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THE CRAFT OF THE EARLY PHYRGIAN POTTER

INTRODUCTION

Phrygian potters had a culturally distinctive approach to making pottery. Common Phrygian shapes and types of decoration are well-known. Each shape and size of vessel was made using characteristic combinations of forming and finishing methods. It is possible to identify how these ancient potters worked by careful study of the vessels themselves. This permits reconstruction of the Phrygian potter's craft and provides information on the economy at Gordion in the first millennium .C. Defining the assemblage in terms of technology, in addition to shape and decoration, provides a better basis for defining ceramic change and assessing the effects of later intercultural contacts (Lydian, Persian, and Greek) on the local ceramic tradition at Gordion (Henrickson 1993, 1994).

The Destruction Level at Gordion, which dates to ca. 700 B.C., has yielded many pottery vessels and other artifacts *in situ* (DeVries 1990; Sams 1994). The anteroom of Terrace Building 2 (TB2a), excavated under the direction of M. M. Voigt in 1989 (Voigt 1994), yielded over 100 vessels, including most of the common Early Phrygian vessel shapes and sizes. In this paper, I will discuss how Phrygian potters made a number of typical vessels based on the TB2a corpus

RECONSTRUCTING THE ANCIENT POTTER'S CRAFT

Background

Studies of traditional potters and data from material science indicate that a number of interrelated factors need to be considered, each of which affects the others.:

cultural behaviors and beliefs which affect potters;

available and accepted working methods and technologies;

properties of potter's clays and other materials;

intended use of the vessel;

shape and size of the vessel.

Cultural beliefs and behaviors shape the setting within which the potter works and dictate the nature of the assemblage, such as shapes and decoration. Innovation, either technological or stylistic, may be encouraged or discouraged. The history of a ceramic tradition strongly affects its further development becuase the potter's craft is conservative. The nature and organization of a society will also influence the nature of the potter's craft.

A tremendous variety of potters' tools and working methods are known. Any single culture and its potters use only a small subset. Each tool and technique has potentials and limits, both inherent and imposed, and potters may not take full advantage what they know or are able to do (cf. Blackman 1988). In addition, our ideas as to what is appropriate or "efficient" need not correspond to those of other societies.

The properties of clays and other materials available have profound impacts on the potter's craft. Different types of clays have varied properties due to their chemical composition and physical structure. These affect choices of forming, finishing, drying, and firing methods (Rye 1981; Vandiver 1988). Properties can be altered

by adding various materials ("temper") to the clay (such as chopped straw, sand, or crushed pottery), other substances (e. g., dung), or treatment (e.g., aging). Each forming method may require specific clay properties, so either different types and sizes of temper, or different types of clay may be used (Rye 1976). In addition, varied firing temperatures and atmospheres (oxidizing or reducing) have different effects on clays.

The intended use(s) of the vessel affect the choice and preparation of the clay, the shape, and the size of the vessel to be made. A cooking pot has to be able to resist the stresses resulting from being exposed to fires. Vessels for storage of liquids usually should be impermeable. Intended uses influence shape and size (E. Henrickson and McDonald 1983). Each shape and size presents a different set of forming problems. The oblique flared sides of a bowl present different challenges from the more vertical sides of a jar, so the same forming methods may not be appropriate or even feasible for both. Only a limited amount of clay can be worked at one time. The wet clay has limited strength which affects how much and what type of force it can withstand and how well it can hold a shape until drying hardens it. Different sizes and shapes of vessels will thus require different forming methods (Balfet 1984). For example, small vessels may be thrown in one piece, while larger ones have to be handbuilt and perhaps then finished on a turntable.

Identification of Forming Methods

Careful study of both sherds and complete vessels can identify the forming and finishing methods used by ancient potters. Each forming and finishing method leaves characteristic traces both within the fabric and on the surfaces. Thus, it is possible to reconstruct how pots were made by linking these residual traces with the original forming and finishing methods (Rye 1981, Vandiver 1987, Henrickson 1991; Van As 1984, 1989). Terms must be defined clearly and used consistently (see Table:1).

Although each step may obscure or obliterate evidence left by previous ones, this does not happen in every case. Each stage of forming and finishing tends to have somewhat more superficial effects than the previous one. Primary forming, the initial shaping of the vessel, leaves traces both within the fabric and on the surfaces. Orientations of inclusions ("temper" and voids) within the fabric reflect the forces the potter applied during the forming of the vessel. Marks on the surfaces tend to result from finishing, such as smoothing and wiping, but may remain from earlier forming steps. Secondary forming, the modification of the basic shape, will alter some traces within the fabric and leave new ones on the surfaces. Finishing tends to affect mostly the surfaces. Thus the residual traces may result from any stage of production.

Traditional potters use various forming and finishing methods in diverse combinations for different parts and sizes of a single vessel type in a distinctive sequence (for example, Güner 1988; Hampe and Winter 1962, 1965; Rye 1981; Rye and Evans 1976). Therefore the analyst must reconstruct the entire forming and finishing sequence for each vessel type and size, using more than just surface traces, in order to understand how vessels were made.

Forming methods can be incorrectly identified. For example, "wheelmarks" or "throwing marks" on the surfaces of vessels are often taken as proof of pottery having been "wheelmade" or "thrown", but these may result from at least three entirely unrelated methods or stages in making a vessel:

1) true throwing on a potter's wheel, for which the best but not infallible evidence is a ridge spiraling upward and outward from the center of the interior of the base and temper within the fabric having a consistent diagonal orientation;

2) secondary forming on a turntable, slowly rotating an unfinished vessel to modify or regularize the shape or smooth the surfaces; and

3) finishing processes, such as smoothing and wiping, which may also be done on a turntable (Henrickson 1991; Vandiver 1987: Appendix III; Roux 1990; Rye 1981; cf. Courty and Roux 1995).

How a vessel breaks gives information it was originally made. Forming methods affect the structure and texture of the fabric itself, leaving stresses and weaknesses. Joins between separate pieces of clay, such as individual coils, remain relatively weaker areas within the vessel. Breaks therefore tend to follow the construction joins. In combination with vessel shape and size, careful examination of: 1) the location and orientation of the breaks on the vessel; and 2) their overall patterning provide considerable information on forming methods.

Joins between pieces of pieces of clay are often recognizable in the surfaces left by breaks. Three types may be defined (Vandiver 1987: Figures 3 and 6, Appendix III): edge-to-edge or butt joins: edges of individual pieces of clay abut one another, as in coiled or slab-built vessels (e.g. Fig. 5.1-2; 8); bevel or diagonal joins: edges of individual pieces of clay overlap, with a diagonal

join running through the fabric (e.g., Fig. 6.2); and face-to-face: two or more pieces of clay layered together surface to surface (e.g., Fig. 3.1-2; 7 [base]). Either of the last two may yield step fractures.

Vessels made by coiling tend to have long parallel horizontal breaks which follow the joins between coils; within each coil, the temper shows a circular patterning. Vessels made by moulding tend to have other, often inconsistent, patterns of breakage which may help to define the pieces of clay used in construction.

Once the forming and finishing methods have been reconstructed, cross-cultural studies of traditional potters allow inferences as to the likely organization of pottery production based on the technologies used and the other characteristics of the assemblage itself (Costin 1991; Peacock 1982; Van der Leeuw 1977; Van As 1984).

THE EARLY PHRYGIAN ASSEMBLAGE

Pottery production was a large-scale industry at Early Phrygian Gordion, ca. 700 B.C. Potters made a relatively limited variety of standardized vessel types and sizes, using consistent combinations of forming and finishing methods. Many vessels were simply finished, either just smoothed or self-slipped. Burnishing is more characteristic of smaller vessel sizes. Painted decoration is rare (cf. Sams 1994; Henrickson 1993, 1994; Johnston 1970). Many attributes such as plain flat bases and simple rims, were easily made.

Early Phrygian potters usually used non-calcareous to low calcareous (<1%-5% calcium) clays, although sometimes more calcareous compositions are found (15% or higher) (Henrickson and Blackman in press). Fabrics range from fine to rather coarse.

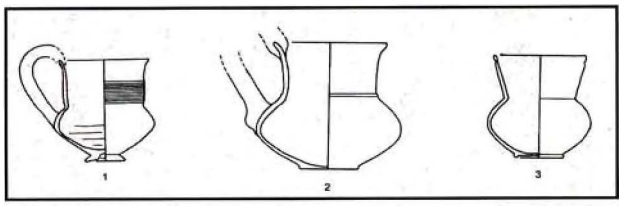

Fig.1 Goblets.

Fine ware: no visible temper; exterior surfaces self-slipped and usually well burnished; fired hard (temperature >800°C); sharp relatively straight fracture.

Common ware: medium grit inclusions (maximum diameter <0.5 mm.); forming methods depend on size and shape of vessels; simple surface treatments predominate; wet-smoothed, often self-slipped; a lustrous micaceous slip characteristic though not standard; variable hardness; fracture generally jagged.

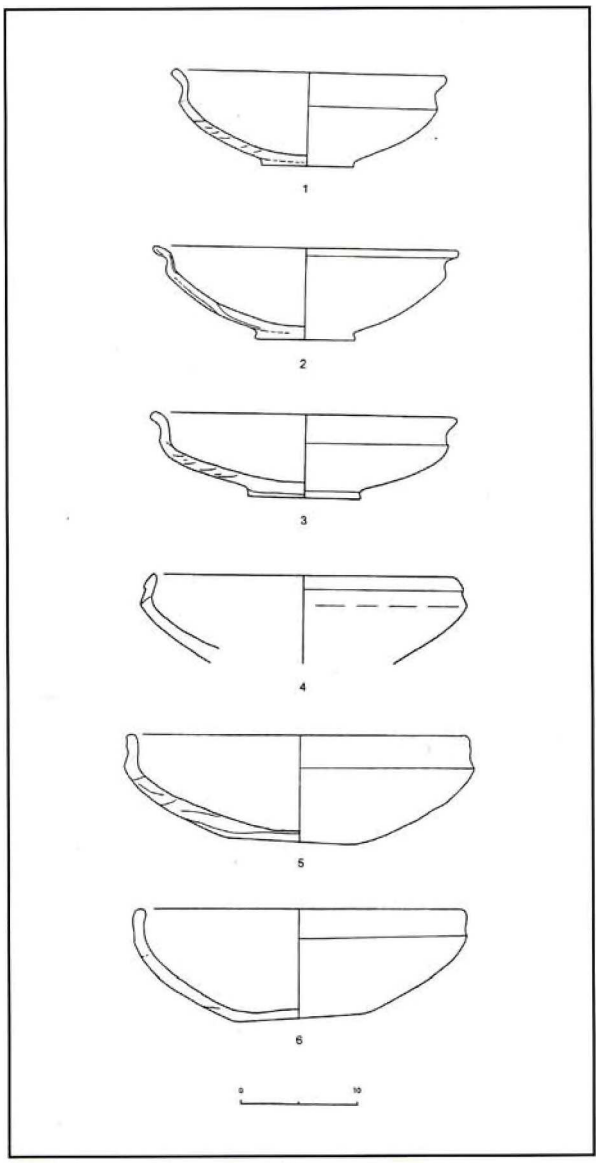

Fig.2 Small and Medium Carinated Bowls.

Coarse ware: as for common ware, but with larger grit (maximum diameter <1-2 mm.) and less careful surface finishing (cf. Sams 1994: 31-40).

All but the largest vessels were usually relatively well-fired (>700-800°C) in kilns using either reducing or oxidizing atmospheres, yielding grey or buff wares. The intense fire in the Destruction Level refired all of the pottery, making it difficult to determine whether many vessels were originally buff or grey.

The following discussion will reconstruct how some of the common Phrygian vessel types were made. Note that different combinations of forming methods were used even to make various sizes of a single vessel shape. Comparisons with Sams's vessel typology and specific parallels are

summarized in Table 2.

Goblets (Fig.1)

Goblets are drinking vessels with a single handle. At least most goblets were thrown on a potter's wheel. Bodies and pedestal bases were made separately and then joined. The combined pieces were then finished on a turntable or wheel. Some goblets have combed decoration added as the leather-hard goblet was rotated on a turntable. Handles were added after the overall finishing. The irregularities of shape and finish suggest that some goblets, though none of those illustrated here, were hand-formed and perhaps finished on a turntable.

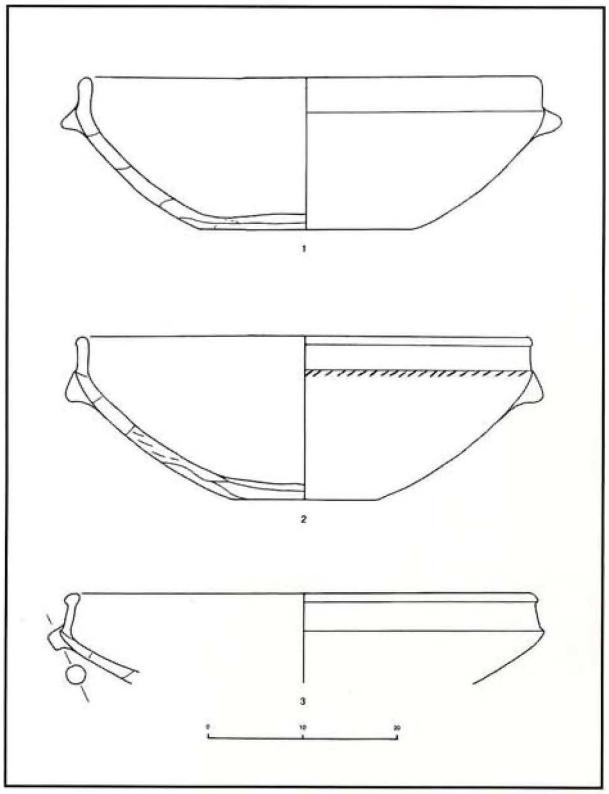

Fig.3 Large Carinated Bowls

Bowls (Fig. 2,3)

Bowls are vessels whose maximum diameter is near to the rim and much less than the overall height. Only carinated bowls will be discussed here.

SMALL BOWLS (maximum diameter < ± 20cm. Small bowls were probably thrown on a potter's wheel (cf. Sams 1994), but none were found in TB2a. Small bowls could also be pinched into shape from a lump of clay rather than thrown; these tend to be rather irregular in shape and poorly finished (cf. Sams 1994).

MEDIUM BOWLS (maximum diameter ±20-40 cm.) Medium bowls were usually moulded, using

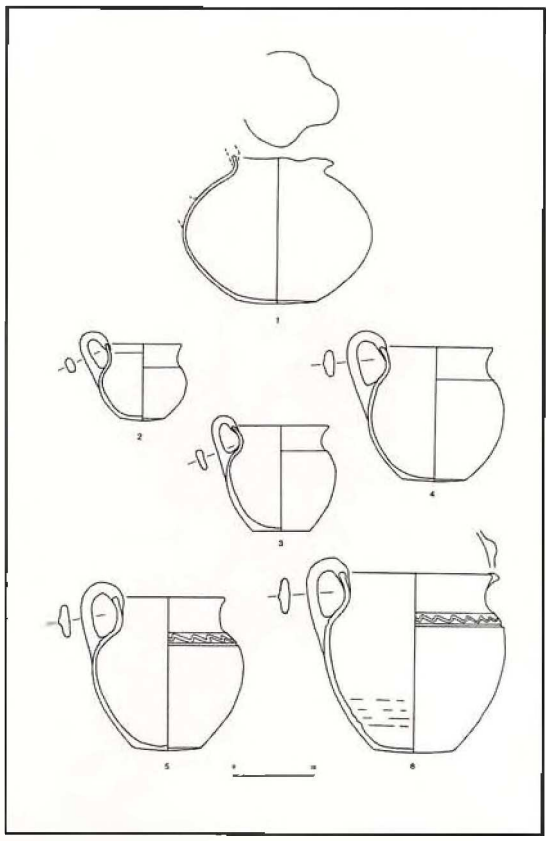

Fig.4 Wide-mouth trefoil jug and one-handled pots.

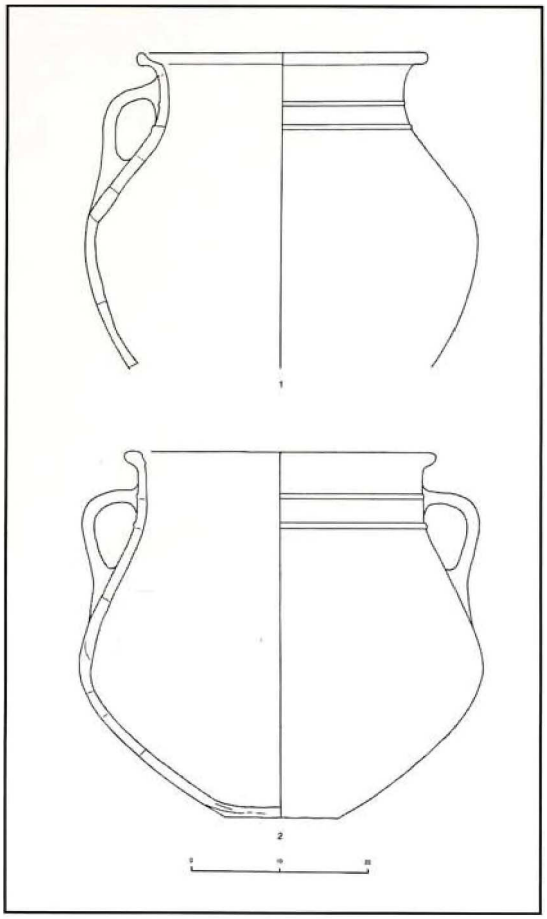

Fig.5 Large wide-mouth pots.

the same general method as for large bowl construction. The vessel wall above the carination was formed by adding a separate coil or slab of clay (Fig. 2.4). Disk and ring bases were made by adding slabs or loops of clay which were then smoothed to shape (Fig. 2.1-3). The asymmetry and irregularity of the disk bases indicate that these bases were hand-finished; their convexity suggests that they likely were finished with the bowl inverted. Pedestal bases (cf. Sams 1994) were formed separately and then attached to the bowl, as with goblets.

LARGE BOWLS (maximum diameter >±40 cm.) Forming the larger bowls or basins involved both moulding and coiling (Fig. 3). In the base and lower body, long step fractures reveal the surfaces of the slabs or lumps of clay which were pressed into a mould on top of one another (Fig. 3.1-2). The base and lower body were then left in the mould to harden somewhat before construction continued. A consistent break all the way around the circumference of one large bowl at the same height above the base demonstrates this delay (Fig. 3.2). The upper body was then constructed using two or three coils which were shaped (Fig. 3.1-2). After removing the bowl from the mould, final shaping and smoothing of surfaces were done on a turntable and the lugs and incised decoration added.

Pots (Fig. 4-5)

Pots are vessels whose maximum diameter is comparable to the height, and whose rim diameter is not markedly less than the maximum diameter, leaving a relatively wide opening.

SMALL POTS (maximum diameter and height <±20 cm.) Small pots were probably thrown on a potter's wheel (Fig. 4.2-6). The open-mouth variety with a single handle often had a decorative band of straight and wavy lines incised on its shoulder as the pot was rotated on a turntable. Small pots could also be pinched into shape rather than thrown.

MEDIUM POTS (maximum diameter and height < ±30-35 cm.) None are illustrated. Forming would likely have followed a sequence similar to that for medium jars (see below).

LARGE POT (maximum diameter and height >35-40 cm.) Construction began with slab bases made up from several layers of clay (Fig. 5.2). The sides were built onto the edge of

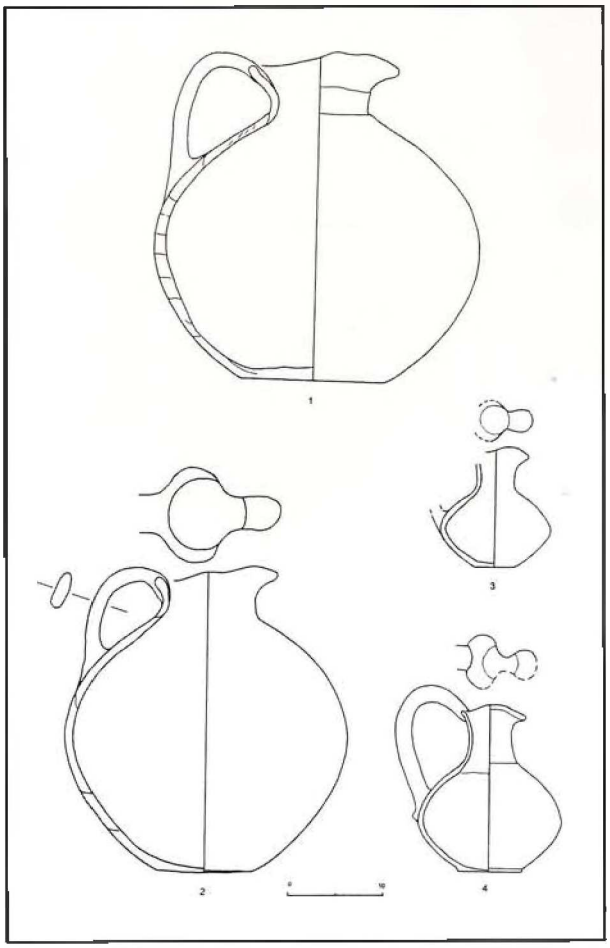

Fig.6 Jars and jugs.

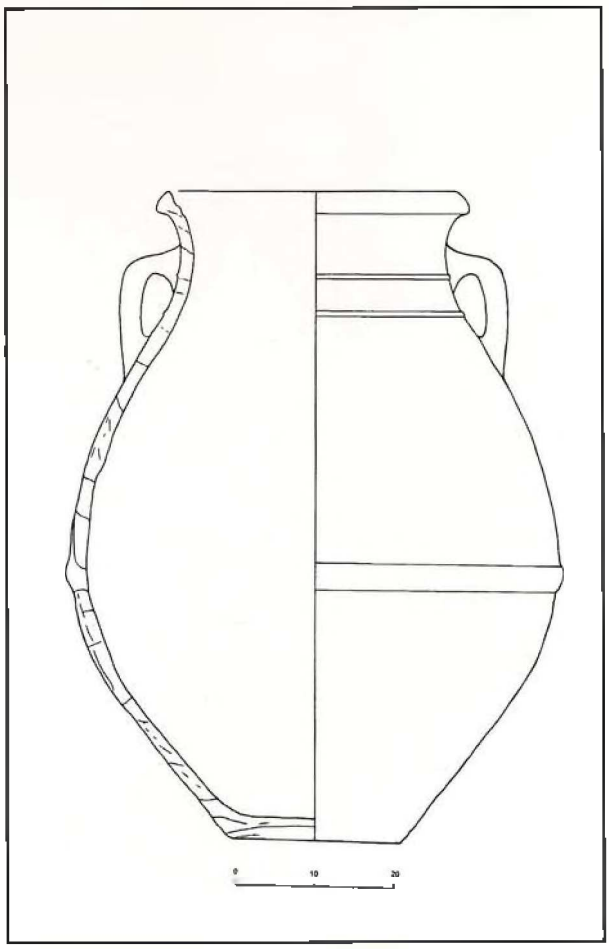

Fig.7 Large wide-mouth storage jar.

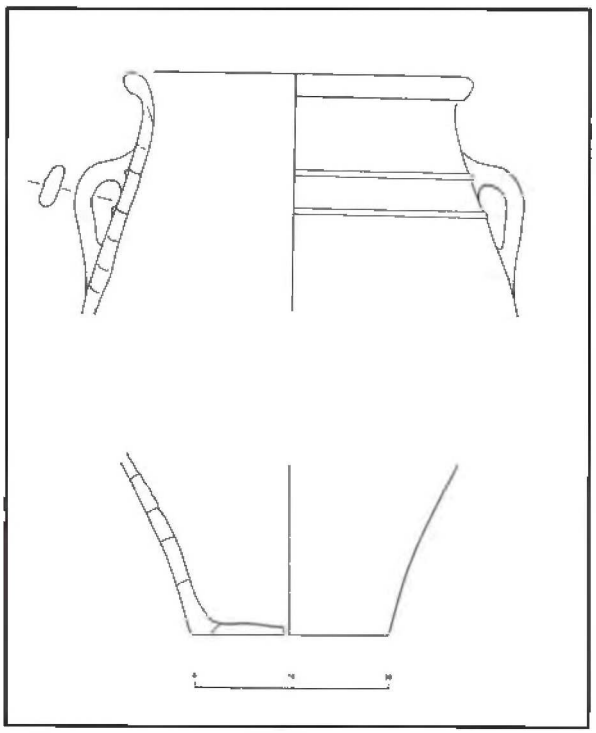

Fig.8 Large wide-mouth storage jar.

the slab base by coiling. Their tendency to break into horizontal strips of relatively uniform height suggests that after each coil was added, it was stretched upward and outward to thin it. With brief intervals to allow the clay to harden slightly, the same process was repeated (Fig. 5.1-2). Secondary shaping and thinning may have been done using a curved potter's tool or by scraping. Interior surfaces were often scraped to thin the sides after forming was completed (Fig. 5). The surfaces were then smoothed and handles added.

Jars and Jugs (Fig. 6)

Jars are vessels whose maximum diameter is less than or equal to the height, and whose neck and rim diameter is much less than the maximum diameter. Jugs have one handle and a spout or pouring lip; jars may have either two or no handles.

SMALL JARS (maximum diameter and height <±20-25 cm.) Small jars or jugs were usually thrown. Depending on the height and narrowness of the neck, they might be made in either one or two pieces (base/body and neck/rim) which were then joined and the exterior finished (Fig. 6.3-4).

MEDIUM JARS (maximum diameter and height < ± 35 cm.) Medium jars were hand-built using coils or strips of clay butted onto a slab base. The walls of the lower body were left thick during forming in order to resist the stresses resulting from forming the upper body, shoulder, neck and rim. The neck and rim in particular were added after the body and shoulder had been allowed to harden somewhat. A curved tool was probably used for secondary shaping of the body, thinning the sides, regularizing the shape, and slightly increasing the diameter. Finally, the interior of the (lower) body was scraped, often rather carelessly, to reduce wall thickness. The addition of the handle was one of the final steps (Fig. 6.1-2).

LARGE JARS (>±35 cm) No large jars were identified in TB2a, but they would probably have been made in the same general fashion as large pots.

Oversize Storage Jars (Fig. 7,8)

The sides of oversize storage jars were built onto a slab base formed from several layers of clay, as with somewhat smaller pots and jars. Periodic horizontal breaks in the sides are unmistakable (Fig. 7-8, especially Fig. 7). Within each of these forming segments separate coils are not clearly identifiable. This suggests that construction consisted of adding a fat coil of clay along the inner edge and drawing it upward (see the bevel joins in profile). An extra layer of clay and a ridge were added around the maximum diameter and somewhat below, perhaps to strengthen the vessel in preparation for the subsequent forming of the upper body. Forming increments in the upper body decreased in height.

Even larger vessels were present in TB2a, but their remains were too badly vitrified and distorted by the intense heat from the fires to yield much information. The identifiable parts of such vessels suggest, however, that the bases made from

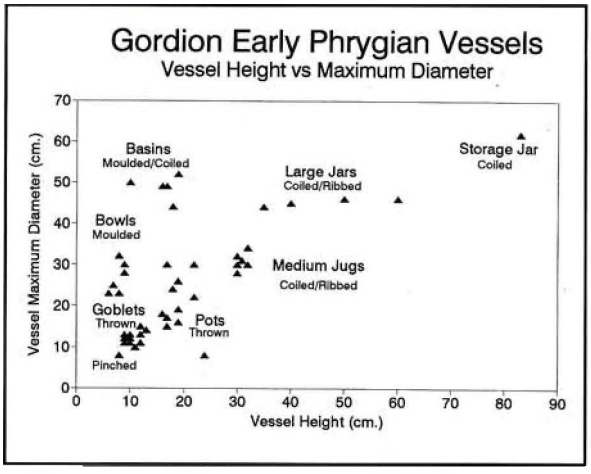

Fig.9 Relationship between vessel size and basic forming methods. Vessel Numbers

layered slabs, and that the rims, necks, and shoulders were coiled, just as for similar vessels from later periods at Gordion (Henrickson 1995).

THE PHRYGIAN POTTER'S CRAFT (Fig. 9)

The distinctive combinations of forming and finishing methods, specific to individual shapes and sizes of vessels of the Phrygian assemblage (Fig. 9), help to define the indigenous Phrygian potter's craft at Gordion -- a culturally distinctive complex of material, technology, and behaviors. The Early Phrygian pottery assemblage consisted of a number of standardized shapes and sizes. The Phrygian potters tended to throw small vessels (maximum size±20-25 cm.) on a potter's wheel. They built larger vessels in a sequence of steps, using varied combinations of handforming methods and often finishing them on a turntable. Thus relatively few types were thrown, as is true of most ceramic industries in most periods across the ancient Near East. To shape the exterior profile, clay tended to be added, such as a slab of clay for a disk base, rather than removed by cutting or scraping. The interior of medium or larger vessels might be scraped in order to thin the vessel walls rather than to change their shape. Finishing was relatively simple. The smaller, finer vessels were usually burnished. Medium and larger vessels were usually just smoothed or self-slipped; some vessels had a micaceous slip applied. Reduction firing, yielding grey or black fabrics, was typical, but some oxidation firing was done to yield buff fabrics, which might be painted. Some ceramic vessel types reproduced metal vessels, as can be seen from comparison of pottery from TB2A with the bronze finds from the Midas Mound tomb (e.g., compare Fig. 6.1-2 and Young 1981: Pl. 60-61; also Fig. 6.3-4 and Young 1981: Pl. 61M, P; cf. Knudsen 1961).

The evidence shows that the potters were professional specialists, working in groups in workshops on a large scale. While the Phrygian potters did not use any especially complex technologies, they clearly had a wide range of skills. Neutron activation analyses of local clays and Early Phrygian pottery has identified several distinctive paste composition groups; this suggests a number of workshops (Henrickson and Blackman in press). Since a number of vessel sizes and shapes may have a single distinctive clay composition, individual workshops probably made a number of different types and sizes of vessels. At the same time, few paste samples are associated with clays available near Gordion itself, so the workshops, or at least their clay sources, must have lain elsewhere in the valley or beyond. This suggests that, in the first millennium B.C., the royal capital at Gordion drew on a wide area for even basic commodities like pottery.

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Table 1: Definitions of Crucial Technical Terms

TERM	DEFINITION
COILING	using 'ropes' or coils of clay to build a vessel
FINISHING	smoothing, slipping, burnishing, painting, etc.
FORMING	PRIMARY: initial shaping of the clay into the basic profile of the vessel; this step may yield the final shape. SECONDARY: modifications to the initial shape yielded by primary forming.
MOULDED	pressing lumps or slabs of clay into or over a template to form a vessel.
POTTER'S WHEEL	a pivoted disk which can be rotated at sustained high speeds, whose centrifugal force the potter uses to lift and shape the clay.
SLAB BUILDING	using slabs or blocks of clay to construct a vessel.
SLIP, SELF-SLIP	SLIP:a fluid suspension of fine clay in water, used to coat surfaces of a vessel SELF-SLIP: wet-smoothing of vessel surfaces with enough liquid so that fine clay particles are brought to the surface, creating a 'slip'.

THROWING using the centrifugal force generated by the rapid rotation of the potter's wheel to raise and shape the clay.

TURNTABLE or a disk used to support and slowly
TOURNETTE or rotate a vessel as it is being built
SLOW WHEEL by hand; it cannot be rotated at sustained speeds sufficient to throw a vessel.

WHEEL- FINISHED all processes involving relatively slow rotation for primary and secondary forming, regularizing of shape, or finishing (smoothing, decoration, etc.). 'Slow wheel', 'turntable', or 'tournette' are common terms for such processes or techniques.

WHEELMADE pottery which is THROWN on a potter's wheel, with the centrifugal force generated by the rotation of the potter's wheel used to raise the walls of the vessel during primary forming.

'WHEELMARKS' (also called 'THROWING MARKS' or 'RILLING') nearly parallel spiraling ridges or striations on either the exterior or interior of vessels thrown on a potter's wheel, created by the pressure of the potter's fingers as the clay is lifted and shaped.

(See Rye 1981; Vandiver 1987)

Vessel Numbers

Figure		Vessel
1.	1	67
	2	76
	3	29
2.	1	40
	2	36
	3	4
	4	22
	5	73
	6	2
3.	1	8
	2	1
	3	93
4.	1	25
	2	48
	3	13
	4	3
	5	90
	6	12
5.	1	27
	2	84
6.	1	20
	2	21
	3	49
	4	91
7.		6
8.		100

Table 2: References to Discussions in Sams (1994)

Vessel Type and Figures	Discussion and Illustrations (Sams 1994)	Specific Paralleles (Sams 1994)
Goblets	"Round-mouthed jugs" Pp. 52-57; Pl. 37-55	
1.1		Pl. 45.566, 569
1.2		Pl. 42.500, 551
1.3		Pl. 39.533; 40.535-539; 41.544-546; 44.563
Carinated Bowls	"Carinated Bowls, Classes 2-3" Pp. 45-48; Pl. 14-23	
2.1		Fig. 12.441, 14.464; Pl. 15.441, 19.464
2.2		Fig. 13.454-455 Pl. 17.454-455
2.3		Fig. 13.459; Pl. 18.459
2.4		Fig. 16.477; Pl. 22.477-478
2.5-6		Fig. 14.470-473, 15.474, 480; Pl. 20.469-473 21.474, 22.480
3.1-2		Fig. 15.475. 481; Pl. 21.475-476, 22.481, 23.482
3.3		Fig. 15.477; Pl. 22.477-478
Pots	"Wide-Mouthed trefoil jug": pp. 61-63 Pl.81-85	
4.1		Pl.81.754, 82.763, 767
	"One-handled utility pots" pp. 70-73, Pl. 101-102	
4.2-6		Pl.101.836-843, 102.844-850
	"Open-mouthed amphoras"; pp. 83-87, Pl. 116-132	
5.1		Pl.118.901, 906
5.2		Pl.118.904, 905
Jars and jugs	"Jugs" : pp. 57-61, Pl.62-80	
6.1		Pl. 79.740, 742
6.2		Pl. 80.749, 750
6.3		Pl. 63.649
6.4		Pl. 68.688
Storage Jars	"Storage Jars": pp.97-100	
7		
8		Pl. 146.998

NOTE

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