

An Approach to the Study of Contemporary Earthenware Technology in Mainland Southeast Asia¹

Introduction

Since 1993–94 we have engaged in studies of village-based earthenware pottery production across most of mainland Southeast Asia. Working closely with potters from over 100 communities in Thailand, Laos, Cambodia, Vietnam and Malaysia, we have developed a method for understanding the sequence of steps whereby clay is acquired, prepared, transformed into a vessel, and fired.² Driving our studies has been our realization through fieldwork experience that, contrary to casual observation, “not all clay pots are alike.” Through direct scrutiny of potters at work (as opposed to study of the finished products, which conceal key features of the production), we could recognize significant differences all along the sequence of steps, but particularly in the central process of shaping the vessel. These differences emerged as patterns that we encountered repeatedly in different pottery-making communities, suggesting relationships among those communities.

At the present stage of our survey we have identified three distinct production sequences by which village women in mainland Southeast Asia make pots by hand without use of the fast wheel. (We have also seen three additional sequences involving the fast wheel). In a recent paper we discuss the geographic distribution of these sequences.³ Here we focus on technology: we present the steps in the process from clay mining to firing for two village locations representing two of the three sequences. We have chosen the two sequences that are the most distinct from one another in order to exhibit, in detail, the technical diversity of earthenware pottery production within mainland Southeast Asia. We will not examine here the possible reasons for this diversity.

Theoretical Perspectives on Practical Work

Using words and photographs, this paper attempts to capture key features of two dynamic production processes. Our analysis follows along lines conceived and developed by Leroi-Gourhan and Lemonnier and illustrated by Gosselain with respect to potting communities in southern Cameroon.⁴ It focuses on technology as embodied behavior. This behavior involves production procedures that seemingly have “meaning” beyond the immediate “function” of producing the finished product, although that meaning is rarely articulated by an individual potter or visible to the observer. Our identification of six different sequences for producing earthenware pottery in central and eastern mainland Southeast Asia leads to the supposition that pottery producers made choices (for a variety of reasons, both practical and not) in the course of the thousands of years of earthenware pottery production on the mainland, and that those choices became embodied in practice. For instance, the most arresting difference in the two hand-forming sequences described here occurs in the shaping of the preform (the initial but incomplete open form on which the finished mouth rim is shaped).

Our survey also has made clear that there is no single, universal “paddle-and-anvil” technique that defines all earthenware production on the mainland. Paddles and anvils are employed in different ways for finishing the preform, while (as this paper shows) some pots are also finished without using paddles and anvils at all.⁵ Thus, production techniques that have been considered “givens” are now problematic; they call for explanations in terms of the origins, histories, diffusion, and principles of behavioral selection of the peoples involved.

Although little research has been carried out in this domain in Southeast Asian studies, work on the meaning of behavior is of increasing interest. Stanley O'Connor's seminal study on the importance of iron-working for understanding a 15th century Indonesian stone relief reveals that the processes embodied in the production of iron symbolized for the people of that time the movement of a human soul following death, degeneration, and reformation in a new guise. Tanabe's study of peasant farming systems in north Thailand makes the point that those production processes are embodied behaviors that may not be voiced, but that define the way the farmers approach the world. This accords with Bloch's observation that anthropological studies may have to move into non-linguistic domains in order to fully understand the cognitive patterns held by people.⁶

Our own studies have yet to move to the level of extrapolating productive behavior to any other aspect of Southeast Asian culture. We are still involved in graphing the diversity of pottery-making behavior, believing that these data have impact in archaeology as well as the contemporary analysis of cultures. We present this paper as a preliminary illustration of our findings, hoping to show that something that may have been assumed to be uninteresting may actually be of great interest.

Following the analytical procedure also used by Gosselain, we present here comparable steps of earthenware pottery production in two communities. These sequences of steps correspond to *chaînes opératoires* as developed by Lemonnier. We call alternative ways of accomplishing a step within a process "attributes." While today we observe these steps as coherent production processes, we are aware that the attributes of a particular sequence have been selected over time. The package of attributes is thus historically contingent.

Not all steps in a package, however, are equally malleable. Our field observations have led us to conclude, for instance, that aspects of final pot form and decoration may be far more flexible than the core process of forming the pot. Gender is also malleable for certain aspects of the sequence. Women are the sole formers of pots when a wheel is not employed, but men can replace women in acquiring and processing clay,

preparing and undertaking firing, and marketing. As we have pointed out in another paper,⁷ this allocation of gender roles may depend on the level of industrialization of production.

Defining the Process

Many of the women potters with whom we work conceptualize their work as a sequence of discrete steps for which they can recite names.⁸ Not all potters within a given community, however—and certainly not all potters sharing the same production process but living some distance from one another—engage in precisely the same actions to produce similar pots. These attributes show a range of variation within the steps of a production process. As we show below with regard to shaping the pot rim, for instance, some women who formerly walked around a post now stand in one place before a concrete-filled bicycle wheel, making use of the ball bearings to spin the "wheel" (fig. 5). The point in the forming process at which impressed decoration is applied can vary, and we have also seen this impressed decoration augmented or replaced by painted decoration applied by men. Sufficient variation exists in the work patterns of women even within the same village such that one cannot avoid noticing it. Thus, our definition of the three sequences of producing pots by hand allows for ranges of variation; they are not ideal types.⁹

In one of the two sites we have selected to describe here, Village A, a substantial number of the women make pots, and pottery making is the year-round, full-time occupation for many of them. Although the following descriptions focus on the technology of pot production, we also have gathered information on social and other correlates—and interaction between these correlates and pot production—in order to provide (in another context) more nearly complete pictures of the communities in which production takes place. This paper focuses on the behavioral patterns involved in production and their impact on the item produced.

While we use still photography to present two sequences here, we want to emphasize the importance of video documentation for our analysis of behavior.

Bracketed descriptions represent activities we did not see ourselves.

Village A¹⁰

Fig. 1. Village A, potter shapes neck and rim of preform on fast wheel made from bicycle wheel.

Village B¹¹

Fig. 2. Village B, potter shapes neck and rim of preform on board.

Step I: Getting Materials

Uses dry stream meander, now open dry area of alluvial soil and adjacent artificial pond, 500 meters outside village.

(Men and women) Dig pot-making clay from veins below ground level.
Sort clay from matrix.
Carry back to village by motorized trishaw.

(Man) Dives in pond to collect temper-making clay, using bucket.
(Man or woman) Mixes wet clay and rice hulls by foot in pit on pond bank.
Forms mixture into balls.
Dries balls in sun.
Fires balls slowly in shallow pit in firing area, using rice chaff and straw.

Uses open dry area 500 meters outside village.

(Woman potter) Digs pot-making clay from veins below ground level.
Puts loose clay on plastic sheet.
Brings to ground level and transfers to plastic bags.
Carries back to village using baskets and shoulder pole.

No temper used.

Step II: Preparing Materials

(Man or woman) Sprinkles water over clay pile. *(Woman potter)* Dries clay in sun.

Slices lumps of clay from pile sufficient for day's production (usually 14–16 pots).
(*Man or woman*) Prepares temper by crushing fired clay/rice husk balls in mortar.

Sieves.

(*Man or woman*) Prepares clay body by placing clay and temper on mat, mixing by foot; wraps in plastic, leaves overnight.

[Elicited: Selects quantity of clay sufficient for next day's production (usually 2–4 pots), soaks in covered buckets or baskets lined with banana leaves, and kneads.]

Step III: Preparing the Preform

Work space: shade under or next to potter's house.

(*Woman*) **Potter squats to work:**

Selects clay for single preform.

Kneads by hand on plastic sheet.

Makes solid cylinder.

Opens into hollow cylinder using thumbs, then hands to open both ends, bamboo stick to pierce center.

Repeats for all pots for that day.

Potter stands to work:

Places cylinder upright on short post.

Expands cylinder body using textured paddle and anvil.

Shapes neck and rim on upper edge of cylinder, using moistened cloth, while walking around cylinder on post (both forward and backward).

(Or: places cylinder on wheel to expand body and make neck and rim.)

Repeats for all pots for that day.

Replaces preform on post.

Expands body further using textured paddle and anvil.

(Optional: stamps design in shoulder using carved paddle, flutes rim.)

[Preforms dry briefly.]

Work space: fenced 'orchard' garden shaded by small trees.

(*Woman*) **Potter squats to work:**

Selects clay for single preform.

Kneads by hand on board on ground.

Makes coil.

Flattens coil into strip, stands strip upright in partial ring on second board resting on short post.

Makes second coil, flattens and completes ring. Smooths ring upward with blade, rotating board on post between scrapes.

Adds more coils.

Repeats to form conical hollow form

Shapes neck and rim, using cloth, while rotating board on post.

Repeats for all pots for that day.

Potter squats to work:

Impresses decoration on shoulder using carved stick.

Wraps lower edge of preform with cloth (to keep moist).

[Preforms dry briefly.]

Step IV: Finishing the Form

Potter sits to work:

Closes base with smooth paddle and anvil.

[Form dries briefly in stand made from broken pot neck.]Repeats for all pots for that day.

Potter stands to work:

Places form in stand on post.

Shapes body with smooth paddle and anvil.

(Optional: stamps design on shoulder using carved paddle.)

Potter stands to work:

Inverts conical preform to rest on rim on board.

Kneads clay for base.

Potter alternates squatting and standing:

Scrapes excess clay from inside of preform using bamboo or metal ring.

Potter stands to work:

Makes coil and attaches to upper edge of preform; smooths upward using blade.

Repeats for all pots for that day.

[Form dries briefly.]

Potter sits to work:

Gives final shaping to body with smooth paddle and anvil.

Repeats for all pots for that day.

(Optional: adds foot rim.)

(Optional: makes lid.)

Inverts pot on rim to dry completely.

(*Man or woman*) (Optional: paints decoration.)

Repeats to close base.

Smooths outside of entire base using blade then wet cloth.

Repeats for all pots for that day.

[Pots dry initially upside-down, later rotated on sides and then base.]

Step V: Preparation for Firing

Uses established location at edge of village.

(*Man and/or woman*) Arranges small supports on ground in grid.

Lays long, dry bamboo stems across supports in one direction.

Lays floor of dry bamboo at right angle.

Places pots mouth-down in rows.

Places second layer of pots leaning mouth-up in interstices of first layer.

About 100–200 pots total.

Covers with rice straw.

Uses established location on river bank.

(*Woman potter?*) Not observed.

[Elicited: Lays one layer of pots mouth-down or sideways on ground (no floor?).

About 20 pots total.

Surrounds and covers pots with bark.

Lays straw over bark.]

Step VI: Firing

(*Man and/or woman*) Walks around pile, lighting fires in straw at many points near ground.

Maintains fire by adding straw where pots are exposed.

Using long stick, pokes into edge of pile to see if color is red (well fired) or black (incompletely fired).

Straw burns to black ash.

Continues localized firing at incompletely fired locations by adding straw and/or bamboo.

Pulls out finished pots using long wood pole.

Saves unburned bamboo for re-use by pulling out and dousing with water.

Forty-five minutes total.

(*Woman potter?*) Not observed.

[Elicited: Two hours.]

Discussion

We have presented a preliminary formulation and comparison of two processes for producing earthenware pots in mainland Southeast Asia. As these brief sketches indicate, pots take form in significantly different ways in these two communities. The woman potter in Village A makes the preform as a hollow cylinder that contains all the clay necessary for the final vessel form. She then opens and expands the cylinder (using a carved paddle that adds texture) and shapes a neck and rim, leaving the bottom open. To shape the neck and rim, she walks quickly around the cylinder as it stands on a short post, moving her hands through a series of positions each of which she holds for a full 360-degree turn around the vessel (or spins the cylinder on a bicycle wheel while holding her hands stationary). Subsequently she closes the bottom with paddle and anvil and further refines the vessel form in two stages, using a smooth paddle that removes all texture.

The woman potter in Village B composes the preform using a number of coils, although at first she builds only the upper half of the vessel from mid-body to rim. She works on a flat board resting on a short post. While coiling the body she works on consolidating vertical sections all around the body, turning the board with her left hand to bring each section in front of her in turn. While shaping the neck and rim, however, she rotates the board steadily with her right hand, forcing all 360 degrees of the upper edge of the preform through a cloth held in her left hand. Subsequently she shapes the hemispherical lower half of the vessel by scraping excess clay from the interior of the preform, then adding more coils to the preform inverted on its rim.

While both potters make jars of similar size used for the same purpose—cooling water used for drinking—one noticeable result of the differences in processes is the considerably greater weight of the pot made by the potter of Village B. The descriptions also hint at other differences beyond the scope of this paper, such as the marked disparity in the number of pots produced in a day depending on whether the potter works alone or in collaboration with other family members.

This presentation should provide some indication of the range of variation in production of mainland Southeast Asian earthenware. Our survey has showed us that a single region such as Northeast Thailand—can house several markedly different pottery-making traditions. This suggests that archaeologists looking at modern pot-making in relation to their excavations would benefit by looking at several sites, not just one, although in any case continuity between present and past methods cannot be taken for granted. Sampling several ethnographic sites provides a range of variation in the attributes of a production process and may well inform the archaeologist about different production processes coexisting in nearby locations.

With regard to materials analyses to assist the archaeologist in defining the sequence of steps by which pots were produced, we have been working with Dr. Pamela Vandiver, Smithsonian Center for Materials Research and Education, who has used xeroradiography to conduct a series of blind tests of some of the finished, fired pots that we collected during our survey. Dr. Vandiver was able to see certain major differences in production techniques between the two samples from the communities discussed here (such as the lack of seams in the vessel from Village A and the center seam in that from Village B), as well as to distinguish between these Southeast Asian vessels and pots from West and East Asia.¹² As Gosselain and Livingstone Smith have noted,¹³ however, sophisticated technical analyses of the total sequence of steps in pot production are seriously lacking.

Ethnographic studies such as we are conducting might be of great use to the archaeologist, although much remains to be done.¹⁴

Summary

This paper is one of a series presenting work in progress related to our survey. We have made a close preliminary comparison of the processes of production of two distinct traditions in mainland Southeast Asia and we have discussed our framework for the analyses and some possible implications of this work. We intend to

develop the analytical structure that we have shown here more intensively across all the sites that we have visited and will continue to visit,

leading to a comprehensive presentation of this material. We invite critical and constructive comments on this project.

Notes

¹ Two years of this long-term project were funded by the Nishida Memorial Foundation for Research in East Asian Ceramic History. We have benefitted greatly from sharing several seasons of fieldwork with ceramics archaeologist Prof. Narasaki Shoichi. A version of this paper was presented at the 7th International Conference of the European Association of Southeast Asian Archaeologists, Berlin, 1998. Copies of the fully illustrated paper, which more completely duplicates the presentation, are available from the authors.

² Our previous papers and reports are: Cort and Lefferts 2000; Cort, Lefferts and Narasaki 1995, 1997; Cort, Lefferts, and Reith 1997; Lefferts and Cort 1998, 1999, in press; Narasaki, Cort, and Lefferts 1994, 1996; Narasaki, Lefferts, and Cort 2000.

³ Lefferts and Cort, in press, includes a map of mainland Southeast Asia showing all surveyed sites and their production types through July 1999.

⁴ See Leroi-Gourhan 1993, Lemonnier 1986, Gosselain 1998: 86. Previous work undertaken on pottery production processes has not made a great impact on archaeological or ethnographic studies, perhaps because of a lack of theoretical importance. See Reina and Hill 1978, Rye 1981. In South and Southeast Asian studies, see Jalan, 1987, Kramer 1997, Longacre 1981, 1983, Longacre and Li 1999.

⁵ See Cort, Lefferts, and Reith 1997.

⁶ Bloch 1991, O'Connor 1985, Tanabe 1994.

⁷ See Lefferts and Cort 1999.

⁸ See Bloch 1991.

⁹ We conceptualize variations between production processes, between steps in these processes, and within a process following Lemonnier and Gosselain, as 'choices'. However, potters are usually unaware of the choices that have been made for them in the past or those that they themselves make as they produce pots while we watch. Thus, we are talking of embodied behavior (Bloch 1991), "practical technology" (Tanabe 1994), and the kind of non-conscious alterations often described by linguists when charting lexico-statistics and phonetic change.

¹⁰ Ban Wang Tua, Amphoe Nam Phong, Khon Kaen Province, (Northeast) Thailand (about 30 kilometers north of Khon Kaen City). This is one of over 50 Thai-Khorat potting sites in Northeast Thailand and in the Vientiane area, Lao PDR.

¹¹ Ban Na Kradao (Din Kok), Muang Khong Se Don, Kweng Champassak, (Southern) Laos (about 50 kilometers north of Pakse). This is one of four sites with similar production technologies in Lao PDR and Central Vietnam.

¹² See Vandiver 1997.

¹³ See Gosselain and Livingstone Smith 1995.

¹⁴ While there are an abundance of published notes concerning pottery production, few recount these in detail. In particular, they often skip the initial steps, which we now see as critical for distinguishing among technological lineages. This paper follows in the tradition of detailed presentation to permit the charting of tradition and change in pottery production. See, e.g., Reina and Hill 1978, Longacre 1981, Rye 1981, Jalal 1987, Kramer 1997.

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