

***Tich Matek*: the technology of Luo pottery production and the definition of ceramic style**

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Tich matek is an expression used often and with feeling by Luo potters. It means 'hard work', and it conveys very well their fundamental observation about their craft. While archaeologists may see pottery as a key to past behavior, social relations, or even cognitive structure, potters themselves, at least Luo potters, tend to have a more mundane perspective on the matter. They see it as the useful product of hard, dirty work: a labor of responsibility rather than an expressive art. Yet, at the same time, many potters do derive a sense of aesthetic satisfaction from their craftsmanship.

This paper is a brief consideration of aspects of the technology of pottery production among the Luo people of Kenya. It provides a summarized description of the 'operational sequence' (Lemonnier 1986; Cresswell 1976) of Luo ceramic manufacture in the context of a consideration of the definition of style and a critique of the functional approach to material culture symbolism (cf. Wobst 1977; Pollock 1983).

Luo potters

The Luo are a Nilotic speaking people divided into a number of sub-groups (Evans-Pritchard 1949; Southall 1952; Whisson 1964; Ogot 1967) whose collective territories comprise some 10,000 square km surrounding the Winam Gulf of Lake Victoria in western Kenya.¹ They live in polygamous extended-family homesteads (*delni*; sing. *dala*) dispersed over the landscape, each married woman within a homestead occupying a separate house. Small-scale hoe agriculture (performed predominantly by women), cattle-herding, and fishing form the subsistence base. Pottery is perhaps the most common element of material culture in virtually every household, serving a range of functions including cooking, brewing, serving, storage, water cooling and transport, and ceremonial uses (Herbich and Dietler, in press).

Potting is the work of women, but only a relatively small number of women. In the sense that the body of users is significantly larger than the body of producers, Luo pottery is a specialized craft. However, potters are decidedly not full-time specialists able to live even in large part off the earnings from their trade. As with other Luo women, potters are wives and mothers first and they must meet the heavy agricultural and domestic responsibilities expected of all women. Potting is done in addition to

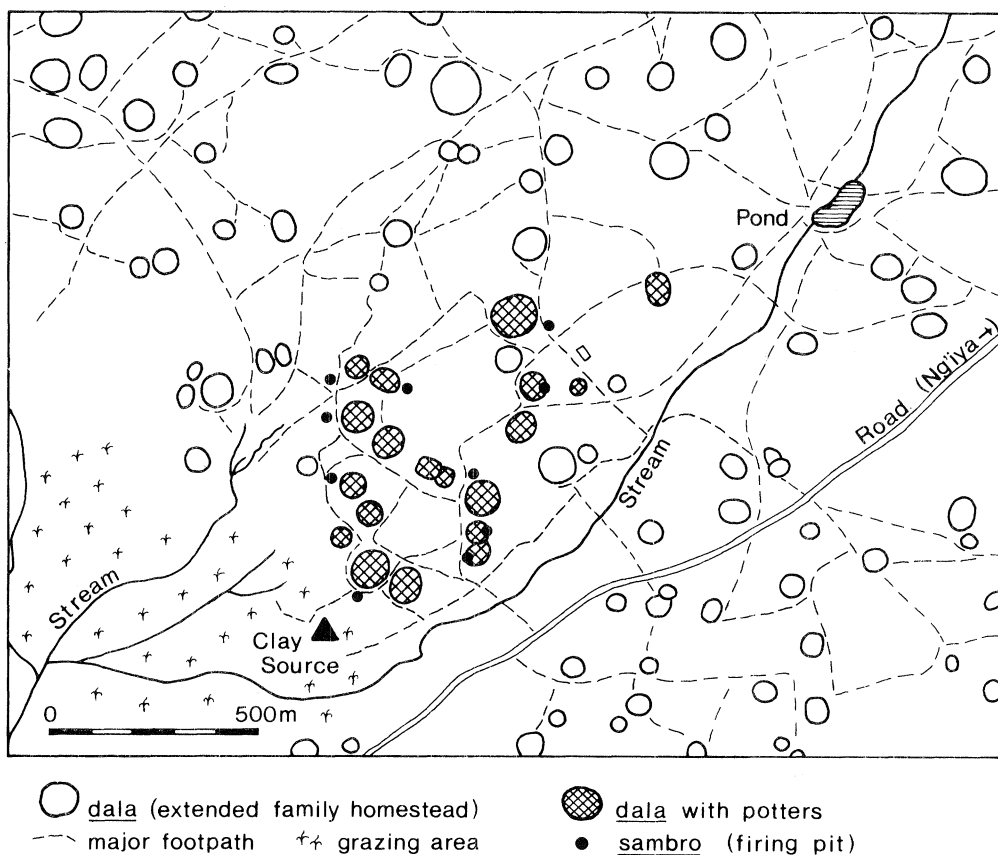


Figure 1 Map of potter community of Pap Nyadiel, near Ng'iya market.

these activities in order to obtain a little cash for such things as household necessities (e.g. salt, soap), school supplies for children, tea and sugar for guests, extra food in lean times, and various sudden emergency expenses.

There are no specialized workshop facilities. Potting is carried out in the homestead as part of the daily routine of domestic activities. Pottery is produced all year, but considerably less of it is made during periods of peak agricultural activity (planting, weeding, and harvesting) and during the rainy seasons. Yet Luo homes (as well as those of some neighboring peoples) are kept well supplied with a large ceramic repertoire by a body of women constituting less than 1 per cent of the population. This form of ceramic production, defined by Peacock (1982) as a 'household industry', is capable of an astonishing volume of production.

Although potting is recognized to be hard work, it is also a social labor that involves women in an important network of shared activity, knowledge, and personal relationships. Potting is only one of many interactive networks in which a potter participates. Moreover, the identity as a potter (*jachuech*) is only one of many roles performed by these women, and certainly not the most significant in terms of defining their overall status. Yet the network of interaction among potters has a very important

role in determining the material pattern of their craft (Herbich 1987).

Potters tend to live in homesteads clustered in close proximity to one another around a clay source, usually with several potters in each homestead. We refer to a network of interacting potters in such a cluster as a 'potter community' (Herbich 1987; Herbich and Dietler in press), although this in no way implies that potters live in bounded groups isolated from non-potters or form a recognizable community in any other sense (see Fig.1). The pottery of each potter community tends to exhibit characteristic combinations of technological, formal, and decorative features which we call a 'micro-style'. These readily distinguishable micro-styles are the product of local traditions of manufacture (i.e. distinctive enduring, but not static, patterns of technical and design choices) conditioned by learning patterns and processes of personal interaction among potters within communities (see Herbich 1987). Because of a system of exogamous patrilineages with patrilocal postmarital residence, strong pressures for resocialization, and the fact that the craft is generally not learned until after marriage, these local traditions are perpetuated by a body of women almost all of whom come originally from outside the area of the potter community.

Technology of production

In comparison to the variety of techniques and operational sequences practised in Africa as a whole (see Drost 1967) the Luo employ a very limited range. However, within this range, significant possibilities for variation in technical and design choices exist and permutations of these result in the micro-styles noted above.

Potters obtain their basic raw materials directly by digging clay, and often temper, from a pit in the ground. Usually, all the potters in a given potter community share common sources of both clay and temper which are located nearby (generally well within 2km). Most sources are designated by a name, and some have a reputation over great distances even among non-potters. In the approximately 3,000 square km region which formed the core area of our study, there were twenty-seven major active clay sources, each with one or more potter communities centered around it (see Fig.2). In only one case was clay transported over a great distance (about 20km, from Nyalaji to Aram), and this was also the only case of clay obtained indirectly. For those communities in which ochre is used for decoration, it often comes from more distant sources and is obtained indirectly through traders, relatives, or friends.

It is rather doubtful that the uneven distribution pattern of clay sources exploited by potter communities accurately represents the natural distribution of good potting clays. It certainly does not represent the natural distribution of clay deposits in general (in addition to local clays of variable quality used for surfacing house walls, there are occasional isolated potters utilizing sources near their homes), and there is a suggestive general correlation between the distribution of the major sources and regional differences in population density. In the case of temper, it is quite evident that the exploitation of common sources is a matter of common tradition rather than restricted distribution of suitable material.

Many of the clay sources have been in use since at least the beginning of the century,

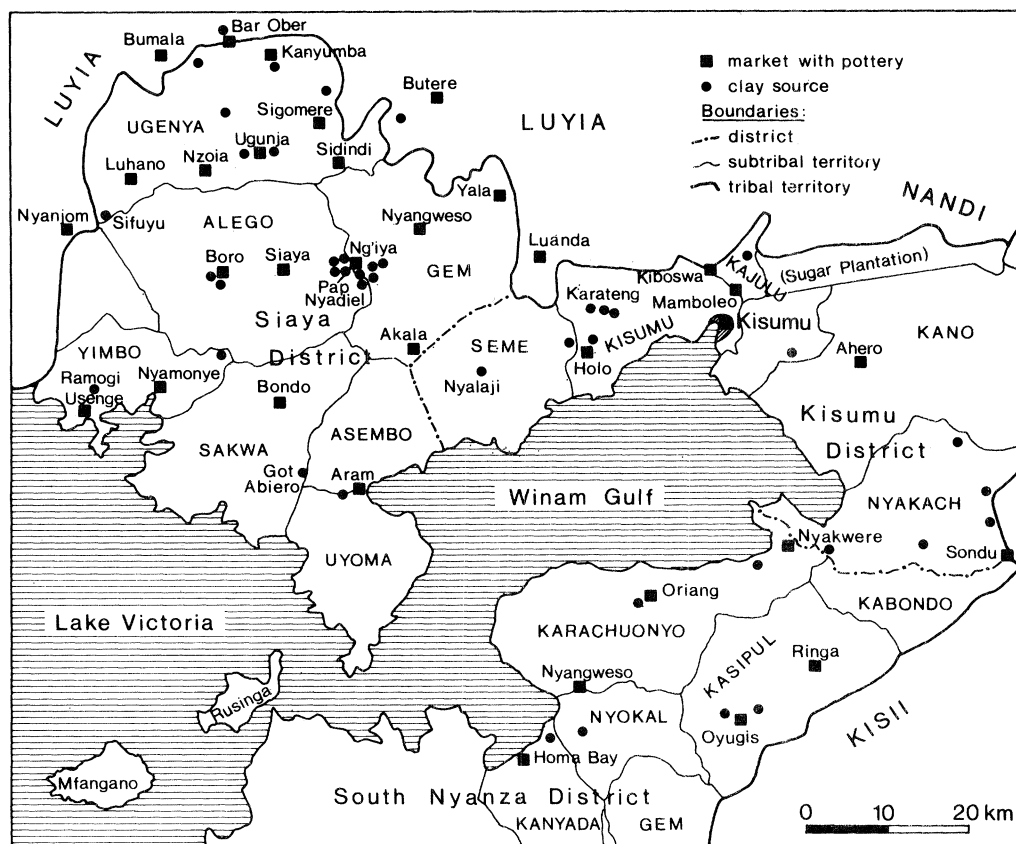


Figure 2 Map of Luo territory (excluding portions of south Nyanza) showing boundaries of tribal and sub-tribal territories, major active clay sources, and markets with pottery. Kisumu is the only urban center in the area.

although exploitation of a few is of more recent origin. Some older sources have been abandoned, due to possible exhaustion of good clay or the occurrence of accidents at the site. For example, at the formerly highly reputed source known as Ulongi, near Boro market, good clay had been pursued to the point that it was being extracted from a several-meter-deep tunnel which is reported to have collapsed and killed a woman. Attempts are no longer made to reach this deep clay because 'Ulongi kills'.

Some sources yield a single type of clay or temper, while others have multiple types (from different beds) which potters must learn to mix in the proper proportions. For example, Sifuyu has five types and Ramogi has four. Except in the case of sherd temper (*oquya*) and loose sand (*kuoyo*), potters generally employ the same term (*lowo*, the general term for soil) for both clay and temper, distinguishing them only by the name of the source. In fact, what we distinguish by the functional term 'temper' is often simply a clay matrix with a substantial amount of clastic particles of the sand or granule size (Wentworth 1922: 381) which, while it will not cohere on its own, is not far different in appearance from many potting clays which often contain coarse material. In addition to locational designations, more descriptive terms relating usually to color or

texture are also often used; and this is always the case for the sources with multiple types of clay and temper (e.g. *lowo rateng*, black soil; *lowo makwar*, red soil; *ohyiehyie*, sandy soil; *pundho*, a sticky soil).

While Luo potters do not classify soils according to the functional distinction between clay and temper, they are aware of the difference. Moreover, potters often have very definite opinions about the relative properties and merits of different clays. For example, in the Wagai community near Ng'iya, two clays (*lowo rateng*, black; and *lowo rabuor*, brown) from the same source are used. Potters say that if *rateng* is used alone it requires longer and more careful preparation, it takes longer to dry, and it cracks more easily in drying; however, it also results in a stronger pot than that made from *rabuor*. In some communities the entire range of local pot forms (for cooking, serving, water storage, brewing, etc.) is made from the same clay and temper combination, while in others different combinations are thought to be better suited to different functions.

All of the potting communities around Ng'iya market are unusual (within the 'core' region of the study) in producing temper by crushing the sherds of broken pots which potters obtain by exchanging two old pots for a new one. It is difficult to measure exactly how much sherd temper is required, but potters estimate that they can make about three new pots with the sherds of one old one of the same size. This use of sherd temper is clearly a matter of local tradition rather than ecological necessity, as deposits of good potential tempering material are available in the area and most potters are aware that such materials are used by potters in other areas. This is also evident, for example, in the fact that in one of these Ng'iya communities occasional experiments with other forms of temper have been in the direction of grinding up other types of ceramic-like materials (such as the burned earth from charcoal production mounds and low-fired bricks) rather than towards using sandy soils.

The basic tools of production and techniques of construction and decoration are few in number, simple, and vary only slightly from community to community. Yet differences in their manipulation result in significant distinguishable patterns of stylistic attributes and evince consistent patterns of design and operational choice on both the community-wide and individual level.

A large sherd (*balathago*) from the bottom of a broken pot serves everywhere as a base support and turntable. The large seed pod of a vine called *ombasa* (*Tylosema fassoglensis*) is used universally as the basic shaping and smoothing tool and also, in some communities, for decorating by incision (*gwaro*). In some areas, small split reed shafts (*odundo*) are used to make series of impressions (in continuous, generally horizontal, bands). In some areas small sticks or the triangular tip of a piece of gourd are used to make bands of punctate impressions. Incised decoration is also executed with a stick in some areas (for example, near Aram market this is usually done with a twig of the *Euphorbia* bush, the same bush used for the hedge-fence of Luo homesteads). A smooth pebble is used for initial burnishing and small spherical hard seeds of the *ajua* shrub (*Caesalpinia volkensii*) are used for finer burnishing (*rudo*). Finally, distinctive continuous patterns are produced in the wet clay by rolling (*kedo*) with the hand one or more of three types of rouletting implement: a 'knotted strip' roulette, a 'twisted string' roulette (see the classification of Soper 1985), or a dried

maize cob. In some communities, two different types of roulette decoration will be applied to the same pot.

Vessel construction begins by vigorously kneading (*nyuaso*) together clay, temper, and/or water (as needed in each area) with feet and hands for periods of up to 15 to 20 minutes to produce a working paste. Aside from visual evaluation, tests for the proper consistency include pressing a small lump of paste between the thumb and fingers and pulling them apart to check stickiness (for plasticity) and rubbing a bit of paste on the tongue to check roughness (for temper content).

The basic technique of forming pots is the so-called 'coil' method. Both what Rice (1987: 127) distinguishes as the 'ring building' and 'segmental' variants of the coil method are used (often on the same pot, depending simply on the circumference of the ring being added), but never 'spiral coiling'. Thick ropes of paste are made by rolling (*winyo*) between the hands and then added (*luowo*) in successive layers to a disc of paste previously pressed into the turntable. The rings of paste-ropes are never set directly on top of each other, but rather always overlap slightly on the inside or outside. The ropes are firmly joined at the point of overlap by pressing between fingers and thumb (*riwo*; which also reduces their thickness and doubles their height), and then further smoothed together by downward strokes of the thumb and scraping with the *ombasa*. However, considerable individual (rather than community-consistent) variation exists in the manner in which these ropes are applied and the vessel is formed. For example, some potters always use internal overlap of the ropes while others may employ internal overlap for the bottom of the vessel and external overlap for the top, and yet others alternate internal and external overlap with each layer. Moreover, some potters will add many ropes before any actual shaping of the body is done, whereas others will begin shaping almost immediately and continue to shape after the addition of each rope.

Shaping is accomplished by scraping (*chwero*) the interior of the pot with the *ombasa* pod against counteracting hand pressure on the other side of the vessel wall, both removing paste and forcing the wall up and outward in the process (*yawo*). The *ombasa* is also used to smooth (*yweyo*) the exterior by more gentle scraping. The rim is formed by scraping with the *ombasa* and smoothing and shaping between the thumb and fingers of a wetted hand while the vessel is rotated.

When the vessel is completely formed, it is ready to be decorated by a series of operations which may be performed in different sequences according to the area, potter, and type of pot (even for the same potter, decorative motifs, techniques of application, and design schemes vary according to pot form). In one nearly universal operation, varying sections of the body (and sometimes the neck) are lightly wetted with the hand and one or more of the types of roulette tool described earlier is rolled over the damp paste. Additionally, depending on the type of pot and the local decorative tradition, geometric motifs may be incised on the shoulder, neck, or mid-body and bands of punctate impressions may be applied.

While preferences in decorative motifs employed or their arrangement in the decorative field are sometimes also indicative of individual potters in some communities, we found that characteristic tendencies in small details of workmanship, the ways in which identical tools or techniques are used to replicate intended identical

features (particularly such things as the profile of the rim or the pattern of reed impressions) are often easily recognizable clues to the identity of a pot's maker. Although they may not be able to explicitly articulate the diagnostic attributes, potters can also usually distinguish their own and other potters' work quite easily even when decoration and form are virtually identical. This sense of individual 'style' is known, for example, as '*ma en luet* Anyango' ('this is the hand of Anyango'). It is expressed differently from recognition of the 'style' of a given potter community which is known, for example, as '*ma en chuech* Boro', ('this is the Boro way of making'). Quality of workmanship is also a factor in the recognition of the work of individuals, as each community has potters with a range of talents. Pots of good potters are generally more evenly and symmetrically shaped and decorated, better finished (e.g. more smoothly scraped interiors, more careful burnishing), and exhibit greater uniformity in proportions from one pot to the next.

Recognition of the latter category of style (potter community micro-styles) is based on patterned combinations of features including raw materials (e.g. color of the fired clay), the repertoire of pot forms, vessel proportions, and decorative characteristics.² Awareness of this level of style varies considerably in terms of breadth of knowledge, with all potters able to recognize alien pots as not belonging to their own local style, and some more aware of the specific characteristics of the styles of other communities (including sometimes even knowledge of differences in production techniques and raw materials which do not yield materially distinctive traits).

The bottom of a pot is finished the day after its initial shaping and decoration, and it is subsequently left to dry upside-down. Most potters say that at least three or four weeks drying time is necessary for medium-sized pots to avoid breaking during firing or structural flaws. However, in practice some potters take risks, occasionally firing after only a few days, and in certain communities very short drying times are the effective norm. As there are no specialized facilities for storing pots while they are drying (and as exposure to direct sun is thought to produce cracks), they are simply kept in the potter's house. This, in fact, along with the difficulties of transport to market, is one of the major limiting factors on the volume of production.

When they are well dried, certain types of pot in certain areas will be further decorated with a thick red ochre 'paint' applied in horizontal bands (straight, lobed, scalloped, or other patterns) on the rim, shoulder, and/or mid-body. The bands, previously left smooth in the field of roulette decoration and in some communities outlined with incised lines, are sometimes first burnished with a pebble. Red ochre (*pala*), ground and mixed with water, is then applied with the fingers and vigorously burnished with the small *ajua* seeds to produce a glossy sheen. In certain areas, the rims, necks, and smooth decorative bands of non-ochre-decorated pots are also burnished.

Luo potters produce a varied repertoire of ceramic vessels. Over the whole of the Luo territory, the range of pot forms can be divided into thirteen general categories. However, in no single region will local versions of all thirteen form categories be made and used. Rather, each area produces and uses a distinctive local subset of variants of about seven to nine of these forms to serve a roughly identical set of functions (Herbich and Dietler in press). Not only the general form category chosen to serve a given

function will vary locally, but also the specific rendering of that form (including vessel sizes and proportions, neck and rim profiles, body curvature, etc.) The total 'Luo repertoire' is a polythetic set which is neither uniform nor bounded: it overlaps with the neighboring Luyia (Herbich 1988). Correlations among form, function, and local taxonomy are also extremely complex and exhibit considerable geographical variation (see Herbich and Dietler in press).

In most areas, each potter produces the complete range of vessel forms used in that area. However, in a few areas more specialized focus on selected forms is practised by certain potter communities, and the full range of pots used in each household in the area is seen only when all the potters from the different communities assemble at the market. For example, among the various potter communities selling at Ng'iya market (from two Luo sub-tribes and using eight different clay sources), the potter community at Pap Nyadiel makes only ochre-decorated water-cooling and beer-drinking pots, the community at Udida makes only ochre-decorated eating bowls, and that at Kathomo makes only black cooking pots.

Firing (*wang'o*) takes place in a shallow round depression (*sambro*) just outside the *Euphorbia* fence of the potter's homestead. In a few instances, when the potter has been having trouble with pots breaking in firing and suspects witchcraft, the *sambro* may be located inside the fence at a spot not visible from the gate to protect against the 'evil eye'. In most areas potters fire on their own, or perhaps with one other potter, and there are rarely more than about twenty pots in the firing. In one community (Pap Nyadiel; see Fig.1), however, potters regularly fire in larger groups, and there may be up to seventy pots in one firing. Firing together saves considerable work in gathering fuel and preparing the *sambro*. However, firing is the most risky phase of the production process and if problems arise (i.e. broken pots) witchcraft is usually suspected. Consequently, the composition of the large cooperative firing parties is constantly changing as groups split up and reform in other combinations.

Pots are always placed in the *sambro* in one level (with all of the mouths facing to the side in one direction) between two layers of branches, and then covered with a thick blanket of loose bundles of long grass (for which potters have distinct preferences as to type). Once lit, the stack burns for roughly an hour, after which the pots are removed, still very hot, with a long wooden pole. Those with ochre decoration (in the communities which use this mode of decoration) are simply allowed to cool. In most areas the remaining pots are splashed with a resinous bark infusion (*orwech*) which sizzles on the pots and, depending on the type of bark used locally, turns the pots a black, brown, or mottled brownish colour.

The various production steps are difficult to characterize precisely in terms of the relative time required for each because of significant variations among individual potters and frequent interruptions of work. However, in general terms it is clear that among the techniques of decoration the most time-consuming and physically tiring process is burnishing, a fact readily pointed out by the potters themselves. In contrast, the application of incised decoration, even the most complicated patterns, is remarkably fast and easy. It takes up a miniscule percentage of the total production time, and it is the least physically demanding of all steps in terms of energy expended. Moreover, with the exception of burnishing, the entire process of applying

decoration of all types consumes far less time and vastly less energy than forming the pots.

The definition of style

This discussion of the technology of Luo ceramic production has some interesting implications for a current archaeological debate about the definition and meaning of ceramic style. For example, Wobst's (1977) popular model known as the 'information exchange' hypothesis is based upon a manifestly functional definition of style. This definition is founded upon the assumption that one can infer communication functions (as well as the meaning and target of the information conveyed) for a certain domain of material culture patterning from a logical analysis of the optimal utility of energy expended in 'stylistic behavior'. This model is essentially an *a priori* logical argument involving a premise and several dependent conclusions which would appear to be contradicted by the empirical data of the Luo case. Specifically, the structure of the argument is as follows that:

- 1) Messages are 'affixed' to artefacts through the medium of style, and that the 'costs of emission' of these messages is greater than with other modes of communication (Wobst 1977: 326, 322).
- 2) They therefore 'require more of a commitment on the part of the emitter', and a concomitant interest in the longevity of the signal (Wobst 1977: 322).
- 3) Furthermore, stylistically communicated information will be directed only at people at a certain social distance well removed from the maker. For individuals in daily personal interaction, stylistic communication would be redundant and 'a dysfunctional waste of energy and matter' (Wobst 1977: 325). It is particularly efficient for communicating boundaries between social groups in competition (Wobst 1977: 328).
- 4) Finally, only the most socially visible objects will be likely to carry stylistic messages of group affiliation (Wobst 1977: 328–30).

The implicit premise underlying this argument is, of course, the fundamental behavioral axiom of formalist economic theory: the strategy of maximization of return for minimum investment (in this case, largely labor investment).

This attempt to explain the social function of style suffers immediately from its implicit acceptance of the traditional dichotomy between 'style' and 'function' (in the utilitarian sense) and the concomitant contrastive method of identifying style within the domain of material patterning (i.e. it seeks to explain the social function of the 'non-functional' aspects of material culture patterning). Consideration of the 'cost' of 'stylistic behavior' only makes sense if style is seen as something added on to an object (e.g. decoration on pottery) at an additional cost in energy expenditure beyond that required to produce its basic form: in others words what Sackett (1982) calls 'adjunct form'. This would indeed appear to be what Wobst had in mind, given his references to stylistic messages being 'affixed' to objects, and it is certainly the domain in which the application of Wobst's model to ceramics has been focused (e.g. Pollock 1983; Plog 1980). If, on the other hand, style is seen to reside in the material results of patterns of

choices made at all stages in the operational sequence of production (cf. Lemonnier 1986; Sackett 1982) rather than as something added on, then the cost of producing it becomes difficult to assess, and is, in fact, a rather meaningless concept.

The Luo case makes it clear that the information exchange functions (including group boundary signalling) imputed to 'adjunct form' can be equally well served by variations in form, techniques, and raw materials; whereas decoration by itself, regardless of its complexity, may in many cases convey very little information at all. For example, despite the obvious existence of the micro-styles, among the Luo and their neighbors ceramic style generally plays no observable role for users in defining ethnic or ethnic sub-group boundaries (Herbich 1988). In the only instance where ceramic style does have such a function, Luo potters from South Nyanza produce two special forms of pottery which are sold to the neighboring Kisii and which the Luo do not use themselves. It is the *form* of these pots rather than the decoration which conveys this ethnic distinction, as the latter does not differ from that applied to the pots used by the Luo. The cost of producing this ethnically significant variation is no different (nor is the variation different in nature) from the cost of producing all the other ethnically insignificant variations in form. Information is not added to the vessel at additional cost in production labor; style results from design choices made during the forming of pots. These choices must be made for any pot, and consideration of the cost of producing this variation yields no clue to the meaning, target, locus, or even existence of any potential symbolic message.

Potters make their stylistic discriminations of '*ma en chuech* Boro' type on the basis of a sort of intuitive multi-variate analysis. The color of the fired clay or *orwech*-treated surface, the shape of the rim, the general pot form assigned to a certain function, and the proportions of that form as it is rendered may be more important than the decorative motifs applied. Choices in such matters are necessary for the manufacture of any pot. Insofar as they may have an intended communication function (and this is not predictable on any systematic basis), such choices in no way necessitate that the resultant stylistic patterns be any more 'costly' than other forms of communication. What is very costly in terms of labor-energy is the manufacture of pots as material objects: there are no inherent requirements about the labor-cost of the technical and design choices which result in recognizable style for such pots.

In comparing the micro-styles of potters selling at Ng'iya and Akala markets, one significant difference is the fact that the latter produce the rimless vessel *nyaloro* (Fig.3a) to serve the same function (beer-drinking), in exactly the same social contexts, for which the former produce the flaring-rimmed *mbiru* (Fig.3b). Moreover, each community produces a distinctive version of these forms which is different from other communities producing vessels of the same general form category. This choice of alternative forms (and their specific local rendition) to serve the same function ought to be considered style (or 'isochrestic variation' according to Sackett 1982): it certainly is by the Luo. Moreover, it is obviously every bit as potentially capable of conveying information of the kind outlined by Wobst (1977: 324) as is decoration, and would therefore have to be considered as such under his definition of style. But how does one measure the 'cost'? The *nyaloro* requires less time and energy to produce than the *mbiru*; it is also usually much less elaborately decorated. Is the stylistic message-

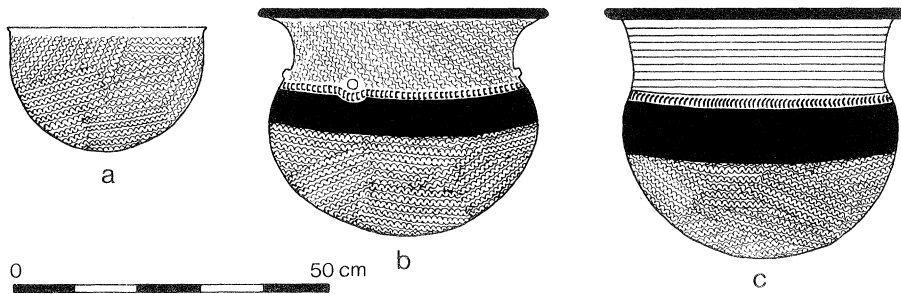


Figure 3 Beer-drinking pots from different Luo areas used in identical social contexts: a) *nyaloro* from Akala, b) *mbiru* from Ng'iyia, c) *mbiru* from Tingare (Ugenya). Solid black represents burnished red ochre decoration.

sending (assuming the legitimacy of this proposed function) of the producers of the former less 'costly' than that of the others? Are not the producers of the latter engaging in a 'dysfunctional waste of energy'?

Even if discussion is limited to decorative style there are several problems involved in 1) measuring the cost of 'stylistic behavior' and, 2) correlating it with communication functions. An immediate problem is that no adequate measure exists of the energy costs of production techniques. The 'production step measure' of Feinman et al. (1981) is a useful first step in this direction, but, as the authors indicate, it is really a cumulative list of techniques employed in ceramic production rather than a precise measure of time or energy expended. The Luo data indicate (and this is hardly unique: e.g. see Colson 1949: 20) that burnishing requires vastly more expenditure of energy than any other decorative technique (and it is purely decorative among the Luo). Yet it has virtually no apparent 'information function' (in the Wobstian sense) within the Luo system; certainly nothing in proportion to its cost.

Incised geometric decoration, which might appear to have more inherent potential as an information-bearing medium, requires very little time or energy in execution. The information it actually may convey varies from area to area, but not in any neat relation to the amount of time invested in its execution or to the complexity of its design.

In general, decoration on Luo pottery has relatively little deliberate information content, especially in terms of signalling group identity for users. There are no sanctions, taboos, or explicit rules governing motifs or their arrangement, as there clearly are, for example, with the layout of the Luo homestead. Iconographic explanations of motifs, as are common, for example, with the Zuni (Bunzel 1972), are very rare among the Luo. Identification of decorative schemes with ethnic groups, as is found with the Shipibo-Conibo (DeBoer 1984), is not a factor among the Luo. Where decoration does appear to play some function communicative of individual or group identity, it is almost entirely confined to the context of production: it involves relations among potters in networks of daily personal interaction.

For example, potters near Ng'iyia market specializing in the production of water-cooling pots split into two groups after a dispute, and these two groups now sit in adjacent but separate sections at the market. Whereas the decoration of their pots used

to be identical, the production of the two groups is now differentiated by a small but consistent difference: one group uses the top of a ruler to produce the band of impressions at the base of the neck made by the other group with a reed fragment, and it no longer applies roulette decoration to the neck of the vessel. In another case, one potter expends extraordinary effort in an idiosyncratic elaboration of the use of reed impression to outline ochre bands in an apparent effort to symbolically differentiate herself from her potter co-wife, of whom she is very jealous. This use of style to emphasize group and individual boundaries (which, it should be noted, is neither a common role nor one predictable in the manner or locus of its expression) contradicts two of the expectations of the 'information exchange' model outlined above. The target group for the message in both cases consists of socially very close individuals: women with whom the potters are in regular personal contact. Secondly, the commitment of the potter to the longevity of the message is completely irrelevant: the message is not intended to be comprehended by anyone in the context of use no matter what the cost.

The final inference of the model would also appear to be contradicted by the Luo data. For example, beer-drinking pots, which are the most socially visible vessel in their use patterns, are elaborately decorated by some potter communities yet hardly at all by others (Fig.3). In fact, beer-drinking pots in some areas are decorated less than cooking pots. The energy expended in the creation of their style (decorative or otherwise) is not related to their social visibility. Moreover, whatever their form and decoration, they exhibit no more 'stylistic behavior' than cooking pots relegated to the kitchen: all pots have recognizable style. Furthermore, all pots are highly visible in the context of selling at the market. Yet even at inter-ethnic markets such as Luanda, stylistic differences play no part in the signaling of ethnic identity for buyers. Distribution of wares of the different micro-styles from the potter-communities indicates that most cut across major ethnic and ethnic sub-group boundaries (these are groups with a long history of conflict and competition), and the boundaries of these style zones fall in areas of no social or cultural significance (Herbich 1986, 1988). The one exception mentioned earlier, pots produced for the Kisii, emphatically underscores the lack of such meaning for pots in most areas. In any case, neither a communication function, nor the meaning, target, or locus of any information which might be conveyed stylistically in these cases can be inferred from consideration of the material pattern of the objects, their social visibility, or the 'cost' of their stylistic elaboration.

Conclusion

The viability of applying a formalist, cost-efficiency economic model to the interpretation of symbolic behavior is dubious in any case, but it is rendered even more so in the absence of a clear empirically-based measure of the time or energy-costs for the creation of style from which function is to be inferred. Moreover, this approach requires that style be seen as information added on to objects at an additional energy cost, rather than as the result of alternative technical and design choices made in performing similar operations in all phases of the technology of production. If the latter approach to style (which is the one most meaningful to the Luo) is adopted, then the

act of opposition rather than the principle of cost becomes the key to locating whatever manifest meaning may exist in style. If the signalling of individual or group identity is desired, this can be accomplished at any stage in the operational sequence of production by executing an alternative choice to that which the potter has been socialized to accept as standard in her community or recognizes to be so elsewhere. Such choices can be eloquently communicative even when they do not result in visible material differences which can be characterized as stylistic traits. However, they need not be any more 'costly' when they do. The production of pottery is hard work (*tich matek*), but the creation of style has no inherent cost; nor at the relative labor costs of different manifestations of style a reliable key to communication function, information content or locus, or message target.

A brief examination of the technology of Luo pottery production demonstrates that, even given a very limited range of basic tools and techniques, a wide range of possibilities exists for expressing stylistic differences as a result of technical, formal, and decorative choices made at various stages of a common operational sequence. However, the identification of groups by ceramic style, when it occurs, is more often a latent than a manifest function (Merton 1957) among the Luo. Whatever meaning and function these stylistic differences may have are variable, complex, and extremely difficult to discern. What is clear is that the meaning and target of information conveyed through style can certainly not be inferred from considerations of efficient application of labor-cost, nor will these latter serve to distinguish those aspects of style which have such manifest 'iconological' (Sackett 1982: 80–1) functions from other material variation. Perhaps, as Lemonnier (1986) has argued, an understanding of the nature and meaning of style in a society can eventually be derived from an elucidation of the fundamental principles of classification guiding the operational choices of various technologies of production (of 'technical systems'). However, as he also clearly demonstrated, such a procedure is extremely complex and is unlikely to lead to any handy general formula of use to archaeologists. Moreover, factors such as the degree of specialization of a given craft (i.e. the ratio of the number of makers to the number of users rather than the degree of economic dependence of the producer) and especially the mechanisms linking the contexts of manufacture and use will obviously have a major role in determining possible information functions for aspects of style (both these factors may vary from craft to craft within the same society). Among other reasons, this is because such specialization necessarily implies 'commoditization' of a craft, that is manufacture for the purpose of exchange (see Appadurai 1986); and exchange involves a change of context which may also involve a change in meaning.

In the Luo case, even a rudimentary understanding of the nature of ceramic style and the reasons for the existence of the micro-styles requires an examination of the processes of learning, interaction, and innovation. Study of the process and context of learning demonstrates how women recruited (through marriage) originally from outside a potter community come to unconsciously internalize and perpetuate a craft tradition involving a standard operational sequence with acceptable limits of variation in choices at different stages as part of a general process of resocialization after marriage (Herbich 1987), much as other women learn to adopt new terminology for the local forms of

pottery they come to use. Equally important for understanding the dynamic nature of style is an examination of personal interaction among potters within community networks, which has an important influence on tendencies in the options chosen from an acceptable range and on the often symbolically meaningful deviations from them. Study of the process of innovation is obviously crucial in any attempts to uncover the meaning and function of style, as in this context one is in a position to examine the manifest reasons for alterations in patterns of choice and consequently to comprehend trajectories of change in the local traditions of manufacture (Dietler and Herbich n.d.).

Changes in style result from the acceptance and incorporation of innovative decisions within the patterns of choice in the operational sequence accepted by an interacting network of potters. These innovations vary widely in their origin. Among the Luo, cases of innovation in form which we have been able to document have most often resulted from creative adaptation to external introductions (e.g. a ring-foot on previously round-bottomed bowls in response to the introduction of tables). As a rule, innovations in materials or techniques of production (e.g. the experiments with temper mentioned earlier) have rarely been attempted by good potters, but rather most often by poor or less diligent ones as a means of camouflaging deficiencies or cutting corners. When good potters innovate it is usually in the field of decoration. There are many reasons for these decorative innovations, but they most often spread as a result of the influence of the innovator's personality or through emulation in the network of potters who have learned from her (Dietler and Herbich n.d.). The trajectory of stylistic change, particularly in decoration, often has little to do with more widespread cultural processes.

While we are still a long way from any systematic understanding of the nature and meaning of ceramic style, its equation with decoration to the exclusion of other aspects of the technology of production is clearly untenable. Moreover, the acceptance of a functional definition of style for the interpretation of archaeological material and the insistence upon an economizing strategy of communication to explain what is often a latent function can only lead to the sort of teleological circularity which was one of the primary flaws of functionalist anthropology.

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Notes

1. The research was conducted from April 1980 to December 1982, with two brief preliminary studies in 1978 and 1979, and was focused on a core area of roughly one third of the whole Luo territory, consisting essentially of Siaya District and surrounding areas. Study of other regions consisted of brief comparative surveys, and is correspondingly less complete.

2. It is worth emphasizing this feature because, while our concept of style obviously owes a significant intellectual debt to the ideas of Lemonnier (1986) and Sackett (1982) (which are by no means identical), it underscores the point that our identification and definition of micro-styles on the basis of variable combinations of technical, formal, and decorative features were not an *ex post facto* attempt to impose a particular theoretical concept of style on the Luo pottery system. Rather, this definition grew immediately and obviously out of observation of empirical patterns which were the only ones recognized as meaningful by the people making and using the pottery; to the Luo, style is in no way synonymous with decoration nor is decoration the most significant aspect of style. The Luo case is therefore more in the way of independent empirical support for the theoretical positions explored by the above mentioned authors.

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Abstract

Dietler, M. and Herbich, I.

Tich Matek: the technology of Luo pottery production and the definition of ceramic style

The paper describes an operational sequence of production for the ‘household ceramic industry’ of the Luo people of Kenya, indicating the variations in technical and design choices at various

stages which characterize the traditions of manufacture and the resultant micro-styles of different potter communities. Examination of the technology of production among the Luo calls into question the basic premises of the functional definition of style proposed under the 'information exchange' hypothesis of M. Wobst. Rather, in agreement with the approaches of P. Lemonnier and J. Sackett, ceramic style is seen to originate in the patterns of choice inherent in all production operations, and neither communication functions nor information targets can be inferred from a consideration of the costs of stylistic behavior.