

Mechanisms of expansion of techniques with a high cost-benefit advantage need more comparative data, in particular data from the second millennium BC in the Near East.

In their study of cultural transmission, Cavalli-Sforza and Feldman (1981) suggested that more empirical data were needed to better test theoretical approaches of cultural change. Actually, more dynamic theory-driven technological data are needed, in particular comparative past and present data on technological change, in order to identify common underlying mechanisms in innovation, expansion, borrowing, and loss.

Acknowledgments

I am extremely grateful to Miriam Stark, Brenda Bowser, and Lee Horne for inviting me to join this volume as well as for their very useful and relevant comments on this chapter. Carol Kramer was a friend. In India, we visited each other at our respective field sites. We took great pleasure in sharing our enthusiasm for ethnoarchaeology. Both of us were convinced that present-day data were necessary for interpreting the past. This chapter is dedicated to her.

Learning and Transmission of Pottery Style

WOMEN'S LIFE HISTORIES AND COMMUNITIES
OF PRACTICE IN THE ECUADORIAN AMAZON

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HOW AND WHY PEOPLE construct, maintain, and transform culture and cultural boundaries is a central issue in anthropological archaeology. Questions about transmission of domestic pottery style from mother to daughter in matrilineal societies were a fundamental impetus for the development of many archaeologists' interests in learning and cultural transmission. In such contexts, archaeologists initially expected strong intergenerational continuity in pottery style and well-delineated social boundaries (see Longacre, this vol.). Today, indigenous communities in the Conambo River basin of the Ecuadorian Amazon are places where there are parallel reasons to expect strong intergenerational continuity in pottery style: all women make pottery, the majority of women report learning from their mothers, the postmarital residence norm is matrilineal, pottery is made exclusively for domestic use, and market influences are absent. Our ethnoarchaeological research in one of these communities, a village divided into two ethnic factions, has shown that indeed this social boundary is well defined and signified by pottery style; however, pottery style is associated strongly with women's political relationships and only weakly with ethnicity, even though ethnicity is a more heritable dimension of social identity (Bowser 2000, 2002). Cases like this have perhaps led us to a point where issues of cultural transmission and the maintenance of social boundaries seem as "unmanageably multidimensional" (Wobst 1977:317) as material style itself. How can we make sense of this?

The simple answer, of course, is that style very often is a symbolic marker of social identity, both style and social identity are polysemic, or multivocal, and neither become fixed during the lifetime of an individual.

Continuity in material culture is not simply the result of unconscious transmission of ideas from generation to generation, a form of native conservatism, or a propensity to do things in the same way as the previous generation, according to the manner in which one is taught. Rather, decisions to imitate or deviate from the style of others represent choices by agents at multiple levels of consciousness. Every person is constantly constructing and reassessing his or her own social relationships, paying attention to the cues of others, and at some level of consciousness making motivated choices about how and why to use cues to social identity. Indeed, it is a fundamental aspect of human social psychology to perceive, imitate, and manipulate cues to social group membership, including behavioral and material signifiers (Tajfel 1982).

Further, competency as a group member requires what we call *boundary consciousness*—an awareness of the behaviors, beliefs, and values that distinguish in-group members from out-group members, although this awareness may be internalized during socialization and may be tacit rather than explicit (e.g., see Labov 1963, 1972). Social boundaries comprise material and behavioral cues to social divisions, or distinctions, between groups. These cues provide the basis for recognition of in-group members and out-group members, as well as for ethnocentrism and xenophobia, the sometimes (though not always) subtle biases in favor of in-group members and against out-group members. Appropriate uses of in-group markers are ascribed positive values by in-group members and serve as the basis of cooperation, while inappropriate use of in-group markers or signification of out-group membership is likely to be met by discriminatory negative attitudes and behaviors (Nettle and Dunbar 1997). These concepts are fundamental in the development of anthropological studies of social identity in both contemporary social theory and evolutionary theory, and fundamental to archaeologists' ideas about style (see e.g., Barth 1969; Bourdieu 1998 [1994:8–9]; Cashdan 2001; Cohen 1994; Dunbar et al. 1999; Levine and Campbell 1972; Royce 1983; Wiessner 1983; Wobst 1977; Yamagishi and Kiyonari 2000). Thus, women's domestic pottery style in Conambo may be understood as part of their motivated political strategies and the active processes of constructing, maintaining, and negotiating social identity, social group membership, and group boundaries (Bowser 2000, 2002). This understanding is consistent with both social theory and evolutionary approaches.

Here, we analyze data to demonstrate that women's political strategies change through different stages of their lives and that they employ different strategies of stylistic behavior as they acquire competency in recognizing stylistic symbols of group membership. To do this, we examine the relative importance of intergenerational learning during different phases of potters' lives and we relate these life-cycle differences in stylistic behavior to life-cycle stages in the development of women's political lives. Finally, we examine transmission of pottery style as part of women's motivated political strategies and their signification of those strategies.

To frame our analysis and discussion, we draw from contemporary approaches to social learning developed along separate trajectories in two distinct paradigms: the "community of practice" approach, based in social theory and concepts of situated learning and practice, and evolutionary life history theory, including the concept of embodied capital. By outlining some of the common foundations, points of theoretical intersection, and parallel trajectories of these approaches, and integrating them in this chapter, we hope to convince readers that these ideas have salience across theoretical boundaries.

Theoretical Background

Contemporary approaches to social learning share a common foundation in the seminal work of Vygotski (1962, 1967, and 1978), whose observations that social learning is more important during particular developmental stages of childhood have been incorporated into social theory and evolutionary approaches. The fundamental tenet of these approaches is that learning is situated in a social context, whether that group is a village of farmer-foragers where children learn to gather and process monogongo nuts (Bock 2002), or a chapter of Alcoholics Anonymous (Lave and Wenger 1991; Wenger 1998). A rich and growing literature on social learning and enculturation in diverse cultural contexts exists in anthropology (for recent examples, see Bock 2004; Edwards 2000; Gurven, Kaplan, and Gutierrez 2006; Hewlett and Lamb 2005; Lancy 1996; Weisner and Edwards 2002; cf. Hirschfeld 2002).

Situated learning theory has been developed and integrated with contemporary social theory, particularly practice theory, by Jean Lave and her colleagues (Chaiklin and Lave 1996; Lave and Wenger 1991; Wenger

1998), and applied by Patricia Crown and others (Crown 1999, 2007; Duwe 2005; Gosselain this vol.; Minar and Crown 2001; Van Keuren 2006) in studies of archaeological craft traditions. This approach decenters the study of learning to shift the focus from the teacher-student interaction to learners. A key concept is the *community of practice*, a community of practitioners with a shared sense of group identity. This concept requires us to consider that learning involves socialization into a group and acquiring a new dimension of social identity. Thus, learning is not simply the transmission of information from one individual to another. Rather, learning is motivated by a desire to become a group member, to achieve competency as it is defined by the group, and to signify membership within the group vis-à-vis that competency.

A second key concept is that learners are *legitimate peripheral participants*. The idea is that learners are newcomers who participate initially as peripheral members and eventually become full members through a process of socialization. Therefore, each community of practice has a developmental cycle. The younger cohort gain competency, widen their participation in the community of practice, move into a position of full participation, and begin to displace other core members, who then may become important senior members with specialized historical knowledge.

A third concept of situated learning theory that is germane to this chapter is that the process of transition and eventual displacement is accompanied by *dynamic tension*, as newcomers seek to establish their own identities through practice. This phenomenon is precisely where explanations of discontinuity and change may lie. The interrelatedness of identity, practice, and the social reproduction of community members is central in this process (Lave and Wenger 1991:114–15).

A complementary approach in evolutionary anthropology is life history theory (see Hill and Kaplan 1999). From this perspective, when an individual transitions through life stages from childhood, to adolescence, adulthood, and finally senescence, he or she faces different physical and cultural constraints and demands on production and reproduction associated with growth and development, health, social competition, finding suitable marriage partners, parenting, and grandparenting. As a result, people in different life stages pursue different strategies that provide the best returns for their efforts—economic and social—for that stage of their lives.

The concept of embodied capital (see Kaplan and Bock 2001) extends the life history approach to encompass the acquisition of skills, knowledge, and cultural competencies as an important aspect of growth and development. These competencies constitute forms of embodied capital attained during one's life that have major consequences in terms of one's ability to acquire and maintain economic and social resources, and to compete over these resources with others. Learning these competencies constitutes an investment in one's future production and reproduction; teaching one's children these competencies becomes an intergenerational investment; and therefore conflicts of interest are likely to arise between generations. Embodied capital varies in form and across environments, cultures, and life stages (see Bock 2002:168).

From our perspective, then, embodied capital includes a woman's competence to produce pottery; to recognize, imitate, and manipulate symbols of social and personal identity; and to engage successfully in political strategies to improve her social position in terms of status and political alliances. These competencies include cognitive abilities, motor skills, and social competencies. For example, embodied capital would include the cognitive ability of young Shipibo-Conibo potters to produce complex design styles by age sixteen (DeBoer 1990) and the mechanics of learning that must be mastered by pottery makers (Crown 2007; Minar and Crown 2001).

Ethnographic Background

Conambo is an indigenous village of about two hundred Achuar- and Quichua-speaking people. It is located on the Conambo River in the lowland tropical rainforest of eastern Ecuador, near the international boundary with Peru in the Upper Amazon River basin. In 1992 and 1993, when we collected the data for this study over a nine-month period, the village was constituted by twenty-four nuclear and extended family households, dispersed along the terraces overlooking the river. Here, the 1992–1993 period comprises the ethnographic present, although our perspective is informed by subsequent fieldwork in the region (Bowser 2000, 2002, 2004, 2005; Bowser and Patton 2004; Patton 1996, 2000, 2004, 2005).

Conambo is the largest village in the Zapara Territory, an indigenous landholding of 250,000 hectares owned collectively by the families living

there. There is no access to tourist markets for pottery, due to the territory's geographic remoteness. No roads extend to the territory, which is accessible by small plane to outsiders. Subsistence is based on swidden horticulture, hunting, fishing, and collecting. Women have primary responsibility for gardening, and men have primary responsibility for hunting.

All adult women maintain their own manioc gardens, make manioc *chicha* (a lightly fermented beer), and make beautifully painted polychrome pottery bowls for serving chicha to their families and guests (Bowser 2000:234–36, figs. 3–5). Pottery making is a highly valued signifier of a woman's social personhood (Bowser 2000:226–29), and the quality of a woman's bowls contributes to her respect within the community (see also Bliege Bird and Smith 2005). All women are potters; “potters” do not comprise a distinct occupational category. There are thirty-five competent potters in the twenty-five households, including all married women ($N = 29$), all widows ($N = 2$), as well as some unmarried girls ($N = 4$).

The most salient social boundary in Conambo is its division into two ethnic factions. Both factions are described emphatically in ethnic terms—the Achuar, living upriver of the community center, and the Quichua, living downriver—even though each side is ethnically mixed as a result of marriages and political realignments, facilitated by a high degree of multilingualism. Achuar and Quichua women paint their pottery beer bowls in subtly different ways that signify their ethnic and political differences (Bowser 2000, 2002).

For potters in Conambo, the community of practice includes all women and girls-becoming-women (fig. 6.1). As we demonstrate in the remainder of this chapter, the developmental cycle of learning to make pottery coincides with the developmental stages of women's political lives: young potters who have achieved competency (ages 14–29, $N = 19$), middle-age potters (ages 30–50, $N = 12$), and older potters (ages 51–65, $N = 4$).

Young Potters

Immersed in the community of practice, accompanying her mother in her daily routine, a small girl plays with clay, making coils, pinch pots, and miniature animals while her mother builds coils into vessels. The girl goes with her mother to find, select, and collect clays, pigments,



FIGURE 6.1 An older potter in Conambo sits quietly and concentrates on painting a bowl, while her granddaughter and great-niece are enjoying themselves and learning to paint bowls under her guidance.

resins, firewood, and other pottery-making materials. Occasionally, she is allowed to paint minor design elements on her mother's painted bowls and begins to build small bowls. Between the ages of ten and fifteen, she is ready to dedicate herself earnestly. She begins to paint her own designs on a bowl formed by her mother and sometimes works jointly on a design laid out by her mother. Her mother provides occasional demonstrations as well as verbal instruction, correction, and praise in manual techniques and the organization of painted design and diplomatically gives proper form to her daughter's poorly shaped pots. When a girl has painted her own bowl, it is “hers,” no matter who formed the body. Thus, girls become competent painters first, then gradually achieve the skills required to form and fire their own bowls. Competent potters make their own vessels from beginning to end, and no longer need the scaffolding (*sensu* Minar and Crown 2001:376) provided by their mothers or other women.

In households full of children, adult women often choose quiet times to work on their vessels, and find a place to sit by themselves, so that they can concentrate. However, young women say that “others come to

help paint" when someone is learning, and it is not unusual to see two sisters-in-law or a small group of sisters and cousins sitting together, talking, giggling, and painting pottery bowls. A young married woman may visit her mother-in-law and make pottery, using her mother-in-law's clays and pigments, asking for intermittent instructions in the execution of a design, as they pass time together.

The majority of women learn pottery making from their mothers (56 percent, or nineteen of thirty-four potters interviewed), although some report learning from a grandmother (6 percent), stepmother (6 percent), sister-in-law (3 percent), or distant aunt (3 percent), by watching others (15 percent), or by being self-taught (12 percent; Bowser 2002:61-64; 126-30). Most young women have learned to make beer bowls by age fifteen, and all women achieve competence by age twenty (Bowser 2002:61-70), marking their transition to marriageable age and adulthood. Generally, a girl in Conambo marries by the age of fifteen, lives with her husband in her parents' household compound, develops her gardens, gives birth to her first children, and then establishes a small house with her husband and small children not far from her parents in the same matrilineal neighborhood of loosely clustered houses. Thus, most young potters (seventeen of nineteen) live matrilocally.

Many young potters look for new ideas to broaden their stylistic repertoires, or study with highly skilled painters to improve their technique and knowledge of design. After marriage, young women's social lives are less circumscribed, as they begin traveling and moving their residences together with their husbands. Some modify their technological and decorative styles during extended visits to a mother-in-law in another village during the early years of marriage, visits to other families in other places reachable by trekking the extensive trail system throughout the region or traveling by canoe along the river, or postmarital resocialization into a new community or household. In this matrilineal society, where creativity and originality in pottery making are valued, young women report learning new styles from other women as active choices they made when they became interested in learning the new techniques, sometimes because their original instructors' painting was *medio mal* (half bad), rather than because of criticism or pressure to conform, unlike cases of postmarital resocialization reported among pottery makers in patrilineal societies (Herbich and Dietler, this vol.; Wallaert, this vol.).

Middle-Age Potters

Middle age is a time of women's widening participation in their community of practice. Women have established independent households with their husbands. During middle age, they support large families from their gardens, and their own daughters reach marriageable age and marry. Gradually, middle-age women build extended family households. Most have moved to a new community away from their mothers and fathers (nine of twelve). They expand their political networks and enhance their status in the village. Women in this age group are politically most active, and their actions have the most influence on their social position within the community. By age thirty-five, they have learned to make the large fermentation jars that their mothers once made for them (Bowser 2002:65-72). They inherit the pottery-making knowledge, or *sabiduria*, of their mothers and other older women. Their painted pottery exhibits great individuality, an admired quality.

Older Potters

Old age is a time of high status for all women in Conambo. Older women raise their youngest children and care for their grandchildren and great-grandchildren as their households become smaller. They maintain their gardens, but with fewer varieties of manioc, a staple food, and more varieties of fruit trees, which have taken years to establish and mature. All older women make pottery, including a widow who lives with her stepson. They participate less in politics. However, in each faction, the old woman with the highest status is the matriarch of an extended family neighborhood, and one of the founders of the village, and she continues to host large gatherings in her home. Most potters in her faction are paying attention to how she is painting the designs on her pottery beer bowls and can recognize her bowls readily.

When a woman is close to the age of her death, she gives her pottery-making tools ceremoniously to a daughter or another woman. This act transfers her *sabiduria*, the ancestral spiritual knowledge of pottery making that is embodied in each woman's calabash scrapers and polishing stones, one example of nonhuman agency (*sensu* Gell 1998) in this context. When she is buried, other women will leave food and chicha beer

for her in their bowls, placed on top of her grave. Thus, participation in the community of practice spans a woman's lifetime and marks its end.

Development of Women's Political Strategies

Politics in Conambo involve competition and the exercise of power over matters of public interest in the public domain, men and women are active participants, and outcomes are consequential. Our previous research shows that women's political networks are different from men's, because some women build alliances that cross-cut the political division in the village, and they situate themselves to serve as mediators, or political brokers, between the two ethnic factions (Bowser and Patton 2004:165-69). Here, we analyze data on status and alliance to show that women's political strategies change through different stages of their lives. Primarily, some women pursue strategies of alliance building across the political divide during middle age, when their positions as political brokers can enhance their status in the village.

Women's Status and Life Stages

In Conambo, a woman whose leadership abilities emerge more frequently and clearly than those of others is recognized as an *ammu* (Quichua) or *juuntach* (Achuar). Such a woman is said to be "more important" than others, a characteristic that we refer to here as "status." In particular, an important woman is described in terms of her maturity and her role in political activities, including her abilities in organizing consensus, persuasion, public speaking, mediation, and conflict resolution. Analysis of quantitative data on women's status and age in Conambo supports three key points. First, women's status increases significantly as they grow older, consistent with anthropological expectations and informants' statements. Second, three life stages can be defined on the basis of women's status and age. Third, middle age is the life stage when women may gain or lose status relative to their age, suggesting that middle age is a critical time in women's life histories.

For this analysis, fifteen women were asked to judge the relative status of twenty-seven competent potters, including twenty-four female heads-of-household and three co-resident women (one widow and two

young married daughters). Each informant was shown photographs of the twenty-seven potters, presented in random sets of three photographs, and asked to identify the most important woman and the second-most important woman in the triad. Each informant was asked to make comparative judgments of twenty triads for a total of 810 judgments. A status score for each potter was calculated by assigning two points to the potter who was ranked first in each triad, one point to the second-ranked potter, and no points to the remaining potter; these points were then summed.

Figure 6.2 shows that women's status increases as they grow older. The linear regression correlation between women's status and age is highly significant ($r^2 = 0.720$, $p = 0.000$, $N = 27$). However, the relationship between women's status and age is best predicted by the quadratic equation ($r^2 = 0.839$), which is represented by the curve. Status rises steeply in women's younger years and levels off as they grow older. Figure 6.2 also shows the basis for our definition of three cohorts: young women of low status (younger than thirty), middle-age women of variable status (between the ages thirty and fifty), and high status, older women (older than fifty). These groups are distinguishable by the fact that the status of young women and older women is highly predictable based on their age, while the status of middle-age women varies considerably. In other words, women in Conambo do not judge the status of middle-age women based on age alone, and explanation of status differences among middle-age women must be sought in other variables.

Women's Political Centrality and Life Stages

Here, we analyze data on women's political alliances and status to evaluate the life stages when women are likely to engage in intermediary positions between the two ethnic factions. We find that political centrality tends to occur during middle age and contributes significantly to women's status. Age is not the sole predictor of their status in Conambo, and middle-age women may enhance or diminish their positions of importance in the village through their own agency.

Quantitative measures of women's alliance similarities were applied from our previous work (Bowser and Patton 2004:164-69) to analyze women's networks of political alliances in the village. The informants who performed the social-ranking task also were asked to make alliance judgments using the

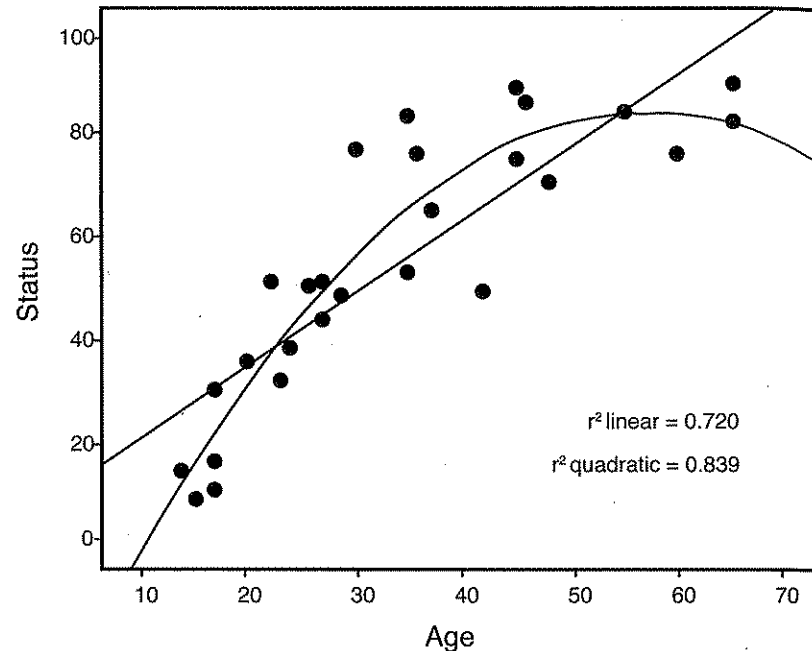


FIGURE 6.2 Women's age and status in Conambo.

same photos presented in groups of three. The informants were asked to indicate which of the three dyadic relationships represented in the triad was the strongest. This judgment was prompted by asking them to predict which two women would be most likely to form an alliance, or "stick together," if a problem or conflict were to arise that involved all three women. Alliances between women were measured as the number of times they were judged to have the strongest alliance divided by the number of times both women appeared in a triad. The similarities of women's alliances were measured as the degree to which women shared the same set of allies.

Figure 6.3a is a spatial representation of women's political networks in Conambo. It suggests a developmental cycle in which young women begin as politically peripheral members of the community, move toward the political core during middle age, then move again toward the peripheries as they become older and are displaced by middle-age women. The peripheral women in figure 6.3a tend to be young and older women. Women in the middle-age group tend to be more central. The central cluster defines the political core of women's networks in the village. More

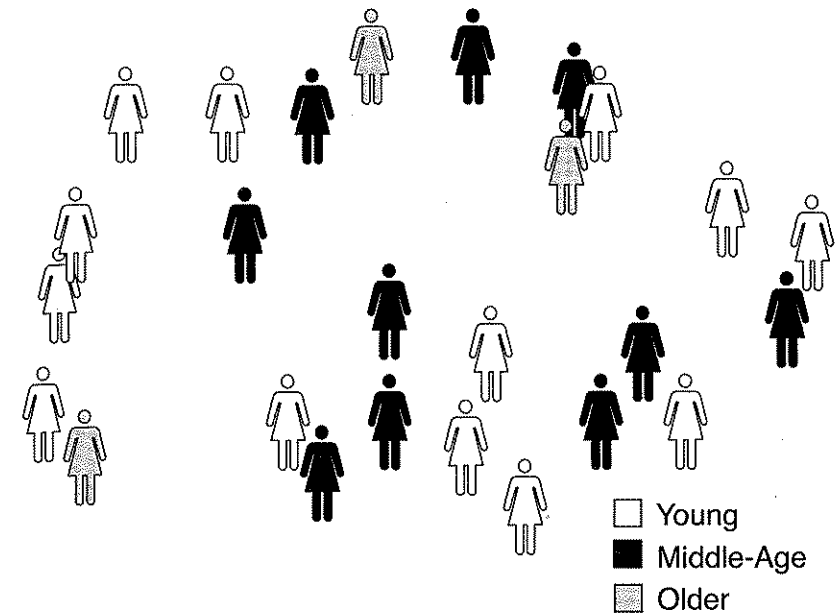


FIGURE 6.3A Multidimensional scaling (MDS) of the potter-by-potter matrix of alliance similarities. Each married woman is represented by an icon, coded by her age category. Close distances between icons indicate that women share similar alliances, and closeness to the center represents political centrality.

specifically, it includes the young women nearest to middle age (ages twenty-seven to twenty-nine), as well as most of the younger members of the middle-age cohort (ages thirty to forty-five), indicating that women are most likely to move toward political centrality as they approach middle age, when their status begins to vary independently of age, and then begin to move toward the peripheries after age forty-five, as their status begins to level off. The youngest members of the young cohort (ages fourteen to twenty-six) and the oldest members of the middle-age cohort (older than forty-five) are more likely to be peripheral, compared to women ages twenty-seven to forty-five. These observations are supported by the fact that the average alliance similarity (a measure of centrality) of women ages twenty-seven to forty-five ($N = 11$) is significantly higher than that of younger and older women ($N = 16$), based on the t-test ($p = 0.020$). This pattern of women's movement toward political centrality during middle age is consistent with situated learning theory, which

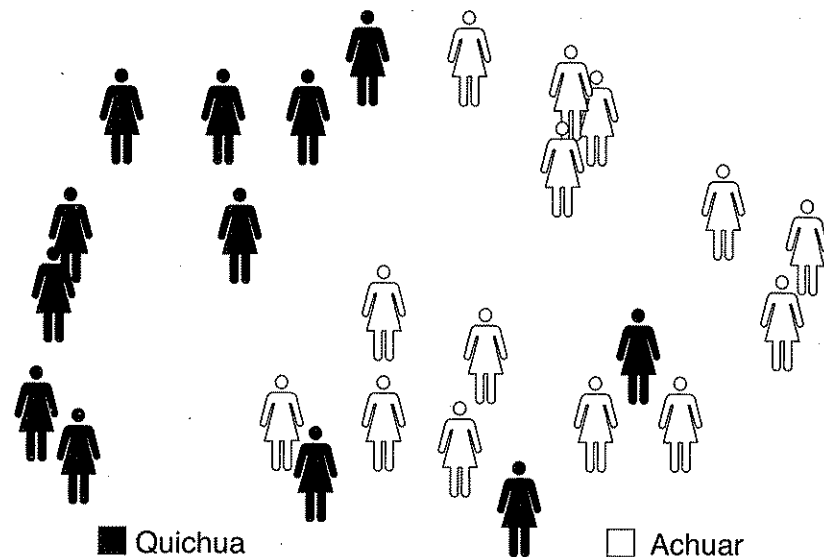


FIGURE 6.3B The MDS from figure 6.3a coded by women's political faction to show that the positions of political centrality are intermediate between the Achuar and Quichua factions.

predicts that members will widen their participation in the community of practice as they mature from peripheral to full participation.

Women who are politically central in the village are positioned as political intermediaries between the two factions (fig. 6.3b). These political brokers occupy positions of inherent tension and risk, because women's stronger relationships across the political divide correspond with weaker relationships within their own factions. In fact, there is a significant negative correlation between a woman's in-group and out-group alliance similarities ($r = -0.704$, $p = 0.000$, $N = 27$). Perhaps for this reason, considerable variation exists in the degree to which women pursue, or achieve, politically intermediate positions as they reach middle age; there is significantly greater variation in the average alliance similarities of women ages twenty-seven to forty-five ($N = 11$), compared to younger and older women ($N = 16$), based on an analysis of variance ($p = 0.020$). The potential for status competition during middle age, as women build their alliances, is consistent with situated learning theory, which predicts dynamic tension during the replacement process by which peripheral learners become full participants and eventually replace the previous cohort.

Nevertheless, these political broker roles are positions of high status. There is a significant positive correlation between a woman's status and her out-group alliance similarity, when age is controlled as a variable ($r = 0.423$, $p = 0.031$, $N = 27$). In other words, a woman who develops extensive alliances across the political divide is likely to have higher status than expected for her age. Conversely, women with weaker out-group alliances tend to have lower status than expected for their age; there is a significant negative correlation between a woman's status and her in-group alliance similarity, when age is controlled as a variable ($r = -0.535$, $p = 0.005$, $N = 27$). In sum, middle age is a time when women may enhance their status through their own agency by pursuing and achieving roles as political intermediaries.

Development of Women's Pottery Styles

In the remainder of this chapter, we examine the development of women's pottery styles in the context of their political life stages, including their perception of stylistic markers of group membership, the influence of kinship and marriage as vectors of transmission, and their "stylistic networks"—the networks of women with whom they share similar styles. We find that women in all life stages make pottery that bears a strong resemblance to the pottery of their close matrilineal kinswomen. Additionally, middle-age women are strongly influenced stylistically by other women of their own generation, who are becoming their allies in factional politics as their cohort moves toward political centrality. They become most competent in recognizing in-group stylistic markers. They do this during a life stage when their strategies of signification are most important, as they gain or lose status depending on the success of their alliance-building strategies. At the same time, middle-age women are less influenced by mothers-in-law and patrilineal kin of the preceding generation, whom they will eventually displace.

Acquiring Competency: Perceiving Stylistic Markers of Group Membership

In Conambo, pottery style is a social marker that contributes to boundary consciousness, marking the political and ethnic differences between

the two factions. Pottery style in Conambo consists of in-group markers, out-group markers, and a set of variables that are shared widely across the political divide. These concepts were evaluated and substantiated by testing women's abilities to distinguish the pottery bowls of Achuar and Quichua women (Bowser 2000:237-41, 2002:206-34). In a blind test, twenty-eight women were shown thirty-three painted beer bowls and asked to identify each bowl as likely made by an Achuar or Quichua potter; overall, women were highly accurate. Here, we reanalyze those data to evaluate the life stages when potters acquire competency in identifying in-group and out-group stylistic markers.

Overall, women's ability to accurately categorize the bowls made by other potters in Conambo does not vary significantly with age. However, a woman's ability to accurately categorize the bowls made by potters in her own faction (her "in-group accuracy") increases with age. There is a significant positive correlation between a potter's in-group accuracy and her age ($r = 0.478$, $p = 0.010$, $N = 28$). Young potters ($N = 14$) are significantly less accurate than middle-age potters ($N = 11$), based on a t-test ($p = 0.040$), and the difference between young and old potters ($N = 3$) is significant at the 94th percentile of certainty ($p = 0.054$), while there is no significant difference between the middle-age and older cohorts.

By contrast, a woman's ability to categorize the bowls made by potters in the opposite faction (her "out-group accuracy") does not vary significantly by age or cohort, though older women are somewhat less accurate. Most women are highly accurate at recognizing out-group bowls (Bowser 2000:238-39). Thus, young women have acquired this ability by the time they are competent potters, before they learn in-group stylistic markers.

Influence of Kinship and Marriage on Transmission of Pottery Style in Different Life Stages

What are the primary vectors of transmission of pottery style during different stages of potters' lives? Here, we examine the influence of kinship and marriage to consider the long-term importance of the early learning context versus other influences on a woman's style as she matures. We conclude that stylistic influences vary throughout a woman's lifetime in Conambo (see comparative discussions in Kramer 1985:83-88; Stark 2003:211-13). Close matrilineal kin strongly influence the pottery style of

women in all age groups. Additionally, middle-age potters expand their stylistic repertoires to incorporate more stylistic influences from women of their own generation, who are becoming their political allies, while the influence of potters of the previous generation declines.

To measure the stylistic similarity between women's bowls, we analyzed eighty attributes of twenty-one variables (three variables of technological style [surface treatment, vessel form, and base form] and eighteen variables of decorative style [interior vs. exterior design symmetry, slip color, primary and secondary design colors, and presence or absence of upper and lower framing lines and squiggly framing lines; also, presence or absence of dots in the upper and lower design fields on bowl interiors]), which includes all variables found to be significant in previous analyses of Conambo pottery (Bowser 2000, 2002). Stylistic similarity measures were calculated based on forty bowls made for household use by thirty of the thirty-five potters from the three cohorts: young ($N = 16$), middle-age ($N = 10$), and older ($N = 4$). In principle, absolute stylistic similarity would be 1.000 and indicate identical attributes for all twenty-one variables, and absolute dissimilarity would be 0.000. In practice, analyses of within-potter similarity ($N = 15$ pair-wise comparisons) produced an average stylistic similarity of 0.653, ranging from 0.533 to 0.800. Overall, similarity between pairs of different potters ($N = 434$ pair-wise comparisons) ranged from low (0.200) to high (0.800), with an average of 0.518, indicating a wide range of variation in stylistic similarity between potters, as well as the use of widely shared stylistic attributes within the village.

Figure 6.4 shows the average stylistic similarity between the potters in each cohort and all other potters, according to their primary relationships of kinship and marriage. Values for older potters are subsumed in terms of their relationships with young and middle-age potters; none of the older potters are related to each other by kinship or marriage, so a cohort analysis is not possible. Middle-age women have no living grandmothers, so there is no value shown for that relationship. All grandmother-granddaughter relationships are lumped; all are matrilineal, except for one case of a grandmother who raised her son's two daughters, whom we classify as matrilineal granddaughters, because matrilineality in this cultural analysis implies co-residence in the early learning context. Similarly, we classified stepparents as parents if the stepparent raised the child.

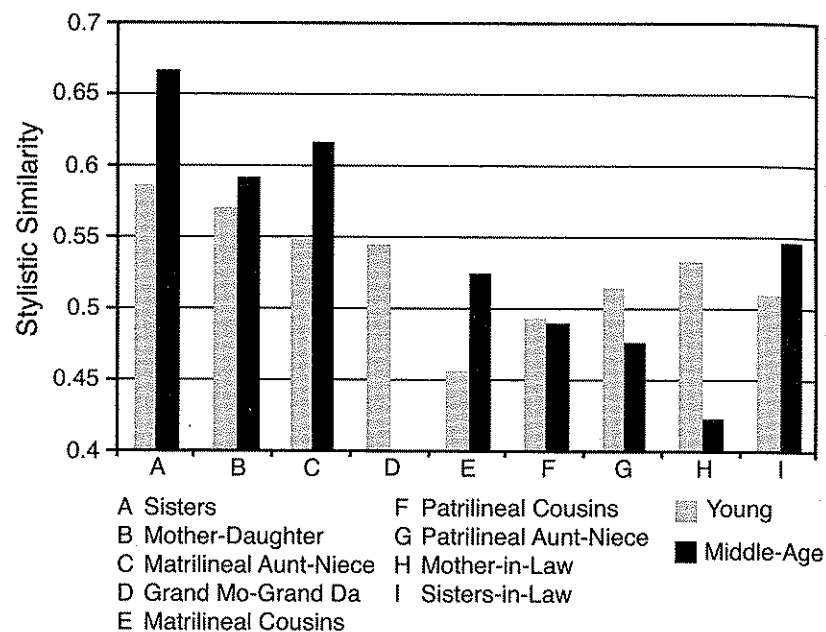


FIGURE 6.4 Average stylistic similarity between the potters in each cohort and all other potters, according to their primary relationships of kinship and marriage. For example, the first gray bar on the left shows that the average stylistic similarity between young potters and their sisters is 0.586, meaning that 58.6 percent of the attributes on their bowls match, on average.

For young potters, the patterns in figure 6.4 are consistent with the expectations of strong vertical transmission of pottery style from generation to generation in a matrilineal society. Very close matrilineal kin relationships are the strongest predictors of stylistic similarity. In general, young women's pottery style is most similar to that of their sisters and older matrilineal kin: mothers, maternal aunts, and grandmothers. Of intermediate influence for these younger potters is their relationship to mothers-in-law, which approaches that of a grandmother. Horizontal marriage ties with sisters-in-law are less important. Younger potters show the least similarity with patrilineal kin, including their patrilineal cousins and aunts.

For middle-age potters, very close matrilineal kin relationships also are the strongest predictors of stylistic similarity (fig. 6.4). In fact, stylistic similarity with close matrilineal kin increases during this life stage,

TABLE 6.1 Rank order of stylistic similarity between young potters and their relatives vs. middle-age potters and their relatives

Relationship	Young potters	Middle-age potters
Sisters	1	1
Mother-daughter	2	3
Matrilineal aunt-niece	3	2
Grandmother-granddaughter	4	*
Mother-in-law	5	8
Patrilineal aunt-niece	6	7
Sisters-in-law	7	4
Patrilineal cousins	8	6
Matrilineal cousins	9	5

Note: 1 = highest average similarity score, as shown in figure 6.4.

*No middle-age women had grandmothers in Conambo.

averaging 66.7 percent between middle-age women and their sisters, 59.1 for middle-age mothers and daughters, and 61.7 for middle-age aunts and nieces. These scores are similar to the average similarity of bowls made by the same potter, which was 65.3 percent. In other words, the bowls made by middle-age women and their close matrilineal kin may be as alike as two bowls made by one potter. This is most true for middle-age women and their sisters.

Additionally, middle-age potters differ from younger potters in the relative importance of other women of their own generation in predicting stylistic similarity. Differences in the rank order of stylistic similarities (summarized in table 6.1) for four different relationships indicate that middle-age potters are influenced by, or are influential in, a different set of relationships than young potters. Whereas young potters show the least amount of stylistic similarity with matrilineal cousins, ranking 9 out of 9, this relationship is more important in predicting stylistic similarity for middle-age potters, ranking 5 out of 8. Similarly, the importance of sisters-in-law increases during middle age, from a rank order of 7 out of 9 for younger potters to 4 out of 8 for middle-age potters. By contrast, the influence of mothers-in-law is dramatically less, dropping in rank from 5 of 9 for younger potters to last (8 of 8) for middle-age potters. The influence of patrilineal aunts also is lower, dropping in rank from 6 of 9 to 7 of 8. In other words, relationships of horizontal transmission with

members of the same generation increase in importance during middle age, while distant relationships of vertical transmission between members of different generations decline.

Most potters (thirty-four of thirty-five) in Conambo are related to some others by kinship and marriage. However, this does not mean that all potters are related to each other. Among potters in the same faction, only 15.5 percent of all pair-wise relationships are kin based, and 7.8 percent are marriage based. No potters have female kin in the out-group faction, although two pairs of potters have affinal relationships that cross the factional divide. In sum, the influence of kinship and marriage on stylistic similarities is not sufficient to explain group-level stylistic differences between the Achuar and Quichua factions. How then can we understand women's stylistic strategies during their life stages more comprehensively and relate these to the use of pottery style as a group boundary marker in Conambo? We return to the idea that the answer lies in women's strategies of alliance building, which encompass the multiple dimensions of their relationships of marriage, kinship, age, status, ethnicity, history, and trust.

Potter's Stylistic Networks during Different Life Stages

In this final subsection, we analyze women's stylistic networks, or networks of potters who share similar styles, during different life stages. If women simply copy the styles of other women with whom they interact, we would expect middle-age women (more than other cohorts) to produce pottery that is similar to women of their age group in both factions, as the middle-age cohort moves toward political centrality in the village. However, if boundary consciousness and the appropriate use of social markers are important and strategic factors in the materialization of group boundaries, we would expect middle-age women in particular to produce pottery that is similar to the style of other in-group members and deviates from the style of out-group members, despite their interactions across the factional divide. Our findings support the latter.

Figure 6.5 shows the average stylistic network similarity scores for potters in the three cohorts, according to their in-group and out-group relationships. These scores indicate the degree to which potters in each cohort are influenced by the same set of women within the village. Our concept of stylistic network is based on the premise that potters do not

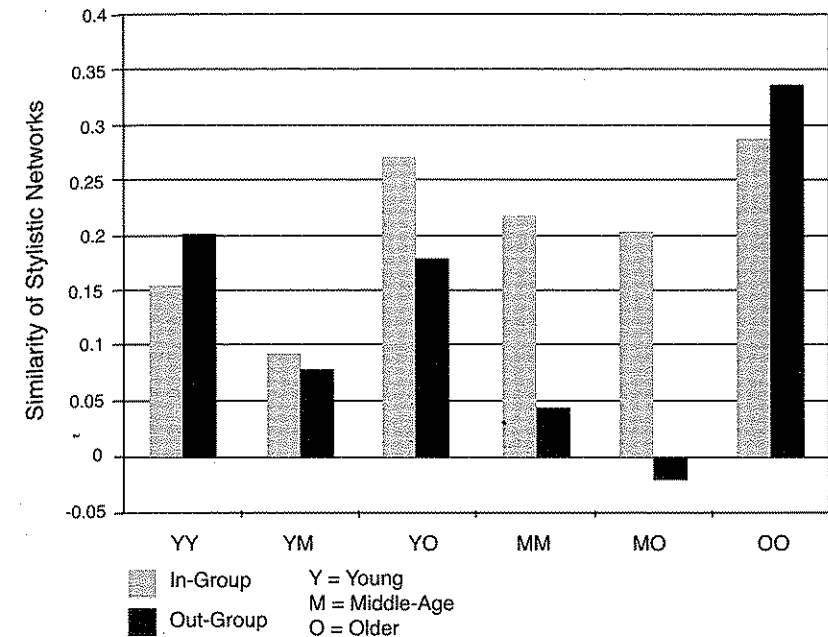


FIGURE 6.5 Average stylistic network similarity scores for potters in the three cohorts according to their in-group and out-group relationships. For example, the first gray bar on the left shows that the average score of stylistic network similarity between a young potter and other young potters in the same faction (in-group) is 0.154, while the second gray bar from the left shows that the average score between a young potter and middle-age potters in the same faction is 0.093. In other words, young potters participate in the stylistic networks of other young potters in their own faction, but they are influenced less by the designs of middle-age potters in their own faction.

employ a "pottery style" that is monolithic, static, or shared uniformly within neatly bounded groups of women. Rather, the stylistic influences on a woman are like networks or cliques, uniquely constituted but overlapping with those of others. Therefore, we constructed a measure of potters' stylistic network similarities, drawing from the same methodology of social network analysis used for women's political alliances above. An additional benefit is that this approach compares all potters with bowls in the sample, representing a broader set of relationships than our stylistic similarity analysis above.

To measure the similarity of stylistic networks between women, we assembled the measures of stylistic similarity into a matrix. Each pair of women was assigned a value based on the degree to which their bowls were similar to the same other women in the village. If the bowls of woman A and woman B shared the same degree of similarity to the bowl of woman C, that comparison would contribute to a higher network similarity score for women A and B, but if the bowl of potter A shared a high degree of similarity with the bowl of potter C and the bowl of potter B had a low degree of similarity to potter C's bowl, then that comparison would contribute to a lower network similarity score for potters A and B. Each pair of women was compared to each of the other twenty-eight potters, one at a time, to calculate their stylistic network similarity score. The resulting score is a Pearson correlation coefficient.

Figure 6.5 shows that younger potters participate most in the stylistic networks of older potters in their faction, and least in the stylistic networks of middle-age potters. This corroborates the analysis of stylistic similarity above, which identified strong vertical transmission between the older and younger generations, and stylistic discontinuity between younger and middle-age potters. Furthermore, younger potters exhibit a considerable amount of overlap with the stylistic networks of the opposite faction, as do older women, during life stages when both cohorts participate least in intergroup politics, and political boundary consciousness is probably least important.

Middle-age women tend to participate most in the stylistic networks of other middle-age potters and older women in their faction (fig. 6.5). Compared to younger potters, middle-age women show greater influence of horizontal transmission on the styles of their bowls, again corroborating the analysis of stylistic similarity above. This corresponds to the time in their lives when they are more central in community politics, building and strengthening their alliances with other middle-age women within and across the political boundaries of the two ethnic factions.

Additionally, middle-age women show the highest degree of boundary consciousness. During the period when out-group stylistic similarity may adversely affect their status in the village, they exhibit the least out-group stylistic similarity of any cohort. Women ascribe low status to potters who make their bowls like women in the opposite faction; there is a significant

negative correlation between a woman's age-corrected status and her out-group stylistic network similarity ($r = -0.488$, $p = 0.018$, $N = 23$).

Life Stages and Shifting Strategies of Signification

Pottery style cannot be explained simply in terms of who taught whom during different stages of life, a single dominant mode of transmission, nor, for that matter, random copying errors. Yet each of these factors surely provides a partial explanation for variation in material culture. We need to continue to build our models, humanistic and empirical, of learning and transmission, and test them in different cultural contexts. We argue that strategies of signification must be part of our models if we wish to understand material style as a marker of social boundaries. Additionally, it is important to consider that people shift their strategies throughout their lives, including their strategies of signification, as they gain competencies in many arenas and their identities as social persons change.

Overall, the analysis shows that the influence of close matrilineal kin on the pottery style of women is very strong for all age groups in Conambo. However, potters employ different strategies of stylistic behavior, as they acquire competency in recognizing stylistic symbols of group membership, widen their participation in political life in the village, and then become senior members of the group. These strategies of conformity and nonconformity contribute to variation in pottery design in the village (see Graves 1985 for a comparative case). Furthermore, these strategies are consequential; women in Conambo whose pottery style is influenced by potters in the opposite faction have lower status than expected for their age, consistent with findings elsewhere that use of out-group markers and signification of out-group membership is likely to evoke discriminatory negative attitudes (Nettle and Dunbar 1997).

Young potters tend to imitate the painted style of close matrilineal kin and older high status women. They are still learning and acquiring the competencies of mature adulthood. They do not yet fully recognize the stylistic markers of women in their own ethnic faction, yet they produce painted pottery that is readily identifiable as in-group pottery, because they imitate the painted styles of older women in their own faction.

Additionally, young women distinguish themselves stylistically from their mothers' generation of potters, whom they will displace politically in the coming years. Thus, we see discontinuity between the painted style of the younger potters and the middle-age potters, consistent with the expectations of dynamic tension, discontinuity, and change predicted to accompany the displacement of middle-age members by younger members of a community of practice. Likewise, the tension inherent in this process of separation and stylistic discontinuity is expectable based on life history theory, which anticipates the conflicts of interest that arise between generations as younger women seek to establish their own identities, status, and households independently of their mothers, at the same time that their mothers seek to maintain their daughters as valuable allies and contributors, economically, socially, and politically, to their own extended family households.

Middle age is the time when the influences on women's pottery designs vary widely. Relationships within her own cohort of close kinship, extended kinship, and marriage, rather than status, increase in importance in a woman's pottery designs as she matures. Thus, we see evidence of women's widening participation in their communities of practice in the painted style of their pottery bowls, as they strengthen and widen their alliances within their own cohort. This is a life stage when potters are actively engaged, competitive, and central in community politics. They recognize pottery style as a marker of group membership in the two ethnic factions. They shift their alliances from older high status women toward women of their own age cohort, expanding their political networks to include more distant kin. The styles of their pottery beer bowls signify this shift.

Old age is a time when potters pay less attention to the painted designs of women in the opposite faction, consistent with their movement away from their positions of political centrality to the peripheries of their factions. As senior members of the group, they maintain their positions of high status, their knowledge is important, they are allies to young women, and all women in their group pay attention to their pottery designs and imitate them.

Our previous studies demonstrated two strategies by which women signify their political alliances in the painted style of their beer bowls in Conambo (Bowser 2000, 2002). Women with strong in-group alliances

paint bowls in ways that signify their factional membership clearly, while politically intermediary women paint their bowls ambiguously, combining stylistic attributes in innovative ways. This study, too, indicates that stylistic conformity and nonconformity represent different strategies of signification and alliance building. Here, we integrate the axiomatic assumptions that the early learning context, kinship, and status also are important contributing factors in explanations of stylistic continuity and social boundaries. More importantly, this study shows that women's stylistic strategies and competencies may change through their lives, consistent with different stages of life history and the developmental cycle of their communities of practice, and patterned variation in pottery style may be understood in these terms.

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