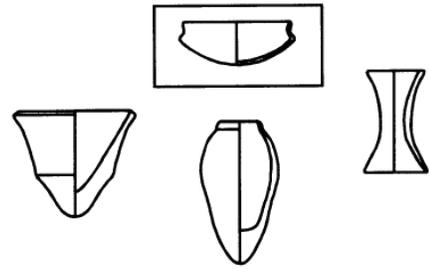
This latter fact is significant because despite the ubiquitous presence of pottery vessels in Old Kingdom deposits, only a half-dozen or so manufacturing centers have been documented as dating to the period, and evidence for several of these is documentary – e.g. the illustration in the tomb of Ti (Arnold and Bourriau 1993:108-111). The identification of local manufacturing traditions would indicate that many more kiln sites

Figure 1: Examples of typical Old Kingdom vessel forms.

Examples of pottery vessels from Denderah.
(After Petrie 1989: figures 1, 2, 4 and 5.)



Examples of pottery vessels from Giza.
(After Reisner and Smith 1955: figures 86, 110, 130 and 132.)



Examples of pottery vessels from Daklha.
(After Ballet 1987: figures 2 and 3.)

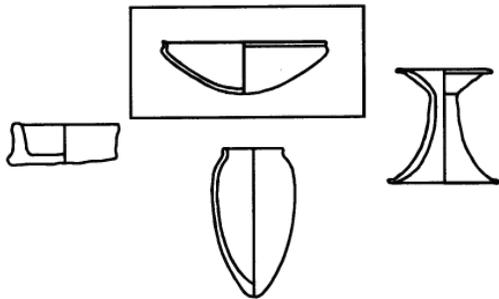


Figure 2: Pottery workshop scene from the tomb of Ti at Saqqara. Photo by Thierry Benderitter, www.osirisnet.net.

must have existed than have been documented thus far.

Objects of Study

Variation in vessel rim form results from the fact that ideas for making pottery are moving through communities of potters and pottery workshops. The greater the number of manufacturing “variants,” the greater the potential number of pottery workshops. All things being equal, relative proximity between pottery workshops should explain the degree of similarity observed between collections of vessels from various locations. By quantifying differences across one type of pottery, often referred to as the “Meidum” bowl (see figure 3) from particular Old Kingdom assemblages, it becomes possible to assess the distribution of pottery workshops throughout the Nile Valley and Delta. Future studies should obviously include more vessel types (such as those illustrated in figure 1); however, the sheer volume of pottery resulting from any Old Kingdom excavation makes a detailed study of the entire collection difficult.

Figure 3 is a picture of this bowl and a drawing from Petrie’s original 1892 publication of his work at the Meidum pyramid, where he initially found examples of the bowls associated with the waste heaps left by the Meidum pyramid builders. During the course of this

field season, Petrie identified bowls of “fine quality,” which he noted were similar to forms found at Giza associated with 4th Dynasty (ca. 2600-2450 BCE) contexts (Petrie et al. 1892:35). The Giza vessels are described by Reisner (in Reisner and Smith 1955:60) as “round-bottomed bowl(s) with a recurved rim.” Thus the “Meidum” bowl was identified in two separate 4th Dynasty contexts. Subsequently, “Meidum” bowls have been found in various contexts throughout the Nile Valley, ranging from copper workshops and domestic settings to tombs.

Examples of bowls from the early 4th Dynasty (ca. 2600-2550 BCE) at Meidum, the late 4th Dynasty (2500-2450 BCE) at Giza and the Teti Pyramid (early 6th Dynasty, ca. 2350-2300 BCE) at Saqqara were measured and compared to measurements taken on vessels collected at Elephantine, where materials collected represent the 2nd (2800-2650 BCE), 3rd/4th (2650-2550 BCE) and 6th Dynasties (2300-2100 BCE) (see figure 4 for locations). Because the “Meidum” bowl has a distinctive rim (see figure 3), measurements on the construction of this rim were compared to determine if there were local differences in manufacturing techniques. This hypothesis is tested by examining rim construc-

tions. Rim construction varies a great deal from site to site and thus is a reasonable focus for measuring differences in manufacturing techniques across sites.

A digital camera was used to take pictures of rim constructions (see figure 3), while other measurements of fabric and diameter were taken on the objects. This precise measurement system highlights differences between pottery groups more effectively than more traditional analytical techniques because the implementation of the analysis is not confined to the duration of an expensive field season in Egypt.

Results

The results of this study are consistent with the idea that pottery is produced at the household or possibly

Figure 3.



Meidum bowl excavated by Flinders Petrie at Meidum. This type has been also been found at Elephantine, Giza and the Teti pyramid complex at Saqqara.



Line drawing of Meidum bowl from Petrie's original publication of his excavation at the Meidum pyramid.



Scale and potsherd.

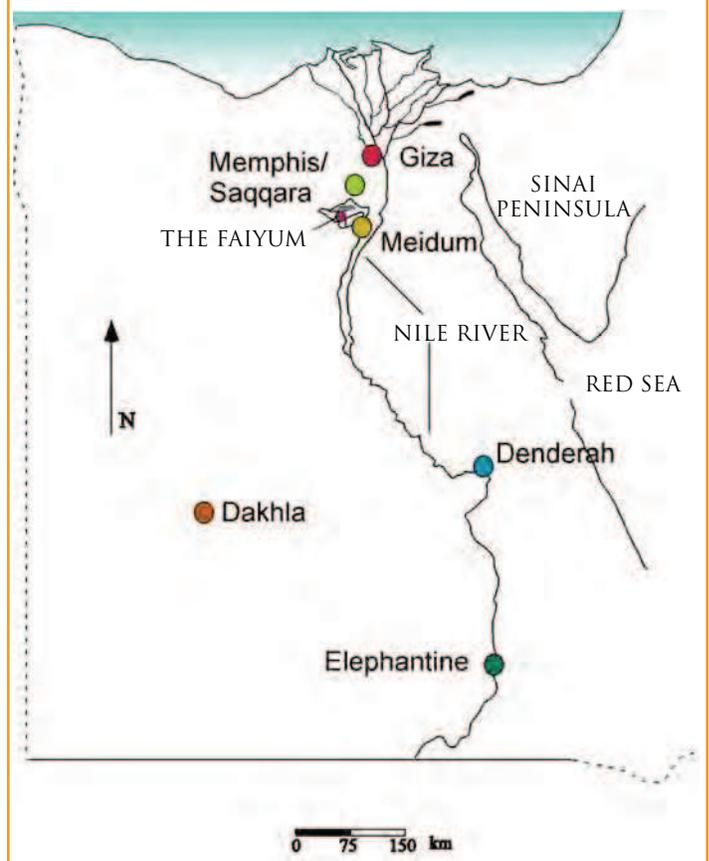
nome level rather than being mass-produced at a central location. Individual Old Kingdom locations produce vessels sharing similar general characteristics, but also exhibiting statistically distinct differences that track geographical distance between sites. Sites located closer to each other are typically more similar in vessel measurements.

Figure 5 illustrates the results of a discriminant function analysis of different measurements across Meidum bowl rims. This kind of analysis quantifies the differences between predefined groups – in this case, groups of vessels identified by dynasty and location (Shennan 1988:196). As can be seen, the Giza and Saqqara assemblages are more similar to Elephantine assemblages from equivalent time periods. In contrast, the Meidum assemblage, which is strongly tied to the reign of Seneferu (Petrie et al. 1892:35) and thus is chronologically equivalent to 3rd/4th Dynasty material from Elephantine (Kaiser et al. 1999:71-72), is nonetheless statistically further away.

Conclusions

The information presented here is part of a larger study of differences in “Meidum” bowls from a large number of Egyptian sites (Sterling in prep). One goal of the

Figure 4. Locations of Old Kingdom bowls.



larger research study has been to examine interaction patterns during the Old Kingdom to evaluate hypotheses about the scale of pottery manufacture during the Old Kingdom (as discussed above). An additional goal, however, has been to determine whether careful attribute scale studies of pottery can be used to determine whether similarity in “Meidum” bowl rim constructions from various locations display differences consistent with spatial proximity.

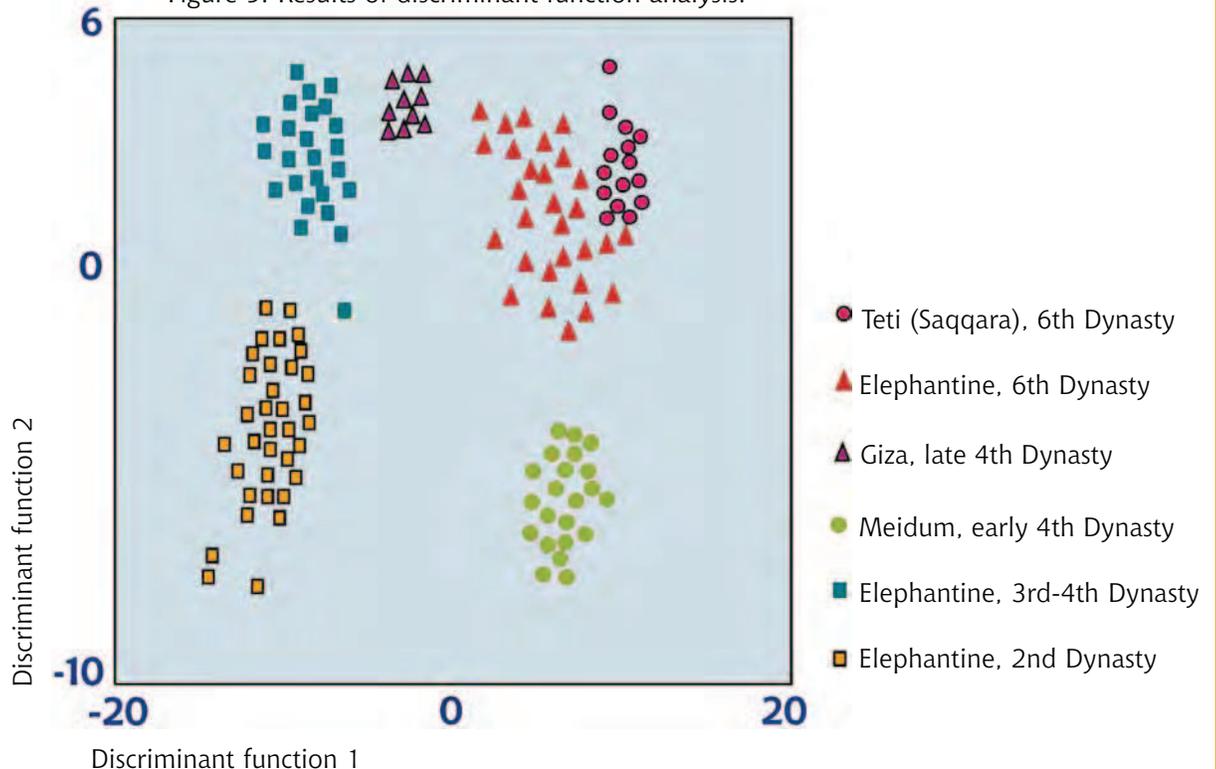
When differences result from simple geographic distance between Old Kingdom locations, there is little basis to posit the existence of centralizing socioeconomic conditions. On the other hand, when differences between vessels from various locations are minimal despite being widely separated geographically, it becomes reasonable to posit the existence of centralizing socioeconomic factors. The results presented here indicate that “Meidum” bowls from Elephantine, Giza and the Teti pyramid complex at Saqqara exhibit similarities that cannot be explained by simple proximity. Economic factors at work during the Old Kingdom, particularly in the form of monumental constructions funded by taxes on crops, resulted in certain nomes developing long distance economic dependencies across vast spatial distances. This fact has led to the characterization of ancient Egypt as being “united and central-

ized” (Baines and Yoffee 1998:219-220).

The movement of large volumes of granite between these locations might explain the similarities observed among “Meidum” bowls. While few would question the presence of large amounts of granite at either Giza or Saqqara, it is interesting to note that construction of the Meidum pyramid involved relatively small amounts of granite (Edwards 1985:70-90). Coincidentally, perhaps, there is less similarity between the Meidum materials and the Elephantine materials than is exhibited by the Giza and Saqqara materials.

This raises the question at least of a stronger economic tie between Giza and Saqqara to Elephantine than between Meidum and Elephantine, as one possible factor driving the similarity between the bowls. The lower courses of Menkaure’s pyramid at Giza consists entirely of granite blocks, a singular expenditure (Lehner 1997:134-137). The material associated with the Giza site is primarily associated with the reign of Menkaure, based on the number of sealings bearing his name (Lehner personal communication). While granite was used in various construction projects throughout Egypt at this time, no other site would have been consuming as much granite as the Giza plateau. One possible explanation, therefore, for similarities observed between Giza and Elephantine in terms of vessel

Figure 5: Results of discriminant function analysis.



construction is that the two communities interacted based on the movement of granite. A similar, though perhaps less well-substantiated case could be made for the material associated with the Teti pyramid.

The results discussed above, while preliminary, are nonetheless promising. The use of image-based analysis provides a means to test long-held hypotheses about the scale of pottery manufacture during the Old Kingdom, with the results presented above clearly identifying the existence of local manufacturing traditions. These

results further indicate the existence of as yet undiscovered manufacturing centers. The second observation, that variation in bowl rim construction tracks a unique relationship between Giza, Saqqara and Elephantine, illustrates the potential of pottery in addressing general questions of economic organization during the Old Kingdom and also underscores the need for more regional scale analysis to further define such relationships.



Digging For Answers

Left: Reis Shahat supervising the removal of sediments overlying Old Kingdom material, in the SE corner of Giza Plateau Mapping Project (GPMP) grid IV, near the bakeries (the mound in the background is the excavation back dirt pile). **Below:** Pottery vessels emerging from the Old Kingdom surface in the eastern portion of GPMP grid II. Vessels range from 12-20cm in diameter.

Photos by Sarah Sterling.



Sarah L. Sterling is an adjunct lecturer at Portland State University. She received her PhD in anthropology from the University of Washington. She has worked on several field projects in Egypt, including the ARCE field school at Memphis. She is a member of the ARCE/NW board.

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