Journal of Archaeological Method and Theory, Vol. 7, No. 3, 2000

Materializing Identities: An African Perspective

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Archaeological approaches to social boundaries are currently emphasizing the dynamic nature of processes thought which individuals construct, maintain, and negotiate their identity. Although the integration of such concepts has led to a more accurate reconstruction of past social boundaries, it has also revealed a need for more sophisticated ways of interpreting material culture. This paper is a step in that direction. Focusing on pottery chaînes opératoires and addressing questions about the salience and scale of particular behaviors, I seek to develop general propositions regarding the relationships between technological styles and aspects of social identity. To that end, I compare African pottery techniques at a subcontinental level and see whether there are recurrent patterns in their distribution and whether these can be related to specific social boundaries or historical processes of group formation.

KEY WORDS: social identity; material culture; pottery; Africa.

Savez-vous planter des choux,
à la mode, à la mode?
Savez-vous planter des choux,
à la mode de chez nous?

Old French rhyme

INTRODUCTION

Is there any correlation between material culture patterning and identity? Does artifact variability provide a key for reconstructing past social boundaries? Asking these perennial questions feels sometimes like speaking of werewolves and vampires: a typical "do you believe in" kind of issue, one that we may consider when relaxing with friends or colleagues, but tend to set aside the moment we come

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1072-5369/00/0900-0187$18.00/0

back to proper scientific work. Of course, archaeologists generally agree that some sort of correlation must exist, and that the ability to connect artifact distributions to social boundaries is a crux of archaeological research. However, how to interpret those distributions is a question for which we cannot seem to find any satisfying answer, let alone any consensus (see Carr and Neitzel, 1995; Conkey and Hastorf, 1990; David *et al*., 1991; Hegmon, 1992, 1998; Hodder, 1982; MacEachern, 1998; Shennan, 1989; Stark, 1998a).

After two decades of discussions that focused on the definition and meaning of style, current approaches to social identity in the archaeological record are opening new avenues as they draw on modern theories of ethnicity and identity (e.g., Blinkhorn, 1997; Jones, 1997; Matthews, 1995; Meadows, 1997; Pluciennik, 1997; Wells, 1995, 1998). These studies acknowledge the interactive, heterogeneous, and dynamic nature of the processes through which a "We" is constructed by opposition to a significant "They" (e.g., Barth, 1969; Bentley, 1987; Cohen, 1994; De Vos, 1995; Eriksen, 1992; Hall, 1996; Poutignat and Streiff-Fenart, 1995) and look for the materialization of such processes in archaeological assemblages. By approaching identity as a process rather than an entity, these and other studies explore crucial concepts such as gender, class divisions, ethnic enclaves, domination and resistance, culture contact, and migration. All these topics have been part of archaeological discourse for decades, but are now considered in a more pragmatic and realistic way. This is an important step that draws archaeology a bit closer to anthropology and history. However, several obstacles still hamper the generalization of such research in archaeology.

A classic problem in identifying social boundaries in prehistory is determining the kind of material data to be taken into consideration. A growing body of literature demonstrates that less salient and more mundane aspects of material culture are as pertinent for approaching social boundaries as their more visible and supposedly consciously invested counterparts. This literature includes the seminal works of Hardin (1970) and Washburn (1977) on design grammars, studies devoted to technological style and the anthropology of techniques (e.g., Childs and Killick, 1993; Dobres and Hoffman, 1994; Lechtman, 1977; Lemonnier, 1992; Schlanger, 1998; Stark, 1998b), and critiques of Wobst's theory of information exchange (e.g., David *et al*., 1988, 1991; Dietler and Herbich, 1998; Hegmon, 1992, 1998; Sackett, 1990; Sterner, 1989). Despite these studies, subtle aspects of material culture continue to be largely ignored by many archaeologists. This position is understandable when considering that many social scientists still approach the construction, maintenance, and negotiation of social identities as a self-conscious process of communication (see Cohen, 1994), and that some archaeologists continue to see style as a deliberate manipulation of highly visible aspects of the material world (see Hegmon's reviews, 1992, 1998). However, recent analyses of the relationship between things and people cast serious doubt on these concepts (e.g., Howes, 1998; Julien and Warnier, 1999; Miller, 1988; Miller *et al*., 1998;

Schlereth, 1982; Tisseron, 1999). One sees, for instance, that *any* area of the material world may support the expression of collective or individual identities, from sewer devices (Monestier, 1997) to office paper (Pellegram, 1998) or television series (Pasquier, 1999), and that the appropriation of material culture in the realization of social strategies is not necessarily a conscious process. Although certain acts of appropriation are related to deliberate expressions of identity, others are so embedded in our cultural values and representations as to remain unnoticed, a part of our *habitus*. The question, of course, is whether there are recurrent patterns between material culture and identities, and thus a possibility of modeling the material reification of social boundaries.

An important notion in the emerging field of the cultural biography of things is that objects may acquire a wide range of meanings during their manufacture and use, as they pass through the hands of various individuals, embedded in different social strategies and networks (e.g., Appadurai, 1986; Gosden and Marshall, 1999; Hoskins, 1998). Thus, objects accumulate histories and have the ability to tell multiple stories about people. This concept may be extended easily to *chaînes opératoires* (Leroi-Gourhan, 1965; Tixier, 1967), or production sequences. For example, in southern Cameroon, potters process clay in a way that makes them unmistakable members of a specific community; fashion vessels with a technique shared by a larger, but nevertheless bounded, group of individuals; use the same ornamental tools and motifs as an even larger group of people; fire the pots in structures and with fuels typically associated with communal or regional traditions; and treat the pots after firing with techniques and materials distributed at still another spatial and social level (Gosselain, 1995, 1998a). In other words, the complex set of feelings and relationships upon which identity is constructed tends to be signified by the spatial distribution of stylistic content and steps of the manufacturing process. Of course, not all individual cases fit into this necessarily idealized picture, but the Cameroonian example suggests the concept of a "technical identity" that incorporates several different facets of the potter's social identity and corresponds, broadly, to an intricate set of boundaries, or social interaction networks, experienced by individuals. Before launching into the reconstruction of past social boundaries, we should thus carefully assess the salience and scale of individual attributes of technological style.

Finally, we must consider the nature of social boundaries that may be inferred from the archaeological record. Are all "We/They" types of relationships associated with the production and consumption of particular forms of material culture? If so, is it possible to distinguish social differences at any level, or are we merely reduced to the identification of broad categories of boundaries? In the Cameroonian case study, certain facets of identity were related consistently to certain stages of the chaîne opératoire, but it remains to be seen whether such a phenomenon is sufficiently universal to be applied in archaeology. We need, in fact, a wider scope of analysis in order to transcend the contextual diversity

of stylistic behavior. Additionally, to quote Jones (1997, p. 131), we need "further consideration of the cultural processes underlying stylistic variation over time."

These three issues—degree of awareness in the materialization of identities, salience and scale of stylistic behavior, and the possibility of generalizing the phenomena observed through an understanding of the processes that underlie them—are the topics that I will explore in this paper, focusing on the manufacture of pottery in sub-Saharan Africa. My aim is to contribute to the elaboration of a more detailed and practical approach to social identities in archaeology.

POTTERY TECHNOLOGY AS A CASE STUDY

As demonstrated elsewhere, pottery chaînes opératoires should not be viewed simply as functionally oriented and monolithic systems (e.g., Gosselain, 1998a, 1999a, 1999b; Livingstone Smith, 2000; Miller, 1985; Pétrequin and Pétrequin, 1999; van der Leeuw, 1993; van der Leeuw *et al*., 1991; Woods, 1986). In fact, most technical options related to different stages of the manufacturing process are functionally equivalent; that is, they allow potters to achieve similar goals. That means, first, little interdependence exists between different stages of the process; a choice made at one level does not automatically condition the choices made at other levels. Second, both the manufacturing processes and uses of clay artifacts permit substantial flexibility in the selection and processing of raw materials. Consequently, changes may be made at almost any stage of the chaîne opératoire without jeopardizing the whole system (see Gosselain, 1998a). Thus, technical behaviors offer room for manipulation, or choices, and may be approached as full stylistic phenomena.

That point made, one should note that if culture does indeed play a leading part in the shaping of pottery technical systems, its governing principles may not appear to generate much internal coherence or homogeneity. This point is too rarely brought forward in anthropological works devoted to technology, which may lead one to believe that *all* elements of a technical system usually are structured along the same symbolic or social lines and should thus display an intrinsic cohesion. In real life, potting traditions, including finished products, manufacturing techniques, and beliefs and attitudes toward actors and materials, incorporate elements of different origins, mostly depending on the respective histories of social groups. Potting traditions are what one could call "sociotechnical aggregates," an intricate mix of inventions, borrowed elements, and manipulations that display an amazing propensity to redefinition by individuals and local groups (see Dietler and Herbich, 1998; Goodby, 1998; Gosselain, 1999a; MacEachern, 1994; Sillar, 1997). For example, when artisans assert that they employ the exact recipes or gestures that they and their ancestors were taught, more detailed investigations in many cases reveal contradictions in their accounts (see Gosselain, 1998a, p. 102). Even in case

of borrowing by people who did not engage in pottery making before, one may observe the emergence of new or transformed elements (Gosselain, 1999a).

However, parts of these "aggregates" appear to be unequally affected by change, such that some may be altered readily at the time of technical transmission or during practice, whereas others are characterized by a remarkable stability. The reason is that the different components of pottery chaînes opératoires do not share a similar technical fluidity or involve similar processes of social interaction. Hence, important differences exist in the potential for technical behavior to be reproduced and to change over time and space and, as we will see, to reflect certain facets of identity. This should render pottery technology especially attractive for those interested in the archaeological reconstruction of social boundaries.

Salience and Stages of the Manufacturing Process

Three categories of manufacturing stages may be distinguished by observing potters at work, according to salience, technical malleability, and the social context in which the techniques are learned and conducted. The first category involves techniques that leave visible evidence on the finished products: certain processing techniques (e.g., tempering or mixing clays to modify texture or color), "preforming" (Courty and Roux, 1995, p. 20) or "secondary forming" (Rye, 1981, p. 62), decoration, certain firing techniques (e.g., smudging), and most postfiring treatments. Even though such stages may be performed in private locations and on an individual basis, their postmanufacturing visibility allows a wide range of people to be aware of potters' behavior and, consequently, to influence potters' choices of techniques. Of particular importance is the social diversity of these influential people: from relatives or fellow potters to neighbors, community members, market customers, retailers, or others. Moreover, the visual qualities produced by these techniques render them especially likely to be ascribed aesthetic, economic, or symbolic values and thus consciously borrowed or manipulated. Another characteristic shared by techniques in this first category is that they are technically malleable. Indeed, if potters can continue to use decorative motifs and tools that they were shown when learning to make pottery, they also may change them later, in response to informal contacts with other individuals, new fashions, economic concerns, a disposition toward innovation, or other influences (e.g., David and Hennig, 1972; DeBoer, 1990; Gosselain, 1992; Hodder, 1979; Longacre, 1991). Such processes of change have been observed at these stages of pottery production, including preforming, postfiring surface treatments, and, to a certain extent, processing raw materials and firing (Gosselain, 1995, 1999a; Livingstone Smith, 2000; Sillar, 1997). Thus, manufacturing steps that are both particularly visible and technically malleable are easily transmissible through postlearning interactions and should display a tendency to fluctuate through time and to be transmitted widely across space to reflect more superficial, situational, and temporary facets of identity.

The second category of manufacturing stages includes clay selection, extraction, processing, and firing. This category also is characterized by technical malleability, as tools and recipes may be replaced or modified after learned. What differentiates it from the previous category is that the technical behavior cannot be "read" on the finished product, and thus the people likely to influence potters' behaviors are a restricted set of individuals. Relatives, neighbors, or customers who do not engage in pottery making or observe potters at work tend to remain oblivious to technical peculiarities and "stylistically" uninvolved. Those who matter most are likely to be fellow potters and other individuals taking part in the chaîne opératoire, particularly when the earlier-mentioned stages are led on a collective rather than an individual basis. Clay collection, for instance, often is conducted by groups of people, such as relatives, friends, or neighbors, who exploit the same extraction area and assist each other to alleviate the work. On these occasions, definitive views are expressed about the way raw materials should be selected and processed. Consequently, young or freshly settled potters who want to be part of an established socioeconomic network may be inclined to emulate their peers and take advice from local potters. Similar influences on potters' choices may be observed at the stage of firing, except that more individuals may be involved where public or communal firing structures are used, including potters from a whole compound, district, or village. Thus, techniques related to the selection, extraction, processing, and firing of raw materials are likely to be modified throughout postlearning interactions, even though such techniques are usually invisible on the finished product and known only by a small category of people. Because postlearning interactions involve a limited category of people—fellow potters and their assistants—the adoption of new techniques occurs infrequently, primarily when artisans relocate their homes or clay sources or both, or seek to produce a new type of pottery artifact. The distribution of these techniques should thus reflect local or regional networks of interaction (see examples in DeBoer, 1986; Dietler and Herbich, 1989, 1998; Gosselain, 1995, 1998a; Wahlman, 1972).

The third category comprises the fashioning stage, also called "primary forming" (Rye, 1981, p. 62) or "roughing out" (Courty and Roux, 1995). In general, this stage leaves no apparent traces on the finished product, and it is usually conducted on an individual basis. The fashioning stage is also distinguished from the others by its reliance principally on specialized gestures, rather than tools and shared information about clay sources and recipes. These gestures are "motor habits" mastered through repeated practice during early learning and subsequently internalized. As such, they prove to be especially resistant to change (Arnold, 1981, 1985, pp. 235–237, 1989; see also Foster, 1965; Gosselain, 1995, 1998a; Hill, 1977; Nicklin, 1971). Change may be of little interest, moreover, because similar pots can be shaped using many different fashioning techniques (Gosselain, 1995, pp. 176–180; Hosler, 1996; Pétrequin and Pétrequin, 1999). When asked about the fashioning techniques used by individual potters, both specialists and nonspecialists usually answer in an evasive way, stressing that what matters most

is that the vessels be "properly made": that is, "pretty" and "solid." This category of manufacturing steps should be characterized by an intimate connection with the primary learning process and great stability through time and space. Interestingly, this learning process is widely documented during early socialization involving deep and formal relationships with a limited set of people, usually close relatives. Departures from that rule exist, notably in sub-Saharan Africa (e.g., Herbich, 1987; Millet, 1994), but these appear to be local exceptions to a predominant model in the transmission of technical knowledge and skills pertaining to pottery making (e.g., Arnold, 1985; Drost, 1968; Gosselain, 1995; Hayden and Cannon, 1984; Reina and Hill, 1978; Roux, 1990; Saraswati, 1978). Thus, fashioning is likely to remain stable throughout a potter's lifetime, and it should reflect those most rooted and enduring aspects of social identity, such as kinship, language, gender, and class subdivisions (Arnold, 1981; Gosselain, 1995, 1998a; Herbich, 1987; Hosler, 1996; Mahias, 1993; Miller, 1985; Mohr-Chavez, 1992).

Decoration and Fashioning Techniques Among Modern African Potters

Having discussed the potential of pottery chaînes opératoires for approaching different aspects of identity and detailed the theoretical premises upon which such an approach may be built, I will turn to the archaeological side of the problem. That is, I want to assess what can be inferred practically, reliably, and consistently from the analysis of clay artifacts in terms of social boundaries. To that end, I have chosen to favor a much broader perspective than the one I have adopted so far (Gosselain, 1998a, 1999a), comparing technical behavior at a subcontinental rather than a local level, and initially ignoring the minute distinctions of cultural contexts. My objective is to see whether there are multiple patterns in the distribution of potters' techniques and whether these can be related to specific social boundaries or historical processes of group formation.

Here, I will limit the comparison to two particular steps of the manufacturing process, decoration and fashioning. As suggested earlier, decoration belongs to a category of manufacturing stages that are both particularly visible and technically malleable, and likely to reflect wider and more superficial categories of social boundaries. Fashioning, on the other hand, constitutes a very stable element of pottery traditions and is expected to reflect the most rooted and enduring aspects of a potter's identity.

Methodology

Inspired by comparative linguistics and the study of spatial morphologies in geography (e.g., Bocquet-Appel *et al*., 1996; Decroly and Grasland, 1994), my method consists of systematic analysis of modern elements of material culture, specifically technical behaviors, to assess their spatial distribution over a broad

geographical area. When comparing these patterns of distribution to social or cultural boundaries, it is possible to identify areas where significant social interactions have taken place, or conversely, to identify areas where social, cultural, or geographical barriers have inhibited the expansion of given technological traits.

The main purpose is to provide archaeologists with an historical tool, a way of generating models that can be tested by archaeological work (Gosselain, 1998b, 1999c). In a sense, such a method is reminiscent of the *Kulturkreise* ("cultural circles") approach developed by German scholars such as Graebner, Ratzel, and Frobenius in the first half of the twentieth century to identify centers of cultural diffusion by comparing the distribution of various material and social traits. However, at least two factors differentiate my method from the diffusionist focus of *Kultukreise* or the strictly statistical approach adopted by its more recent offshoots (e.g., Roberts *et al*., 1995). First, I consider techniques and tools rather than objects; that is, I consider a category of cultural traits for which transmission through time and space requires specific modes of interaction between individuals. Second, I seek to contextualize the phenomena compared by considering them according to their respective salience, ease of change, and connection to particular moments in the learning process, relating their transmission to specific social contexts and networks to reconstruct the origin and development of cultural traditions. This shift from all-or-none classifications and from the use of very different cultural categories as homologous traits to more "qualitative" and systematic comparisons characterizes much contemporary research in comparative anthropology (see Holy, 1987). It is of special interest here because it allows generalizations about the relationships between material culture and identity, as illustrated below.

Data Sources and Mapping

Three bodies of data from sub-Saharan Africa have been taken into consideration. The first body of data was collected by the Ceramic and Society Project (see Gosselain *et al*., 1996) as well as several research associates in the countries of Senegal, Togo, Burkina Faso, Nigeria, Cameroon, Chad, and D. R. Congo (ex-Zaire). The methodologies of these studies varied, ranging from 4 to 6 month periods of intensive ethnographic work with communities of 10–30 potters (Gosselain *et al*., 1996; Sall, 1996, 1998; Wallaert, 1998) to a series of one-day visits to a dozen villages (e.g., Langlois *et al*., 1998; Tondeur, 1997). Altogether, these data pertain to some 650 potters belonging to 72 linguistic groups.

The second body of data comes from a systematic perusal of the ethnographic and ethnoarchaeological literature on pottery making in sub-Saharan Africa. These sources are of varying relevance and accuracy, including large-scale and detailed studies in Senegal (Gelbert, 1995; Guèye, 1998), Mali (Frank, 1998; Gallay *et al*., 1994; LaViolette, 1987), Burkina Faso (Haberland, 1986), Ghana (Crossland, 1989; Cruz, 1996), the Lake Chad area (David, 1998; David and MacEachern,

1988; Delneuf, 1991), and Congo (Pinçon, 1997); detailed local or regional surveys (e.g., Adandé and Métinhoué, 1984; Eggert and Kanimba, 1980; Fatunsin, 1992; Gill, 1981; Gruner, 1988; Haaland, 1978; Herbich and Dietler, 1991; Hussein, 1986; Lawton, 1967; Schneider, 1990; Spindel, 1990); brief observations (e.g., Krause, 1985; Lindhal and Matenga, 1995); or casual statements in ethnographic monographs, administrative reports, and religious publications. Altogether, more than 700 sources have been reviewed, relating to some 550 linguistic groups.

The third body of data derives from examination of pottery collections at the Africa Museum in Tervuren, Belgium. These collections were obtained primarily in D. R. Congo at the turn of the twentieth century, and illustrations may be found in Coart and de Hauleville (1907). The analysis provided information on decoration techniques and postfiring treatments for some 15 linguistic groups.

Thus, the database is enormous, but uneven in its level of detail. The complete data set and bibliography are compiled at the Africa Museum and are available for use by scholars. To facilitate comparison, I have chosen to map data on decoration and fashioning techniques according to language distribution rather than specific locations; that is, I systematically extrapolated generalized data on technical behaviors to the level of corresponding language community instead of mapping the places where observations were made. Although this may give a false sense of technological homogeneity, my purpose is to identify and compare broad patterns in the spatial distribution of technical behavior. We will see that language constitutes an excellent point of reference when interpreting such patterns.

Methodologically, the real problems were to determine which technical tradition to extrapolate when faced with contradictory information or multiple traditions and to find a sufficiently detailed map of ethnolinguistic boundaries to facilitate the comparison—still an unavailable item for sub-Saharan Africa, to my surprise. I dealt with the first problem by choosing to take all clearly stated information into account and including cases of multiple technical traditions on the map. As for the map itself, I created my own version (see Figs. 2 and 5) by consolidating information from language maps published by Barreteau (1978), Crozier and Blench (1992), Dieu and Renaud (1983) and Schadeberg (1992) and filling the remaining gaps with Dalby (1977) and Murdock (1959). Although requiring further improvements, this is probably the closest rendition of existing linguistic boundaries for sub-Saharan Africa.

Decoration Tools and Techniques

Given their importance in pottery studies, I will start by studying the modern distribution of decoration tools and techniques, limiting the discussion to a particular category of devices: the "roulettes." These tools are made by carving wood or twisting, knotting, braiding, coiling, or wrapping fiber strips or cords (see Soper, 1985). During pottery production, roulettes are rolled on fresh clay to impress

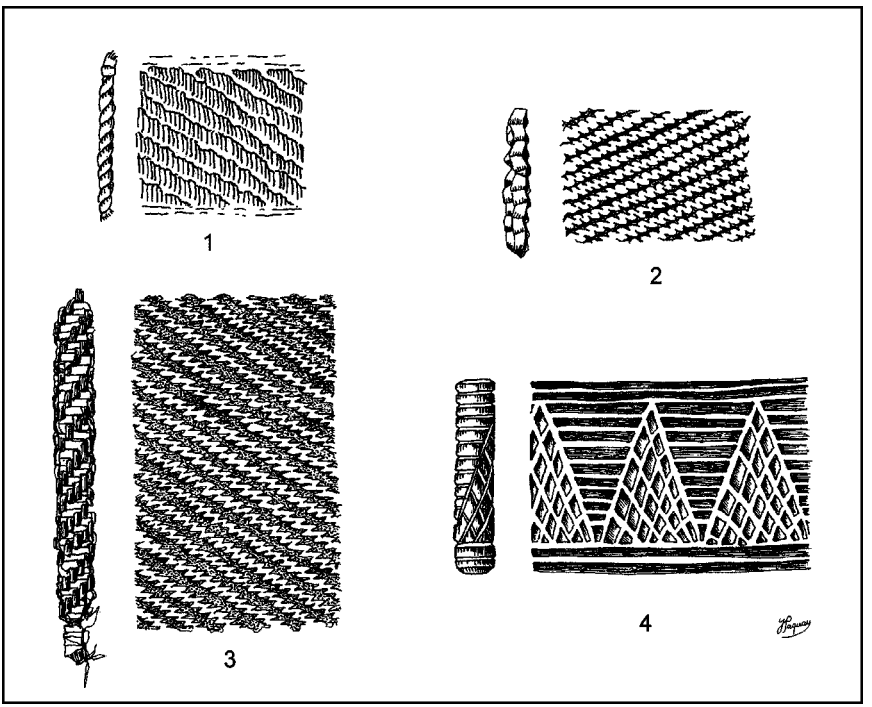

Fig. 1. Examples of African fiber (1–3) and carved (4) roulettes, with their corresponding motives.

regular patterns (Fig. 1). Easy to make, easy to use, and accommodating a variety of ornamental motifs, roulettes are documented in sub-Saharan Africa since at least 5,000 BP and have enjoyed a prodigious success ever since (Livingstone Smith, 1996; Soper, 1985). Roulettes are especially important for Africanist archaeologists, who have relied on these tools since the beginning of the twentieth century to establish and refine ceramic typologies (e.g., Connah, 1996; Hubert *et al*., 1921; MacIntosh, 1995) and to document population movements and cultural changes (e.g., David and Vidal, 1977; Desmedt, 1991; Soper, 1985; Stewart, 1993).

From a stylistic point of view, rouletting epitomizes the category of manufacturing stages that are highly visible on the finished product, technically malleable, readily transmissible, and theoretically expected to fluctuate through time and be distributed widely through space. In fact, a fair number of the potters observed in the field did not seem to be particular about their choice of rouletting tools. Some, for instance, used a twisted string roulette, a knotted strip roulette, a corn cob, or even an hair-curler as expedient substitutes for worn, carved roulettes; others readily adopted the various types of rouletting tools that I brought them, some of which they had never seen previously. In 1991, for instance, Tobe Elise, a Vute potter living in Yangba, Central Cameroon, told me that she had tried unsuccessfully to

replace the carved roulettes inherited from her great-aunt, because woodcarvers in the area no longer produced such items. Consequently, she started to decorate her vessels with a corn cob, as she had seen other women do in the village, because such a tool "allowed me to cover the pot with regular motifs, much better than a stick" and "people like it that way," she said, adding that personally she found these motifs less attractive and varied than the ones she obtained with carved roulettes. What potters stressed was their need for convenient tools—cheap, easy to procure or make, and easy to use—to decorate their vessels with regular and elegant patterns.

According to available data, about one-half of contemporary sub-Saharan populations use roulettes as primary or secondary decoration tools. Three-fifths of these peoples use fiber roulettes only, whereas one-fifth use both fiber and carved roulettes, and another one-fifth use carved roulettes only. Among remaining populations, rouletting appears to be unknown. Pottery is decorated in a variety of ways, including incising, grooving, stamping, painting, slipping, and burnishing, all techniques observed among roulette users as well.

The roulette-using populations tend to cluster in a large, geographically bounded area (Fig. 2). Fiber roulettes are distributed from west to east and then

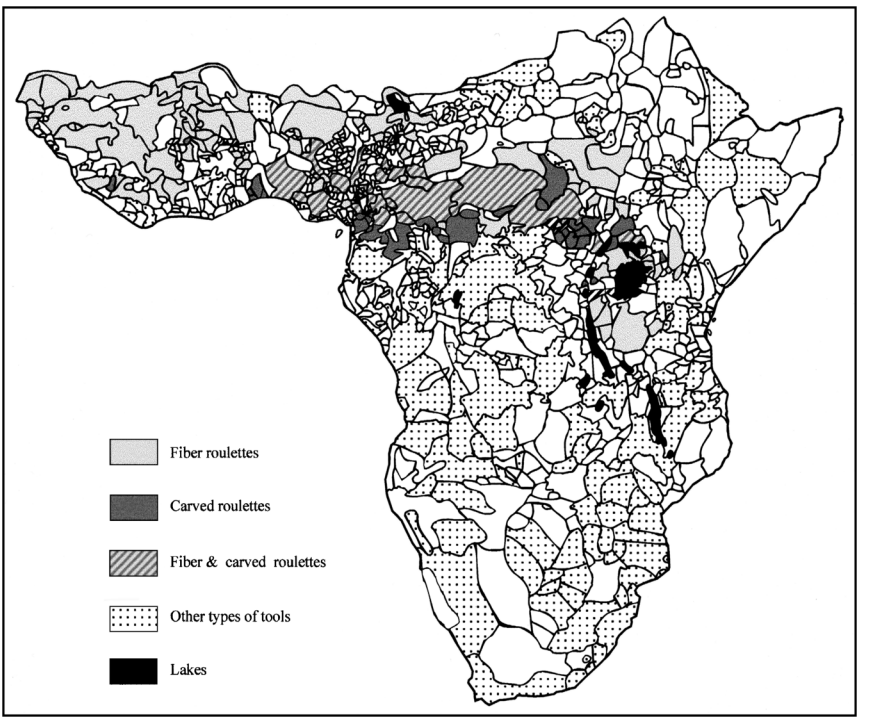

Fig. 2. Distribution of the linguistic groups using fiber and carved roulettes in sub-Saharan Africa.

southwards into the Great Lakes region. Carved roulettes occupy a smaller area, but still display this west-to-east pattern. Additionally, several geographical isolates of carved roulettes appear in West Africa. It is unclear whether these are true isolates to be considered potentially as independent loci of innovation or linked to slavery and other recent population movements, or whether these simply constitute the western fringe of a sketchily documented distribution. In this respect, I suspect that the apparent lack of roulettes among people living in the northern half of Central African Republic or southern Sudan has more to do with the sketchiness of available data than actual traditions.

Three important points may be made regarding these distributions. First, both fiber and carved roulettes appear to spread primarily in a continuous way rather than a patchy one, that is, from neighbor to neighbor. Second, the distribution of these tools fits perfectly with several natural boundaries: the short grass savanna and the desert to the north, the tropical rain forest to the south, and the Eastern Rift valley to the east. However, this pattern does not correspond with existing cultural boundaries, even with macro-level boundaries such as pastoralists versus agriculturalists, sedentary versus nomadic people, or chiefdoms versus early states. Third, fiber and carved roulettes spread across the linguistic "fragmentation belt" (Dalby, 1977) and are used widely by people speaking many different languages (Fig. 3). According to linguists, this area has witnessed the arrival and subsequent contact of peoples belonging to different language groups and families after the desertification of the Sahara, a process that may have started during the Early or Middle Holocene (Blench, 1993).

Thus, rouletting tools are used by people speaking Afro-Asiatic, Nilo-Saharan, and Niger-Congo languages, although they do not spread over the entire area occupied by speakers of those three linguistic phyla. A similar situation prevails at the next level of language subdivision: most *but not all* members of the language family or group use a fiber roulette, a carved roulette, or both categories of tools. This is the case among Atlantic, Mande, Gur, Kwa, Chadic, Central Sudanic, and Nilotic speakers. Less frequently, only a few members of the language family/group use them, including Saharan, Cuchitic, and Bantu speakers. In a few exceptional cases, all members of the language family or group appear to use roulettes, including Songhaï, Dogon, New Benue-Congo, and Adamawa-Ubangian speakers. It must be noted, however, that the territories of those groups are either very small or located at the center of the distribution area, suggesting that technical homogeneity is of geographical rather than cultural or historical significance.

To summarize, rouletting represents a technique that is distributed continuously across a large area, independent of cultural variations such as language, social organization, and economy, corresponding to no other boundaries than natural ones. This, I believe, is a clear case of technical diffusion. Roulette decoration, like cellular phones, rubber tires, Chinese teapots, or any other popular and widely

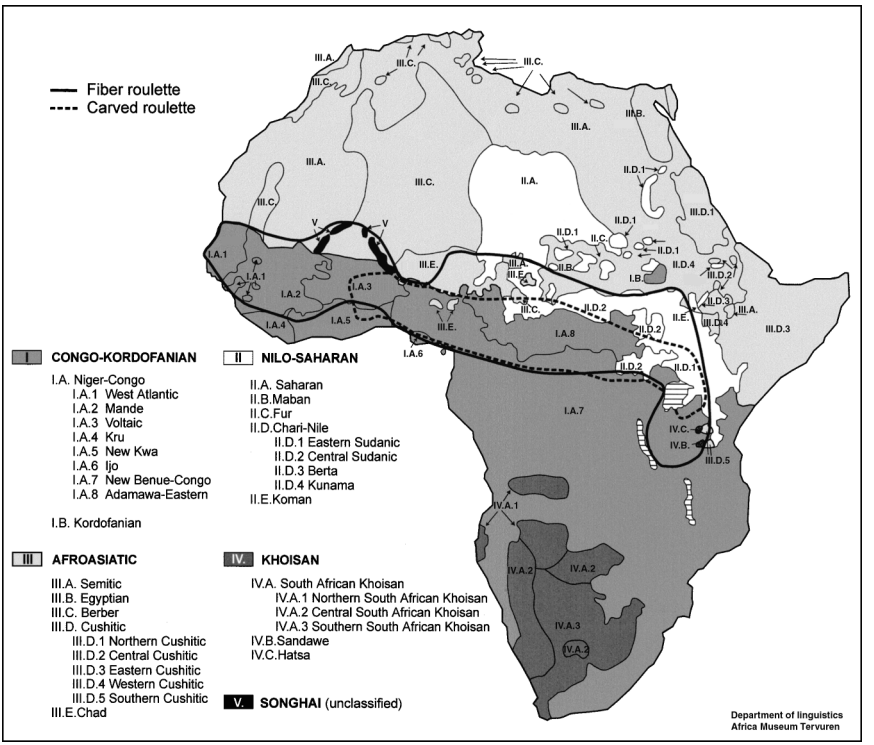

Fig. 3. Classification and distribution of African languages (modified from Greenberg (1963) and Williamson (1989) by B. Janssens and C. Grégoire), and extrapolation of the areas where potters use fiber and carved roulettes.

spread item, could have been borrowed or imitated easily by people—in this case pottery-producers—and diffused widely, without necessarily entailing migration or major cultural changes.

Examination of archaeological data supports this scenario. As shown by Livingstone Smith (1996), rouletted pottery appeared in the southwestern Sahara some 4,000 years ago and then spread gradually from west to east until 500 AD. Although diffused in two temporally independent waves (see also David and Vidal, 1977), fiber and carved roulettes are associated with multiple archaeological contexts, from late Neolithic to late Iron Age, a further indication that their diffusion is independent of major socioeconomic changes. Some patterns of distribution may of course be attributable to population movements, such as the distribution of carved roulettes among Adamawa-Ubangian populations (David and Vidal, 1977). As a rule, however, rouletting tools stand as poor indicators of large-scale phenomena such as language expansion or cultural affiliation. Rather,

they likely diffused throughout the "fragmentation belt" and adjacent areas well after the arrival and subsequent contact of present-day language families and groups.

Such a picture nicely fits the theoretical propositions made above. In the category of manufacturing stages that are both particularly visible and easily adopted through postlearning interactions, techniques of decoration were expected to fluctuate over time and space and to reflect more superficial and transitory aspects of social identity and interactions. Indeed, when considering the great scale at which fiber and carved roulettes were adopted by unrelated populations in a variety of contexts, one is inclined to see these tools as materializations of superficial relationships or situational identities.

This is not to say that roulettes or other kinds of decorative tools are never embedded in local symbolic systems, laden with cultural value, and thus likely to depend on other more stable aspects of society (see David *et al*., 1988). However, *from a strictly typological point of view*, rouletting tools allow mostly for the identification of social networks of individuals whose interactions are only occasional and superficial, dependent upon geographic propinquity. By living near one another, sharing similar activities, or frequenting the same market places or other sites of social interaction, people have the opportunity to exchange goods and ideas without necessarily engaging in close or regular relationships. These are perfect conditions for new fashions or concepts to crystallize and develop into regional distributions. These "pools" have the ability to grow in every direction, provided a sufficiently dense human population, and to shift progressively into a wider, yet still continuous distribution area. Having reached that stage, the sole connection among peoples living at the fringes are the populations established among them. Conversely, the distribution is likely to stop where no interactions take place between individuals or groups, due to discontinuities in the human population, the absence of trading routes and networks or the presence of natural barriers or both (e.g., Livingstone Smith, 2000).

Thus, the distribution of rouletting tools may be generalized to a corridor of geographically contiguous, if culturally distant, communities through which diverse cultural traits may have diffused. Pottery decoration techniques certainly range among these cultural traits, and others may have fully or partially followed a similar path, such as pastoralism, agriculture, and iron technology (see Blench and MacDonald, 1999; David and Vidal, 1977; Lavachery, 1998). As an historical result, what we find today is the material manifestation of mostly incidental relationships between people who do not have much in common and do not think of themselves as belonging to a "bounded cultural unit," except perhaps at the local level. Ironically, such a form of social identity is probably the farthest from the one archaeologists have in mind when speaking of "cultures," yet it was identified by analyzing distributions of decoration techniques, a very traditional parameter in archaeology.

Fashioning Techniques

Let us now consider the spatial distribution of fashioning techniques in the same area. So far, I have been able to record some 50 different ways of roughing out clay vessels in sub-Saharan Africa (Gosselain, 1995). Differences are sometimes difficult to recognize and poorly documented in the literature, however, so I will restrict the present comparison to basic techniques. These can be grouped into six categories (Gosselain, 1995; Fig. 4): (1) pounding in a concave mold; (2) coiling;

Fig. 4. Main categories of shaping techniques used in sub-Saharan Africa: (1) pounding in a concave mold, (2) coiling; (3) superimposition and drawing of large rings; (4) drawing of a ring-shaped lump; (5) molding over a convex mold; (6) drawing of a lump.

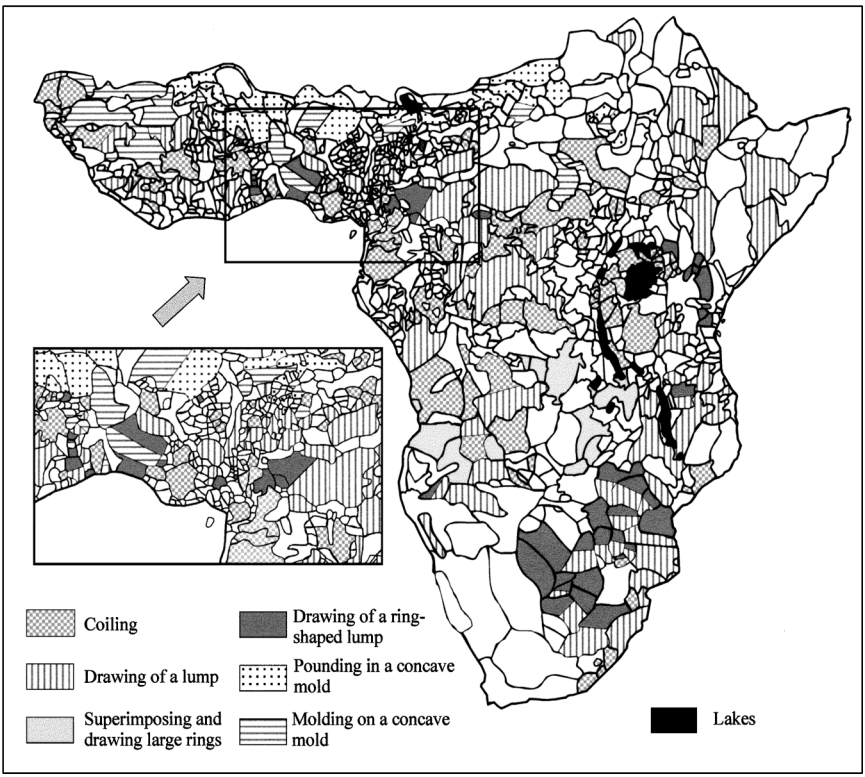

Fig. 5. Distribution of the six categories of shaping techniques in sub-Saharan Africa.

(3) superimposing and drawing of large rings; (4) drawing of a ring-shaped lump; (5) molding over a convex mold; and (6) drawing of a lump.

The distribution of these categories was studied in the same way as the rouletting tools, although data only relate to some 350 populations, given to poor or incomplete descriptions. Despite this, obvious patterns appear when analyzing the spatial distribution of fashioning techniques (Fig. 5). First, three fashioning techniques spread patchily throughout the continent, including coiling, drawing of a lump, and drawing of a ring-shaped lump. Second, the other techniques tend to cluster in more restricted areas. Third, there are some interesting cases in which a correlation with natural boundaries is suggested, such as the distribution of pounding, to some extent molding, and the clustering of coiling traditions in the eastern Great Lakes region. For example, pounding in a concave mold and molding over a convex mold mostly spread throughout the Sahelian belt, with some interruptions around the Chad basin and southern extensions into West Africa.

The patterns are more clear when the distribution of fashioning techniques is compared with that of language families. To start with, techniques such as pounding and molding tend to be associated with Afro-Asiatic and Nilo-Saharan speakers, whereas coiling, drawing of a lump, drawing of a ring-shaped lump, and superimposition and drawing of large rings are present either exclusively or primarily among Niger-Congo speakers. Several technical overlaps are nevertheless found within and between linguistic boundaries.

A closer correlation appear between languages and fashioning techniques when the next lower level in language classification, phylum subdivisions, is considered. In West Africa, for instance, Mande speakers of the Niger-Congo family display three shaping techniques. Molding is by far the most widespread, but a second tradition, drawing of a lump, is documented among a series of Mande speakers living in the southern and southeastern fringe of the Mande heartland or isolated within Gur, Kwa, and Benue territories. Much less frequently, coiling is found in the southern Mande area. Although this latter technique probably arrived in the area through contacts with neighboring groups (see further for a description of processes of technical acculturation), the two other techniques are widely distributed, with molding observed among most northern Mande speakers, and drawing of a lump among eastern, southwestern, and the remaining northern Mande speakers. It must be stressed that drawing of a lump is found among linguistically isolated populations that have been separated from the Mande "core" for the longest time period, or subsequently have developed few contacts with other northern Mande (Grégoire and de Halleux, 1994). Thus, drawing of a lump could be the oldest tradition in the Mande area: the "Mande prototechnique," to paraphrase linguists.

Conversely, molding may constitute a more recent and exogenous technical development. Documented among neighboring populations whose geographical distribution partly corresponds to that of the former Mali empire (thirteenth to fourteenth centuries AD), it appears to be the result of a process through which a foreign pottery tradition took precedence over others. Here, it is important to note that molding is probably less demanding in terms of skills than the five other fashioning techniques mentioned earlier. It simply involves pressing clay onto the bottom of an inverted pot using a stone, a sherd, or a clay hammer and removing the clay from the inverted vessel when it has become sufficiently stiff. This does not pose real handling problems and does not require specialized gestures. Such a situation differs considerably from pounding on a concave mold, for instance (see Martinelli, 1994). Thus, molding may have been mastered by skilled potters who were seeking a more expedient technology, as documented by Gelbert (1999) in Senegal, or imposed as a new tradition by foreign artisans. However, the process by which this technique spread would have required interaction with knowledgeable potters for other individuals to learn the technique and, perhaps, to recognize its efficiency.

Interestingly, the northern Mande potters who use the molding technique today belong to the blacksmith "Nyamakalaw" caste, an endogamous ranked specialist group (Tamari, 1991, p. 223) typically associated with north and northeastern Sahelian societies (see Conrad and Frank, 1995; Frank, 1998; Haaland, 1978; Haberland, 1962; Sterner and David, 1991; Tamari, 1991; Vaughan, 1970). As demonstrated by Tamari (1991) among West African populations, this particular mode of socioeconomic organization developed during the thirteenth or fourteenth century from at most three centers and then spread across linguistic and social boundaries during the following two or three centuries (see also Frank, 1998). In the process (Tamari, 1991, p. 249),

> caste people [who] moved into a hitherto casteless area . . . sometimes forced cultivators who practiced a craft or musical activity on a part-time basis to give it up. . . . In other cases, skilled artisans and musicians may have preferred assimilation to the foreigner group to abandonment of their activities

This is a very plausible way of explaining the cross-cultural distribution of techniques such as molding and pounding: by establishing new networks within which technical knowledge and skills were to be diffused and by imposing strict endogamy on the artisans, castes contributed to the diffusion of specific behaviors among diverse populations (see MacEachern, 1998). Although these populations were formerly unaffiliated from one another from a linguistic point of view, they engaged subsequently in a similar process of socioprofessional stratification, which generated a new form of social identity, as groups of artisans were drawn together institutionally while simultaneously being subjected to a form of social segregation from noncasted agriculturalists (i.e., Conrad and Frank, 1995; Tamari, 1991; Vaughan, 1970). The boundary between these two categories of people is so pronounced that both endo- and exo-definitions are sometimes expressed in racial terms.

Another enlightening example of a relationship between the distribution of fashioning techniques and particular cultural boundaries concerns the linguistic affiliation of people who fashion their vessels by drawing a ring-shaped lump. This fashioning technique is observed among people who speak languages that belong to the Benue-Congo family distributed from west to east and then south: Western Kwa, Plateau, Mambiloïd, Adamawa, Ubangian, Bantoïd, and Bantu C, the whole zone E, Bantu R and about one half of zone S. The sole exception are the Nilotic Pokot speakers of Kenya. More than a correlation between languages and technical traditions, this distribution conforms geographically to the route that linguists presently believe was taken during the Bantu expansion process, starting with the split of Benue-Congo speakers in western Africa and the appearance of Proto-Bantu in the Cameroonian Grassfields at the cross-section of western and central Africa, followed by a first and very old eastern expansion wave down to the Great Lakes region, a second wave along the western coast and into the rain forest, and a much more recent wave southward, down to southern Africa (Fig. 6; Janssens, 1998,

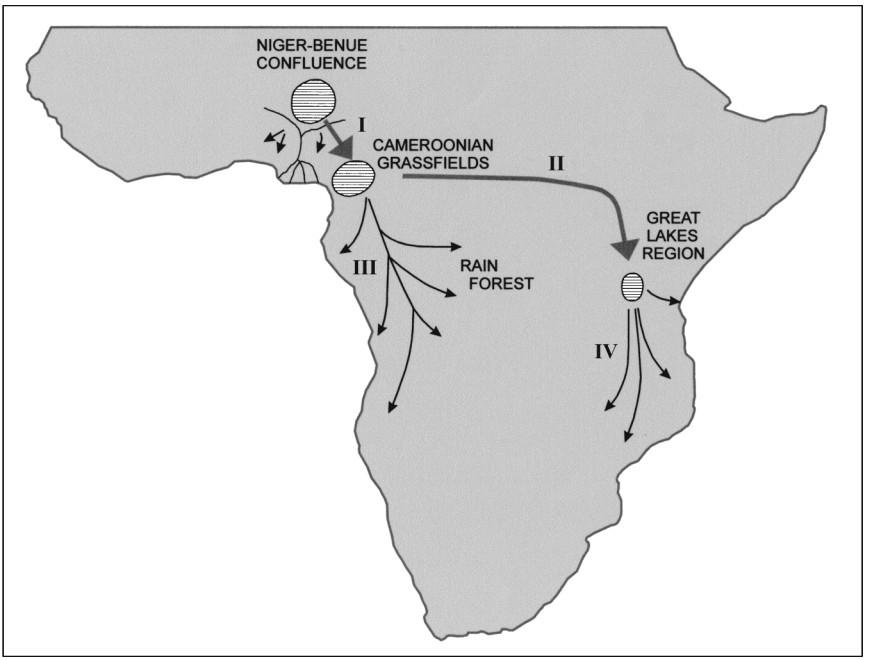

Fig. 6. Janssens's hypothesis regarding the expansion of Bantu languages, from the split of Benue-Congo languages in western Africa to the inception of Bantu in southern Africa.

in press). Amazingly, analysis of the spatial distribution of the ring-shaped lump technique (Fig. 5) allows one to reconstruct nearly all the first stages of this process as well as a possible route followed by eastern Bantu: an isolated occurrence in northern Nigeria, not very far from the Niger-Benue confluence; a horizontal distribution starting from Togo and going eastward along the Golf of Guinea and further east at the border of Cameroon and the Central African Republic; a large gap and then, after an isolated occurrence to the northeast of the Great Lakes region, a second group east of Lake Victoria, followed by an isolated occurrence; and a third group spreading over Mozambique, Zimbabwe, and South Africa.

If this pattern in the distribution of fashioning techniques reflects population movement and, perhaps, Bantu expansion waves, one may wonder about the numerous peoples who use techniques other than drawing a large ring of clay, along the path supposedly taken by the Bantu. Here, four factors must be taken into consideration. First, the largest clusters of the ring-shaped lump technique, near the mouth of the Volta River, in eastern Cameroon, to the east of the Great Lakes region and in southern Africa, may correspond to some sort of stations where groups of people settled permanently or temporarily, for centuries or decades, while other people continued farther. These particular areas may have been the sites of close

interactions between migrants and other groups, a process that gave Benue-Congo, Proto-Bantu, and Bantu speakers the opportunity to leave their technical imprint after moving on to other regions. This could account for the isolated occurrence of this technique among the Nilotic Pokot of Kenya, a group that does not belong to the Benue-Congo language family and whose ancestors may have simply borrowed the technique, particularly if they were not producing pottery prior to contact with the incoming Bantu, pursuing their own historical development afterward. Such a process already has been documented in other parts of the continent (e.g., Gosselain, 1999a).

Second, the large expansion waves that supposedly contributed to the diffusion of Bantu languages into central, eastern, and southern Africa have been followed by countless, smaller-scale population movements throughout the last millennia. These likely blurred any clear picture of the Bantu effect on the distribution of the drawing of a ring technique. For instance, the Nilotic penetration into the Great Lakes region or the eastward/southward expansion of Adamawa-Ubangian populations, largely associated with the drawing of a lump technique (except around Lake Chad), and a series of more recent population displacements (e.g., Tardits, 1981; Vansina, 1990), may have been responsible for disruptions in the spatial distribution of particular techniques.

Third, we must acknowledge processes of cultural mixing among people who do not share similar technical traditions. As previously shown for several African potting communities, individual movements across linguistic boundaries and especially matrimonial exchange may lead to the coexistence of different traditions in noncomplex societies where pottery is a female activity (e.g., Adandé and Metinhoué, 1984; Culwick, 1935; David and Hennig, 1972; Delneuf, 1991; Gosselain, 1995, 1998a). This produces a kind of technical multilingualism at the regional, local, and even individual level whereby some potters use different techniques to shape vessels of different sizes or shapes. The spatial coexistence of different traditions also may stem from linguistic and cultural assimilation of previously independent populations, as documented among the Dogon of Mali (Gallay, 1994) and particular Mande potting communities (Frank, 1993). In all these cases, people simply retained parts of their cultural heritage, including fashioning techniques, while borrowing or being pressured to adopt new cultural traits in the process of establishing another identity. Still another process of cultural mixing is the adoption and subsequent transmission of pottery technology by individuals who do not belong to the same network as the local indigenous potters. This may explain gender differences in the use of specific fashioning techniques, for instance, as documented among Gurmance, Yanga, Moba, and Mossi peoples of central West Africa (Lhote, 1977; Livingstone Smith, pers. com. 1998; Priddy, 1971; Roy, 1987). To summarize, technical acculturation leads usually to the incorporation and independent development of varying pottery traditions in societies or communities that may otherwise appear as culturally homogeneous.

Fourth, the blurring of patterns in the distribution of fashioning techniques may stem from local processes of innovation or technological drift. Indeed, while learning to fashion a vessel generally involves close interaction between two individuals and a formal type of training, including hand-in-hand demonstrations and constant rectification of gestures (e.g., Gosselain, 1998a, pp. 94–95), recent field studies have also revealed that apprentices still have some latitude for change in particular contexts. For instance, potters in several linguistic groups seem to be less interested than others in the minute reproduction of cultural norms, and some even appear to favor individual expression by tolerating deviations from the gestures initially shown to them by master potters or by limiting a teacher's intervention during the process of learning (Wallaert, 1998, 1999). Such conditions may allow for the progressive alteration of technical behavior or the appearance of new traditions, two phenomena that would complicate the reading of modern distribution maps.

Keeping all the preceding in mind, we may then consider the distribution of coiling traditions throughout the Bantu area. Although this technique appears to spread in a random way, it is possible to make out some interesting patterns in its distribution as well. First, the technique seems to extend in a diagonal line from southern Cameroon down to eastern Gabon and into the heart of central Africa, between two blocks of people who use the drawing of a lump method. Second, coiling also follows the northeastern bend of the Congo River quite nicely, up to the border between the D. R. Congo, Central African Republic, and Sudan. Finally, coiling also clusters in the Great Lakes region, where it is used by nearly all Bantu of Zone J and some of their Nilotic neighbors. What is interesting to recall is that linguists trace the western stream of the Bantu expansion along a diagonal axis that nicely fits the distribution of coiling techniques over west-central Africa, from the Grassfields into Central Africa, with a series of subsequent developments including one along the Congo River. The clustering in the Great Lakes region is more difficult to explain, except if subscribing to the model proposed by Vansina (1995, p. 188), wherein western Bantu are said to have migrated down to the southern fringes of Central Africa and then up to the Great Lakes region, where they were stopped by natural boundaries.

Of course, the problem with using such a generic category as "coiling" is that this term subsumes considerable variation and that putative links may be established between people whose respective traditions have different origins. However, closer examination of the available evidence supports the process envisioned earlier. Specific coiling traditions are encountered in fairly discrete distributions. In the heart of the Bantu area and around the Great Lakes region, coiling is mostly characterized by the superimposition of thin coils on spiral or slab-shaped bottoms, while other variants are documented in adjacent regions or among neighboring people. These include addition of thick coils by internal crushing or external joining and shaping bottoms by molding a ball of clay between fingers.

This part of the argument remains very tentative, however, and should be reassessed in the light of more comprehensive and detailed data collection. What matters here is the striking correspondence between pottery fashioning techniques and some of the most pervasive and enduring forms of social groups. In accordance with the predictions made earlier, patterns in the distribution of the fashioning step of the chaîne opératoire do broadly match social boundaries such as language divisions (see also Arnold, 1981), endogamous ranked specialist groups (see also Mahias, 1993; Miller, 1985), and even gender (see also Hosler, 1996; Mohr-Chavez, 1992), all categories of social group membership that usually constitute the core of people's identity, that part which is probably the most firmly rooted and hence the most difficult to mask or erase. As illustrated by the various situations encountered in sub-Saharan Africa, the reason for such correspondence has to do both with the type of skills involved and the context of their acquisition and transmission. Here indeed is a step of the manufacturing process whose mastery requires a period of close interaction between individuals, rather than occasional informal contacts, and that apparently resists subsequent alterations—except, perhaps, when molding is involved, as described earlier. Pottery-learning networks are embedded in broader social networks based on kinship, language affiliation, clans, or castes, and so it is not particularly surprising to see fashioning techniques evolve and be reproduced over time and space in patterns corresponding to major cultural processes such as language expansion and the development of particular economic or political structures.

Granted, these networks relate to different facets of identity, a fact that may singularly complicate archaeological interpretations. Nevertheless, considered as a whole, these distributions do correspond to a category of social boundaries within which, on the one hand, cultural closeness, affiliation, or dominance is obviously more important than geographical propinquity, and on the other, people's sense of belonging is likely to rely on common practices rather than spuriously borrowed traits.

CONCLUSION

I began this paper with a single question: "Is there any correlation between material cultural patterning and social identity?" Despite the evident complexity of the problem, I hope to have convinced the reader of the need to consider that artifacts and chaînes opératoires, like individuals and socials groups, are not clearly bounded and monolithic units, but complex, dynamic, and profoundly mixed constructions. As such, they have the ability to tell multiple stories about social groups and their historical trajectories, depending not only on the social and historical context but also on the salience of the techniques.

Although such an approach opens new avenues for the reconstruction of past societies, it also compels us to shift our attention from structures or features to

actual processes of enculturation, that is, to understand how and why people come to do things in a particular way or consume particular commodities, and how and why such behaviors may relate to the production and reproduction of social boundaries. The development of reliable and useful theoretical tools demands that we put our questions and assumptions into more general terms.

My main argument regarding the production of material culture is that the contexts in which technical behaviors are constructed and reproduced correspond to the same networks of social interaction upon which identities are themselves constructed and reproduced. One learns specific abilities and acquires specific tastes by interacting with relatives, friends, neighbors, or members of any form of social group to which one belongs or with which one interacts, within or across boundaries. This is how individuals come to do things in their own particular ways or to consume particular kinds of goods, all of which may be used subsequently as symbols of differentiation and belonging. As social networks expand, contract, and interconnect according to historical events, people are thus likely to accumulate a wide range of dispositions, including knowledge, skills, tastes, and habits, pertaining to different facets of their identity. This has two important implications. First, technical traditions may incorporate elements of multiple origins, as some are transmitted between people who belong to the same social group, whereas others are borrowed from people belonging to other groups. This articulation constitutes the core of any cultural construct and explains why such constructs are, like identity, heterogeneous and profoundly dynamic phenomena. Second, all cultural elements do not necessarily evolve in the same way. Some, for instance, are more difficult to modify or less consciously invested or both as symbols of group belonging, whereas others may be easier to change or more frequently brandished or both as "ethnic banners." Depending on the technical behavior taken into consideration, therefore, one may be able to differentiate among conspicuous, fluctuating, and superficial facets of identity on the one hand, and more subtle yet pervasive and rooted ones on the other. As put by Jones (1997, p. 92) in her presentation of Bentley's theory, one may be able to separate "between surface cultural expressions and deep structural dispositions."

Being more manipulable and visible than other aspects, pottery decoration tools and techniques are especially receptive to borrowing. Consequently, they tend to fluctuate through time, to be distributed widely through space, and to reflect those most superficial, situational, and temporary facets of identity—a fact that does not preclude their local exploitation as symbols of belonging to a particular group or ideology. In sub-Saharan Africa, this situation translates into rouletting tools being diffused among neighboring but culturally unaffiliated populations. If considered from a strict typological point of view, they merely allow for the identification of loose and situational networks of interaction in which geographical propinquity and local processes of imitation and conformity play a leading role.

Fashioning, on the other hand, is a less salient stage of the chaîne opératoire and one that proves especially resistant to change. It is characterized therefore by

a greater stability through time and space, an intimate connection to the spatial development of learning networks, and hence a tendency to reflect those most rooted and enduring facets of identity. In sub-Saharan Africa, the distribution of fashioning techniques follows a series of meaningful boundaries between individuals and communities: language divisions, castes, and gender. Thus, they give us information on a category of social networks built upon cultural or even kin affiliation rather than geographical propinquity and on major historical processes such as migration and acculturation, provided that local patterns of change are analyzed.

All of these techniques are likely meaningful in cultural, social, or historical terms (e.g., Chilton, 1998; Goodby, 1998), even if taken in isolation. What I intended to demonstrate is that we can hope to tell more accurate stories about people's past and present behaviors by taking all of them into consideration and, more importantly, by being aware of the mixed and heterogeneous nature of artifacts or assemblages, as well as their respective potential and limitations in terms of salience and ease of transmission.

ACKNOWLEDGMENTS

The research on which this paper is based was conducted while I was a member of the Ceramic and Society Project, a project developed at the University of Brussels and funded by a grant Action de Recherche Concertées from the Direction Générale de la Recherche Scientifique, Communauté Française de Belgique. Figures 1 and 2 and 4–6 were processed by Yvette Paquay; Figure 3 was processed by Jacqueline Renard. I express my warmest gratitude to Brenda Bowser and Nicholas David, who helped me transform a lengthy and awkward manuscript into a proper article. I extend my thanks to Claire Grégoire, Baudoin Janssens, Detlef Gronenborn, David Shoenbrun, Alexandre Livingstone Smith, Philippe Lavachery, Els Cornelissen, and Pierre de Maret for their help, critiques, and support. Thanks are also due to M. B. Schiffer for his entertaining comments on a former version of this text.

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