STYLE AND SOCIAL INFORMATION IN KALAHARI SAN PROJECTILE POINTS

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The results of a study on the relationship between stylistic variation in Kalahari San projectile points and aspects of San social organization are summarized. Five issues relevant to archaeology are discussed in light of the San data: (1) stylistic behavior and the different aspects of style, (2) which items of material culture carry social information and why, (3) which attributes on San projectile points carry social information, (4) what the results of the analysis of stylistic variation in projectile points imply for current methods of stylistic analysis and interpretation, and (5) the correspondence between style in San projectile points and San organization.

THE SCENE IS FAMILIAR. A lonely scout outside a circle of covered wagons hears a rustle, then an arrow pierces the side of a covered wagon. He pulls it out and with a quick professional glance identifies the tribe of the man who shot it. This banal Hollywood scene is the envy of archaeologists—to be able to pick up an artifact, identify it at glance, and interpret its meaning. Unfortunately, the procedure for archaeologists is more tedious. After excavating the point they must try to place it in time, measure it from every angle, and determine if it comes from a certain population of projectile points. Even if they can discern different populations of points, interpretation is not straightforward. The difference could be temporal, functional or stylistic, and even if it is the latter, the information that it contains about intergroup relations is not unambiguous. The scout has knowledge about three factors that are poorly understood by ethnographers and archaeologists: (1) which items and which variables on these items carry social information, (2) what conditions bring about the use of certain items of material culture to transmit messages about social relations, and (3) how different patterns of stylistic variation over space correspond to intergroup and intragroup relations.

Recently a number of ethnoarchaeological studies have concentrated on the above problems (Crosby 1977; David 1972; David and Henning 1972; Deetz 1965; Friedrich 1970; Hardin 1979, Hodder 1978, 1979; Hodder, ed. 1978; Stanislawski 1978; White et al. 1977; Wobst 1977). Most of the results indicate that although social information is contained in material culture, the correspondence is not straightforward (Hodder 1978), and that archaeologists need to understand more about the principles that underly stylistic behavior. To gain some understanding of the above three factors in a hunting and gathering society, between 1973 and 1977 I made extensive investigations on Kalahari San intragroup and intergroup relations and corresponding stylistic variation in artifacts. Research was carried out in depth among the !Kung, and more superficially among the peoples of two other language groups, the !Xo and the Tshu-Khwe, the latter of which can be divided into several subgroups, among them the G/wi and the Nharo (see Figure 1). First, a complete inventory of the material possessions of each group was made, and later more extensive data were collected on projectile points and several items decorated with glass beads—headbands, belts, beaded bags, tortoise shell compacts, and pubic aprons. These items were chosen for more careful study, because they were the only ones still regularly made and used by most San in the study and were not significantly affected by the expanding handicrafts market in Botswana. Excellent current ethnographies are available for all groups studied. In this paper, I will concentrate on the results of the projectile point study.

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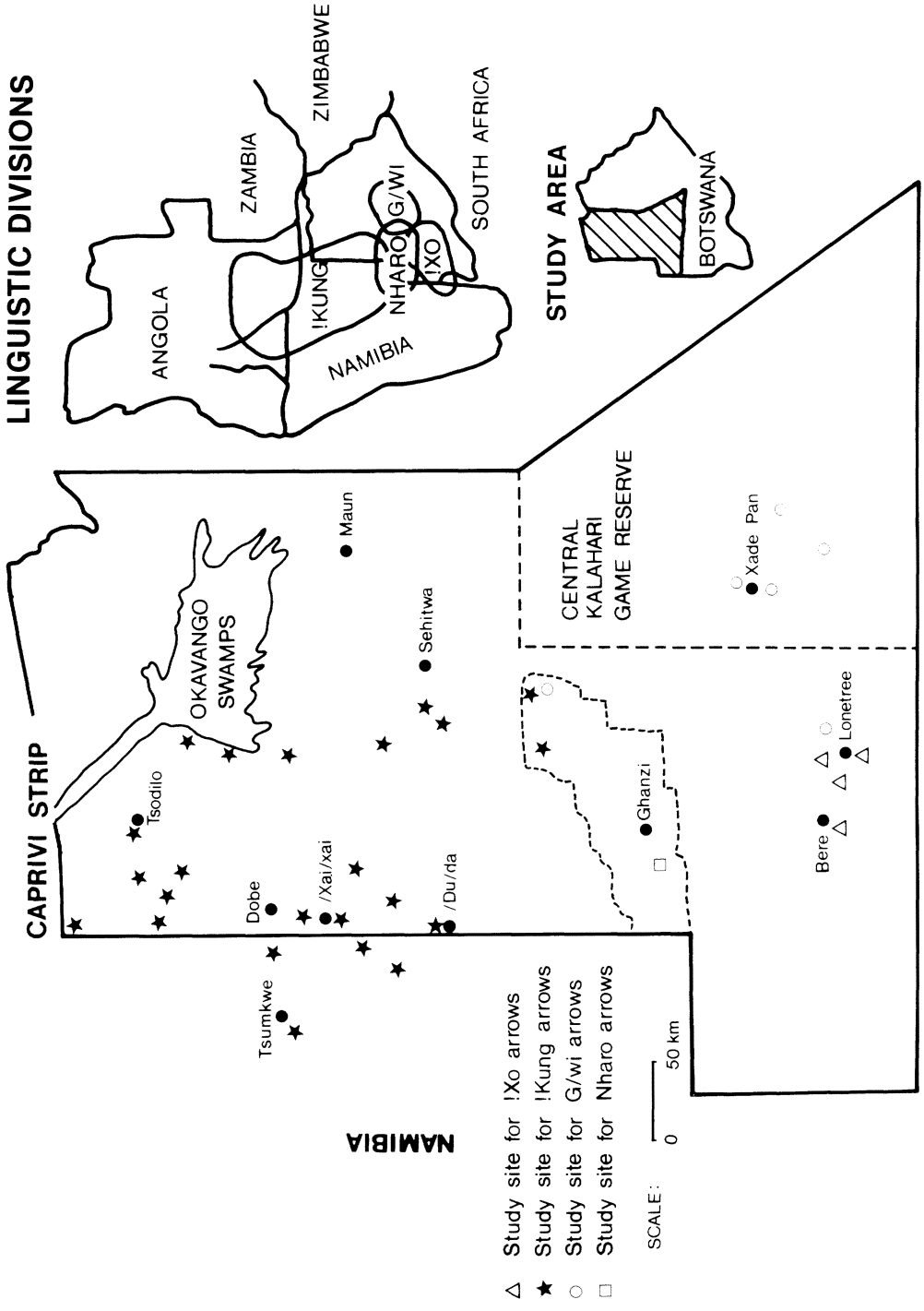

Figure 1. Map of the study area and sites at which arrows were recorded (left). Map of San linguistic groups included in the study (right).

ETHNOGRAPHIC BACKGROUND

The Kalahari San

The !Kung, the G/wi, the !Xo and the Nharo are remarkably homogeneous in their economic base, technological level, ideological systems and social organization, considering that they come from three mutually unintelligible language groups spread out over an area about half the size of France. They share about 90% of each others' material culture, a fact which facilitated stylistic studies as most items were comparable across groups. The Nharo will not be considered here as they are largely settled on the Ghanzi farms where bow and arrow hunting is uncommon.

The Kalahari San subsist on hunting and gathering and face the problem of high temporal and spatial variation in resources, as well as incongruity between the location of water and that of other resources during the dry season. The abundance of resources decreases gradually from the !Kung area in the north to the !Xo area in the south. The northern fringe of the Kalahari is relatively well watered and has an abundance of protein-rich staples, such as the mongongo nut, which are absent in the south. Resources in the north are highly localized and variable from area to area, making possible the absorption of local scarcity by regional abundance (Cashdan 1981), something that becomes less possible as one moves southward (Barnard 1979).

The Kalahari San have five levels of social organization—the nuclear family, the band, the band cluster or nexus, the dialect group, and the language group. In most cases, dialect groups are no longer distinct due to the mixing of San in farming areas. The nuclear family is the unit that is expected to provide itself with the basic daily subsistence, although it relies heavily on kinsmen in its own and other bands for assistance in food sharing, hunting, gathering, childcare, etc.

The band or camp among the San is made up of one or more cores of siblings, who are linked by marriage and their respective families (Heinz 1975; Lee 1979; Silberbauer 1972). Band size and seasonal patterns of aggregation and dispersal vary between groups according to the distribution of food and water in different areas (Barnard 1979). The !Kung band has an average size of 25 members (range 8–40) (Lee 1979; Marshall 1976), the G/wi band 22–60 members (Silberbauer 1972), and the !Xo band 35–45 members (Heinz 1975). The average !Kung band inhabits an area of 300–600 km^2 (Lee 1979), the G/wi band one of 450–1,000 km^2 (Silberbauer 1972), and the !Xo band an area similar to that of the !Kung band (estimated from Heinz [1979]). In all groups, frequent extended visiting brings about continuing short-term personnel changes, but a 10-year perspective on band membership among the /Xai/Xai !Kung (Wiessner 1977, 1981) indicates that band membership is relatively stable except when demographic events make a band too large or too small to be viable.

The major contrasts in organization take place at the level of the band cluster. The band cluster is weakly developed among the !Kung, although four to 10 bands do specify certain areas in which they have worked out a regular pattern of land use and converge on the same permanent waters during the dry season (Wiessner 1977). In the /Xai/Xai cluster, 42% of all exchange partnerships, which function largely to allow extended visiting (Wiessner 1977, 1981, 1982b), involved persons within the band cluster, and 68% involved partners in other clusters.

In contrast, the !Xo band cluster is an almost exclusive territorial unit composed of three to seven bands and is considered to be the ideal pool for wives (Heinz 1979). Seventy to eighty percent of all marriages take place within the cluster in contrast to about 50% among the !Kung. !Xo move freely within the cluster, but would not think of asking for permission to use the land of another cluster (Heinz 1979). A good part of the organizational differences between the !Kung and !Xo can be attributed to the distribution of resources mentioned above, which makes it advantageous for the !Kung to have more widespread ties and for the !Xo to limit access to their areas of landrights. The G/wi band cluster appears to be more distinct than that of the !Kung, but frequent visiting between clusters does occur (Silberbauer 1972, 1981).

Although San linguistic groups cover vast areas (Figure 1), !Kung, !Xo, and G/wi informants did see themselves as members of their own respective linguistic groups and had terms for these groups. Several factors hold linguistic groups together—exchange networks, intermarriage, male initiation rites and other ceremonial events, a shared language and universal systems of kinship

categorization which allow San to classify any other San in their language group by a kin term (Barnard 1978). All four linguistic groups had common borders, except for the !Kung and !Xo (Figure 1), and had frequent contact with one another. Relations varied along the borders from friendly to reserved, with only a few points where conflict occurred.

Kalahari San social organization can by no means be seen as being representative of hunting and gathering societies in general, as it is well recognized that hunting and gathering societies have a wide range of organizational variation. Those that are common today were not necessarily the most prevalent in the past (Wobst 1978). A number of recent studies have attempted to account for variation in social organization in hunter-gatherer societies (Binford 1980; Fox 1969; Gardner 1966; Testart 1980; Wiessner 1982a; Woodburn 1980). Three of these schemes complement each other and together cover the variation in organization that results from different strategies used in the productive process.

Woodburn (1980) groups hunter-gatherers into those for whom returns for labor are immediate and those for whom they are delayed, according to the amount of investment put into productive assets. The San have an immediate return system which implies that no continuity in group membership through time (a factor that has an important influence on style [Wiessner 1982a]) would result from joint investment into productive assets that yield delayed returns.

Binford (1980) sees hunter-gatherer variation as the result of strategies of organization around resources. On one end of a continuum are foragers who "map onto" resources through frequent moves and adjustments in group size, and on the other, strategists, who supply themselves with specific resources through logistically organized task groups sent out to procure resources in bulk. The San fall on the forager end of the spectrum, suggesting that neither cooperation in strategic activities nor the delayed returns of bulk storage would promote stable personnel membership in a group. On the contrary, groups are flexible in order to distribute themselves effectively over available resources.

I have suggested (Wiessner 1982a) that much of the diversity in hunter-gatherer societies stems from different strategies to reduce risk: (1) prevention of loss, (2) transferal of risk or loss from one group to another during, for example, ceremonial events or warfare, (3) storage, and (4) individually or centrally organized pooling of risk. The last is a social method of reducing risk in which risk is distributed over the broader population so that loss is made more predictable and shared by those in the pool. Strategies for reducing risk affect the continuity of personnel membership within a group, since returns for investments are delayed. The San fall clearly at one end of the spectrum and reduce both short-term and long-term risk primarily through individually organized pooling. As a result, groups have some continuity of personnel within a core of kin who cover each other's daily losses, as well as within the population that pools risk.

Finally, Fox (1969) has discussed the "enclavement" of hunter-gatherers within a wider economic system. He attributes highly migratory individuals, residential groups lacking in formal kinship links, and lack of extensive sharing between family groups to "fragmentation of the society into individually competitive units each geared to external trade or barter exchange" (Fox 1969:142). Although there are many San groups who are "enclaved," except for the San in the Ghanzi area, those in this study still had their primary dependencies within their own society.

STYLE

The definition of style that I will use here is *formal variation in material culture that transmits information about personal and social identity*. Following Wobst (1977) and Conkey (1978, 1980a), style will be seen as a means of transmitting information; thus it is subject to selection and may confer an adaptive advantage on its users, as should be obvious from the opening example. However, the concept of style used here will be limited to that which transmits information about identity, because formal variation in material culture can include stylistic messaging that stems from several behavioral sources (Wobst 1977:325), and the understanding of stylistic variation depends heavily on understanding the behavior that generates it (Wiessner 1982c).

Research centering on personal and social differentiation has provided some concepts that are

relevant to understanding stylistic behavior. Individuals have been shown to view themselves as entities with certain characteristics that make up their sense of identity—identity that stems from two sources. Tajfel (1978) and his associates argue that sense of identity is largely derived from membership in different groups and identification with these groups. In contrast, Codol (1981), Lemaine et al. (1978), Zavalloni (1973, 1975), and others argue that an important part of identity is established through individuals' striving to differentiate themselves from similar others, leading to a strong impetus for creativity and innovation (Moscovici 1968). Advocates of both approaches agree that the mechanism by which identity is developed and altered is the process of social comparison, through which the self is differentiated from others and the ingroup from the outgroup (Lemaine et al. 1978; Festinger 1954; Tajfel 1978; Turner 1978; Codol 1981). In this process, individuals evaluate themselves against others in order to achieve a positive self-image and self esteem, and they have a strong desire to project this image to others in order to attain self-recognition.

There are many channels through which persons can project various aspects of their identities to others, such as dialect or nonverbal behavior; one of these is style. Style, in transmitting aspects of personal and social identity, will be affected by the social comparison process and should be subject to the conditions that determine its outcome, leading to expressions of similarity or differentiation. In interviews with San, the social comparison process appeared to be the major factor affecting stylistic choices. Most San interviewed compared not only their artifacts with those of others, but expanded discussions to compare themselves with others (Wiessner 1982c).

As there are both personal and group facets to identity, discrete corresponding aspects of style are appropriate for transmitting messages relating to these. Here I will suggest that at least two very distinct aspects of style exist and that these each have a different referent, contain very different kinds of information, may be affected by different conditions, generate a different pattern of variation, and thus require different methods of analysis. Both aspects appear frequently in the archaeological literature, but their separation has not been made explicit; explicitness is necessary in order to derive social information from style successfully.

Emblemic Style

The first aspect of style I will call emblemic style, that is, *formal variation in material culture that has a distinct referent and transmits a clear message to a defined target population* (Wobst 1977) *about conscious affiliation or identity,* such as an emblem or a flag. Most frequently its referent will be a social group and the norms, values, goals or property associated with this group, and thus it will be used to express objective social attributes of identity (Zavalloni 1973: 253). Because it has a distinct referent, emblemic style carries information about the existence of groups and boundaries and not about degree of interaction across or within them. Emblems can also be used to convey other messages such as proscription and prescription (Wobst 1977), and these can only be separated from messages about identity by examining the realm of distribution of an emblem and its associated artifacts.

Through time, emblemic style would be expected to change gradually only with errors in reproduction and to undergo rapid change only when its referent changes or when it is detached from its referent (i.e., see Cleland [1972]). Likewise, as Wobst (1977) has mentioned and Conkey (1980a) has further discussed, artifacts carrying this kind of stylistic message lose their signaling neutrality when some members of their class become bearers of other stylistic messages. Thus, emblemic style would tend to be an all or nothing occurrence which Conkey has argued should first be used "with the appearance of a non-continuous component in the human social world" or "the need for dealing with boundaries per se" (Conkey 1980a:230). Because it carries a distinct message, emblemic style should undergo strong selection for uniformity and clarity (Wobst 1977), and because it marks and maintains boundaries, it should be distinguishable archaeologically by uniformity within its realm of function. Finally, Wobst has predicted that this kind of stylistic signaling will be poorly developed in hunter-gatherer societies because few messages are sufficiently replicative to justify the investment in energy and matter required by stylistic communi-

cation, and/or because in societies with limited social networks, most of these messages are already known.

Assertive Style

The second type of stylistic variation, which corresponds more closely to the social interaction view of style in archaeology (Deetz 1965; Hill 1970; Longacre 1970; Plog 1980; Voss 1977; Whallon 1968), I will call assertive style. Assertive style is *formal variation in material culture which is personally based and which carries information supporting individual identity,* by separating persons from similar others as well as by giving personal translations of membership in various groups (Wiessner 1982c). It has no distinct referent as it supports, but does not directly symbolize, individual identity and may be employed either consciously or unconsciously. For example, it can be used to transmit a message that says "I am myself" without directly saying "I am not like you." A San girl may wear beads in a certain way to express her identity without saying that she is clearly looking for a spouse or committing the indiscretion of saying that she is prettier than others. Today, San men wear a variety of store-bought hats, often buying ones of the same style, but giving them personal alterations so that they express affiliation with others who are "modern" and have access to cash income and yet maintain an element of personal identity.

Crook (1981) has related the desire of individuals to create a positive self-image, and to present this to others in order to achieve social recognition, to the evolution of reciprocal altruism. He argues that persons who could present such a positive image would induce others to engage more willingly in reciprocal relations. It is possible that assertive style could have originated to serve such a need, as it is a suitable means of presenting recurrent information (Wobst 1977); the extensive energy and matter investment associated with it would not necessarily be a drawback, but an indicator of initiative and industry. Desire to present a positive image to partners in reciprocity and to members of the opposite sex was the most frequent motive for stylistic effort given by San informants (Wiessner 1982c). Thus, unlike emblemic style, assertive style would be expected to be reasonably well developed among hunter-gatherers. If Crook's hypothesis is correct, one would expect assertive style to appear first in the archaeological record with the origins of regular, delayed and unbalanced reciprocal relationships.

Unlike emblemic style, assertive style supports but does not directly symbolize individual identity. It has no distinct referent and consequently has the potential to diffuse with acculturation and enculturation, providing a measure of interpersonal contact for archaeologists. As a result, it can contain information that is complementary to that of emblemic style by giving a measure of contact within and over boundaries. Whether it carries such information, however, is a complex matter that depends on a number of decisions of the maker and on the natural, functional, and social properties of the object such as:

(1) realm of function and suitability for carrying stylistic messages. Whether or not an item with stylistic content is a good indicator of contact depends on its role within the society. Artifacts that are quickly made and discarded soon after use draw little notice and would be expected to be poor indicators of contact.

(2) ease of replication and complexity of design. As Friedrich (1970) has pointed out, stylistic features are good or bad indicators of contact depending on their complexity and ease of replication. Replication of simple design elements over a large area may tell little more than that some contact exists, while that of more complex design configurations will be more sensitive indicators. Natural or functional properties of an artifact may limit stylistic features to a few basic forms, making these artifacts poor indicators of contact. Likewise, social decisions may cause designs to remain simple.

(3) the density of an artifact containing style in the population. If styles are to spread with enculturation and acculturation, they will only do so if the artifacts that bear them are decorated frequently enough so that their styles are seen by others and can spread. The frequency of decoration of a given item will depend heavily on decisions made by the makers when comparing

the artifacts with others in their class. For example, if the outcomes of comparisons are to differentiate competitively, styles will develop rapidly, and a large number of items in a given class will have stylistic content. However, if the outcomes of decisions are intended to avoid duplicating objects decorated by others, but rather, to find other vehicles for self-expression, then density of items that contain style in a given class will be low. The latter situation is typical for the San (Wiessner 1982c), and, as will be discussed later, appears to be attributable to socioeconomic factors.

Discussion

It should be added that style in artifacts which does not meet the criteria for carrying information about contact may hold other valuable information for archaeologists. For instance, in an innovative analysis, Conkey (1980b) recently has used designs on engraved bone and antler as one indicator of aggregation sites.

Assertive style would be expected to have a profile of change through time different from that of emblemic style because it is not tied to a distinct referent. Because its rate of change depends on innovation and diffusion, profiles of change through time may provide important indicators of socioeconomic changes (Kroeber and Richardson 1940), such as the increased need to signal personal differentiation or a switch to an economy in which there is economic incentive to produce new styles to sell more products. With crafts specialization, styles may be altered to serve the needs for personal expression of both the craftsperson and buyer.

In principle, assertive style should be distinguishable in the archaeological record from emblemic style, which has a discrete distribution, while the distribution of assertive style ranges from random to clinal depending on the above-mentioned conditions. Needless to say, in practice, factors such as patterns of discard and multiple occupations of a site can make the two difficult to separate. Unlike emblemic style, assertive style would not be expected to be an all or nothing phenomenon, as persons can choose very different items with which to express their identities.

Finally, the dividing line between the two aspects of style can be a thin one, as an element of style that is found frequently in a population may become a group emblem during periods of stress or competition. Both types of style may also occur on a single item. For example, the Herero of Botswana mark their ethnic identity by a very distinct form of long dress crowned by a turbanlike headdress. They stand out from Tswana women in the same village who wear knee-length, shirtwaist dresses. However, within this basic dress form, stylistic changes reflecting personal preference occur in features such as neckline and fabric. These latter undergo stylistic changes that crosscut ethnic boundaries, often originating in the towns and gradually spreading to more remote cattle posts. Thus the emblemic style in basic dress form gives information about ethnic boundaries, and assertive style in other features gives a measure of degree of contact across boundaries.

ITEMS CONTAINING STYLE

The literature offers two theoretical bases for choosing items for stylistic analysis. The first is based on the assumption that an item carries a stylistic message because it is one that is naturally important to social identity (Rick 1980; Wobst 1977) and/or is efficient for transmitting such a message. The second maintains that the greater the number of transformational stages an item goes through, the greater its chances of bearing social information, because each stage provides an opportunity to add social expression. This view has been explicitly stated by Wilmsen for projectile points: "Projectile points may serve as diagnostic items not because they perform esoteric or especially significant extractive functions . . . but because they are products of manufacturing processes that inherently amplify morphological differences" (Wilmsen and Roberts 1978:26–27).

To learn which factors influence stylistic investment, items of San material culture were plotted according to type and frequency of stylistic content by manufacturing time and useful lifetime. Following Wilmsen's predictions, stylistic content would be expected to be correlated with manu-

facturing time and, according to a suggestion made by Wobst concerning the cost of stylistic messaging, with useful lifetime. Presumably the longer the lifetime of an item, the higher the probability that its message would reach others. When stylistic content in a given item is not correlated with these factors, then one can assume that other factors play a role. Stylistic content was measured in two ways: (1) whether or not an item varied in type or form over space, and (2) percentages of an item that had additional decoration (engraving, carving, or beadwork). Decorative items such as jewelry were excluded from the analysis, as they carried stylistic messages by definition, but their manufacture time and useful lifetime varied greatly.

The results of the analysis showed an association between stylistic content and both manufacturing time and useful lifetime. Items that were manufactured within minutes and discarded soon after use, such as stirring sticks, bark spoons, wooden forks or hammerstones, had little if any stylistic content. Artifacts that took a number of hours to manufacture and that were kept for a year or more—spears, knives, clubs, awls, musical instruments—showed considerable variation in their forms. Items that bore additional decoration more than 50% of the time were most frequently items of clothing as well as everyday items that were highly visible in the group—beaded handbags, bone pipes, tortoise shell cosmetic compacts. Interestingly, there were virtually no items that required several hours to manufacture and had a long useful lifetime that did not manifest style at least 5–10% of the time, even though their visibility and realm of function did not make them particularly suitable for stylistic messages. Many San express complementarity and avoid competition by elaborately decorating some item that is decorated by few others in their group.

There were two categories of exceptions to the above relationship between stylistic content and manufacturing time and useful lifetime. The first was made up of items that took a long time to manufacture but had little stylistic content because of limitations imposed by materials and/or function—carrying nets, dance rattles made of cocoons. The second consisted largely of items carrying emblemic style which were manufactured rather quickly in comparison to other San items, but nonetheless manifested stylistic content in the form of group identity markers or markers of religious objectification—oracle discs, arrows, and wooden forks used in the puberty ceremony. However, other items signaling group affiliation, such as public aprons, go through a complex manufacturing process. It appears, then, that factors which make artifacts naturally important to social identity are dominant in cases where an item carries a distinct emblem. To illustrate this point, I will discuss the role of the poisoned arrow, which has a short useful lifetime, as well as a short manufacture time relative to other San artifacts, and yet is rich in style.

Kalahari San Projectile Points

San projectile points combine a 10,000-year-old principle (Clark 1970)—the use of a small point to penetrate the animal followed by a heavily poisoned shaft to kill—with new materials. The use of metal began approximately 100 years ago, reaching all groups in the study area within the last 20–30 years. Consequently, present-day variation in points corresponds to recent organization. In the /Xai/Xai area, men in their fifties and sixties talked about their fathers' experimentation with different styles of larger metal points when they first received wire through exchange networks. These men did not recall making points of other styles themselves, except for reverting to the original bone points when metal was not available. Apparently then, the current !Kung metal projectile point was developed and stabilized rather quickly. This is supported by the fact that 16 points collected by the Marshalls in 1952–1953 show no significant differences from those currently used in the area. Today, hunting with guns or on horseback with spears is rapidly making the bow and arrow obsolete.

Although San arrows are kept tip down in their quivers out of the reach of children, their visibility, and thus suitability for stylistic messaging, is greatly enhanced by their role in the !Kung exchange system called "hxaro," exchange that underwrites relationships of mutual sharing, assistance, and extended visiting (Wiessner 1977, 1981). Arrows are widely exchanged, and of sixteen hunters interviewed at /Xai/Xai, four had only their own arrows in their quivers, four their

own plus those from one other hunter, four had arrows from two other hunters, and the remaining four arrows from three or more other hunters (see also Lee [1979:249]). Of 236 !Kung arrows recorded, 57% were made by the hunter himself, 26% were received from exchange partners living 1–20 km away (including camp members), 3% were received from partners living 20–60 km away, 13% from partners living 60–100 km away, and 1% from partners living 100–200 km away. The fact that more exchanged arrows come from partners living 60–100 km away reflects the !Kung's preference for exchange with persons in areas with complementary resources, rather than with persons in the closest areas (Wiessner 1977, 1982b). The G/wi and !Xo also claim to exchange arrows frequently.

Socially, politically, and economically, San arrows have greater import than any other single San artifact. Their primary function is a positive one—procurement of meat which makes up about 45% of the San diet (Lee 1979). Poisoned arrows also carry a negative association, as the instruments responsible for most murders (Lee 1979). San arrows have strong social import because of their role in meat sharing. Among the San, the arrow maker either receives a large portion of the meat or is responsible for the distribution; thus San give and lend arrows in ways that fill needs and solidify socioeconomic ties (Lee 1979; Marshall 1976; Wiessner 1977). Arrows also have significance in boundary maintenance. Because many wounded animals are not pursued, animals shot in one area may die in another, bearing the arrow of the hunter. The !Kung do discuss this possibility and maintain that if foreign people with different arrows are hunting nearby, eventually they would find out. Finally, arrows play an important role in San myth and folklore (Biesele 1978) and are used for hunting the eland, the animal that is the unifying symbol in San culture (Lewis-Williams 1981).

STYLISTIC ATTRIBUTES

For the analyst, a task perhaps even more difficult than choosing items that carry social information is isolating the stylistic attributes on these items. Voss (1977) has emphasized this problem for lithic artifacts, stating that the study of style in lithic artifacts may be even more difficult than in pottery because the former bear little obvious decoration. Consequently, stylistic variation is often considered to be that variation which cannot be attributed to other factors such as materials, function, or technology (Binford 1965; Close 1979; Rick 1980; Voss 1977; Wilmsen and Roberts 1978). Among studies using this approach, however, the choice of stylistic attributes follows no consistent criteria and varies from the selection of attributes that are most obviously nonfunctional and relevant to shaping an item, such as certain types of retouch (Rick 1980; Voss 1977; Wilmsen and Roberts 1978) to selection of all variables that cannot be experimentally shown to be solely attributable to nonstylistic function (Stiles 1979). Furthermore, Sackett (1972) has stressed that important social information in lithic artifacts can be contained in attributes that might be perceived by the analyst as purely functional elements. In this section, I will examine methods of identifying stylistic variables and deriving information from them in light of stylistic variation in San projectile points over space.

The San projectile point has five component parts, as shown in Figure 2. The basic form is the same for all San groups in the study (Heinz 1975; Lee 1979; Silberbauer 1981) and was used by all groups for the same range of game animals. Aside from the blunt wooden arrows used for bird hunting, this arrow is the only one used today and has no variation in form or size according to the animal hunted. Of 55 !Kung hunters interviewed, 7 (13%) did not know how to make arrows and received all of their arrows through exchange. Of the remaining, 49 (87%) said that they had learned to make arrows by watching their fathers or some other close relative.

The tip of a projectile point is hammered into a roughly flat triangular blank from a piece of heavy gauge fencing wire. The !Kung and !Xo either hammer the tip cold or heat the wire first, while the G/wi use a bellows system to heat the wire to higher temperatures (Silberbauer 1981). The blank is then filed into the desired shape with a metal file, and points are often refiled to remove rust. The gauge of wire used varies but has no effect on the final size or shape of the point.

The poisoned shaft is composed of the same piece of metal wire as the tip and is wrapped with

Figure 2. A Kalahari San arrow.

sinew, coated with poison, and glued with resin to a stem joint. This unit is connected to the main shaft by a link carved out of giraffe rib or wood. The link is inserted into the main shaft with a firm but detachable connection, so that once the arrow is in the animal the mainshaft can fall to the ground, leaving the poisoned segment to work. When all materials are assembled, each arrow requires about 20 minutes work, 5–10 minutes of which are used to form the tip.

Poisoned arrows are shot with a bow 80–100 cm long which has a range of about 25 m (Silberbauer 1965; Heinz 1975). When well placed, they can kill within six hours antelopes weighing 100 kg (Lee 1979), but Yellen and Lee (1976) estimate that as many as 50% of animals shot are not recovered. Arrows are retrieved when possible. For twelve arrows examined after a kill, three could be reused directly and nine were subsequently reworked to repair the damaged tip. Since in the vast majority of cases retrieved points are reworked and reused, most arrows left in the archaeological record would be stray finds, and few points would be found on living sites.

Choice of Attributes

The attributes used in the analysis were chosen primarily according to what the !Kung considered to be distinguishing features. On the basis of these, all !Kung felt that they could pick out their own arrows after careful scrutiny, and 11 out of 16 hunters interviewed felt that hunting and exchange partners could also recognize each other's arrows. Of 55 !Kung interviewed in 5 areas, 17 said that they could distinguish their own arrows but could not exactly say how. Of the remaining 38, the shape of the barbs was mentioned 29 times as being distinctive, and body shape was mentioned 36 times. Shape of the distal point or tip, symmetry, sharpness, direction of filing, and length of link were each mentioned by one or two hunters. The four G/wi and six !Xo hunters interviewed gave similar distinguishing features but also included size.

Nine out of 55 hunters interviewed expressed pride in their arrow making abilities and stated that they were recognized by others as being "the professionals." They were not necessarily the best hunters. These skilled arrow makers were much more enthusiastic than others about discussing the details of their craft, concentrating their discussions on precision and quality, not on the making of specific shapes. Other hunters readily admitted that they "just made arrows" or that they made arrows poorly. In separating their own arrows from those made by others in their quivers, informants seemed to pay more attention to quality than to the above-mentioned attributes, despite having given shape of base and body as distinguishing features.

The variables and attributes chosen to describe tip, body, and base shape are given in Tables 1 and 2. Symmetry was used as a measure of quality, and other variables recorded were: length of each component part of an arrow, details of filing, methods of wrapping the various parts with sinew, and decoration of the link shaft. All arrows were carefully photographed in the field, and a sample of one to five arrows was purchased from each hunter. The /Xai/Xai and Tsodilo samples were measured in the field, and !Kung arrows from other areas were measured from the purchased sample. All observations from the larger G/wi and !Xo arrows were made from the photographs because of a taboo against women touching arrows. These coincided well with measurements made on the purchased sample. The taboo caused no problem among the /Xai/Xai and Dobe !Kung, who were well seasoned in dealing with anthropologists and thus eagerly awaited the slightest drop in hunting success, so that they could come to me and collect domestic foods in compensation for the animal they failed to kill.

Table 1. Stylistic Variation in !Kung San Projectile Points by Individual.

Person	Size (mm)[a]						Distal Point Shape[b]			Body Shape[c]								Base Shape (mm)[d]							
	L		W		W/L		1	2	3	cv	cv	st	st	cc	st	asy	sy	indented			st	convex		asy	sy
	x	*sd*	x	*sd*	x	*sd*					st		cv		cc			1.0	0.5	0.2		0.2	0.5		
A/ Kumsa N = 7	11.0	0.0	7.3	.5	.67	.04	7				7						7	7							3	4
B/ G/au N = 14	9.8	1.0	7.3	.6	.75	.06	6	7	1	9	2	3				6	8		3	4	2	5		10	4
C/ Debe N = 9	10.0	1.1	7.7	.7	.76	.06	1	6	2		1	5	3			1	8	2	7					9	
D/ Kaishe N = 9	7.6	1.7	7.1	.9	.97	.15	1	7	1		1	6			2	8	1			1		3	5	9	
E/ T/ashe N = 11	8.8	1.7	6.9	.7	.80	.12	4	7		1	5	2	1	1	1	6	5	2	5	2		2		7	4
F/ G/unta N = 8	9.0	1.3	7.4	.5	.84	.13	1	7		1	2	5				2	6	1	6	1					8
N = 10	8.4	1.4	7.3	.7	.88	.07	2	6	2		2	8				2	8	2	5	3				1	9
N = 6	9.0	0.6	7.2	.4	.80	.07	2	4		1	2	3					6	2	3			1		6	
G/ Krau N = 10	10.1	1.1	7.0	.7	.70	.09	5	5		2	3	5				2	8		3	7				2	8
N = 6	9.7	1.2	7.3	.8	.77	.10	5	1		1	2	3				3	3			1	5				6

[a] L = maximum length, W = maximum width.
[b] Distal point shape equals (1) very sharp, (2) sharp, (3) rounded.
[c] Body shape equals cv = convex, st = straight, cc = concave, cv/st = upper body convex and lower body concave; sy = symmetric, asy = asymmetric.
[d] Base shape equals indented, straight, convex, degree of indentation measured from a base line drawn between the tips of the barbs.

Table 2. Stylistic Variation in San Projectile Points by Band Cluster and Linguistic Group.

Group	Size (mm)[a]						Tip Width[b]		Distal Point Shape[c]				Body Shape[d]							Base Shape (mm)[e]						
	L		W		W/L								cv	cv	st	st	cv	cv	cc	indented			st	cv	indented
	x	sd	x	sd	x	sd	x	sd	1	2	3	4		st		cv	cc #1	cc #2	st	1.0	0.5	0.2		0.2	(mm) x	sd
!Kung																										
Tsodilo n = 20	9.9	1.4	7.5	1.2	.76	.10			7	10	3		5	10	1		4			1	7	3	6	3		
Dobe n = 20	9.7	1.3	7.2	0.8	.75	.09			7	9	4		8	7	3				2	4	2	6	3	6		
/Xai/Xai n = 20	9.7	1.1	7.3	0.7	.77	.11			8	10	2		5	9	3		1		2	2	6	2	3	7		
!Xo																										
Bere n = 24	22.4	3.1	14.8	1.6	.67	.08	6.0	.5		8	16			3			17	4							2.1	.2
Lonetree n = 17	24.3	3.7	15.8	1.6	.66	.11	6.8	.9		4	5	8	13	3			1								2.4	.5
!Kung n = 60	9.8	1.3	7.3	1.0	.75	.09			22	29	9		18	26	7		5		4	7	15	10	12	16	.3	.3
!Xo n = 41	23.2	3.4	15.2	1.6	.67	.09	6.3	.8		12	21	8	13	6			18	4							2.2	.4
G/wi n = 28	24.6	4.9	13.5*	2.3	.56*	.08	3.1*	.7	21*	7			1		3	2	1		21*						3.2*	1.0

[a] L = maximum length, W = maximum width.
[b] Tip width: measured 5 mm down from distal point.
[c] Distal point shape: (1) very sharp, (2) sharp, (3) rounded, (4) very rounded.
[d] Body shape: cv = convex, st = straight, cc = concave, cv/cc #1 = slightly convex upper body and concave lower body, cv/cc #2 = markedly convex upper body and concave lower body.
[e] Base shape: indented, straight, convex; indented (mm): number of mm indented from a base line drawn between the tips of the barbs.
* Statistically significant difference between G/wi and !Xo points at the .05 level.

Stylistic Variation at the Level of the Individual

The upper half of Table 1 gives variation in projectile points by individual for five !Kung from different bands at /Xai/Xai. Individuals A through E are listed according to their abilities in arrow making as estimated by themselves and others. Two results stand out in Table 1. First, the arrows of a skilled craftsman like Kumsa (A) are much more uniform and symmetrical than are those of an unskilled one like Tashe (E), with the arrows of the average !Kung hunter falling between these extremes. Second, each hunter's arrows have certain characteristics that make them slightly different from those of other hunters, but there is enough variation within each hunter's set so that at least a third of the arrows could fit easily into that of another.

In the other attributes screened, there were no statistically significant differences between sets due to the wide range of variation within each set. The !Kung say that this variation is important, as they remember each arrow by its individual characteristics as well as by the shape of the point.

On 18 of 236 arrows recorded at /Xai/Xai (8%), the link shaft was decorated with one of three engravings—circles extending around the link, short parallel lines extending down the link, and v-shaped engravings. In the Dobe and Tsodilo areas similar markings were found on about 3% of all arrows, but not on those from other San language groups. Interviews about these marks revealed that they had no particular meaning but were put on an arrow when the maker thought that it was beautiful, lucky, or when he was entertaining others who were watching him make arrows. These engravings did not carry information about degree of interpersonal contact because of their infrequent occurrence.

To see if individuals had regular styles of making arrows over time, sets of arrows made by the same person at different times were compared. The results for two hunters are given in the bottom half of Table 1. When asked if they always made their arrows in the same way, both hunters said that when making a new set, they tried to make all points like the first one they made that pleased them that day. Subsequent observations of arrow making supported this. Of G/unta's three sets, all made within six months, the first and the second are similar, but the third has very asymmetric sides. In contrast, base shape of the arrows in Krau's (D) two sets are different. In the following year I observed Kumsa (A) making a set of 23 very regular arrows, but this time with straight bases. He said that he had forgotten what those in his last set were like. Thus a hunter tries to make the arrows in each set alike but does not maintain a characteristic style through time.

Stylistic Variation at the Level of the Band

To look at stylistic variation at the level of the band, three to four arrows were randomly chosen from hunters in each of three bands at /Xai/Xai, combined into one sample, and compared to those from the other bands. T-tests and chi-square tests showed no significant differences between bands at the .05 level. The sample of points from each band then represented the sum of individual differences of hunters in that band, with no outstanding features being shared by all members. These data are not included in the tables as they yield no significant results.

Stylistic Variation at the Level of the Band Cluster

For analysis of stylistic variation by band cluster, a sample of 20 points was randomly selected from three clusters—Tsodilo (8 hunters), Dobe-Qangwa (17 hunters), and /Xai/Xai (13 hunters) (see Figure 1). The results are given in the upper half of Table 2. T-tests run on length, width, and width/length ratio for the Dobe; /Xai/Xai and Tsodilo samples showed no significant differences at the .05 level. Chi-square tests to test for differences in attributes describing tip, body, and base shape (categories were collapsed in a number of different combinations) also yielded no significant differences. Subsequently, the 16 arrows collected by the Marshalls in 1953 in the Nyae Nyae area, the 17 arrows collected from three hunters in the Sehitwa area, and the 6 arrows from

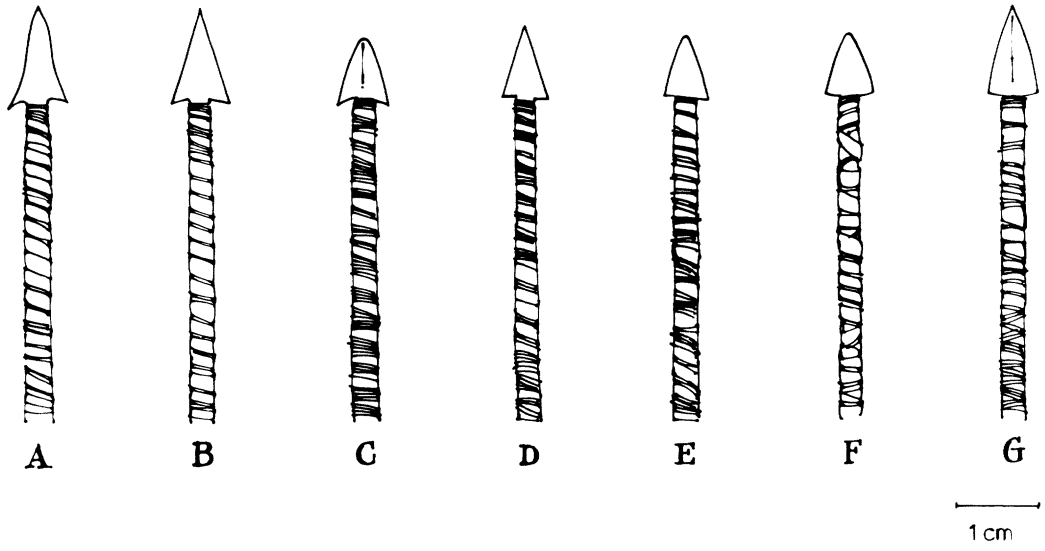

Figure 3. Range of variation in central !Kung San projectile points.

hunters in the Ghanzi area were compared to a random sample of arrows drawn from the present-day /Xai/Xai collection and were not found to be statistically different.

The above results indicate that there are no regionally specific stylistic features in !Kung arrows. In variables that set off !Kung arrows from G/wi and !Xo arrows, namely length and width of point, !Kung points are remarkably homogeneous. For instance, difference in mean length of points between band clusters is extremely small, from .2 to .3 mm, and the standard deviation of points within band clusters varies from 1.1 to 1.4 mm. To see if differences of 1 mm to 3 mm in length and width of points could be perceived by the San, seven hunters were individually presented with two points of different widths and lengths. They were allowed to handle them as long as they pleased, but were given only one at a time, so that they could not compare them side by side. They were then asked which was longer, wider, etc. For length, all informants answered "no difference" or "do not know" for a 1-mm difference, four out of seven correctly identified a 2-mm difference, and all informants could recognize a 3-mm difference. For width, results were similar. For tip and body shape, informants could discriminate between basic category differences with accuracy (i.e., sharp or rounded tip, concave, straight or convex sides), but not intermediate ones. For base shape, even the most minor differences, such as that between a .2-mm indentation and a straight base, could be recognized. For attributes other than size, there appears to be a greater range of perceived variation in points, although the different forms were not found in significantly different proportions between either bands or band clusters.

It is not possible to determine if there is a stylistic division between central and southern !Kung dialect speakers, as the latter are settled where bow and arrow hunting is obsolete. There does, however, appear to be a minor stylistic division between the central !Kung and the northern !Kung in Angola, with the latter having arrows with a 1:1 length/width ratio and extremely marked base indentations of 2–3 mm. I showed Guerreiro's illustrations (1968) to the /Xai/Xai !Kung, and two older hunters said that that was the way some men in their fathers' generation made arrows, indicating that they recognized the arrows as !Kung, but ones that differed from those made in the region today.

Sample sizes of arrows collected in !Xo and G/wi areas are smaller than those from the !Kung due to the fact that G/wi and !Xo have an average of four arrows per quiver in contrast with the !Kung's twelve, and because of the decline of bow and arrow hunting in these areas. Samples given for the !Xo and G/wi in Table 2 thus represent all arrows recorded, not a random sample of

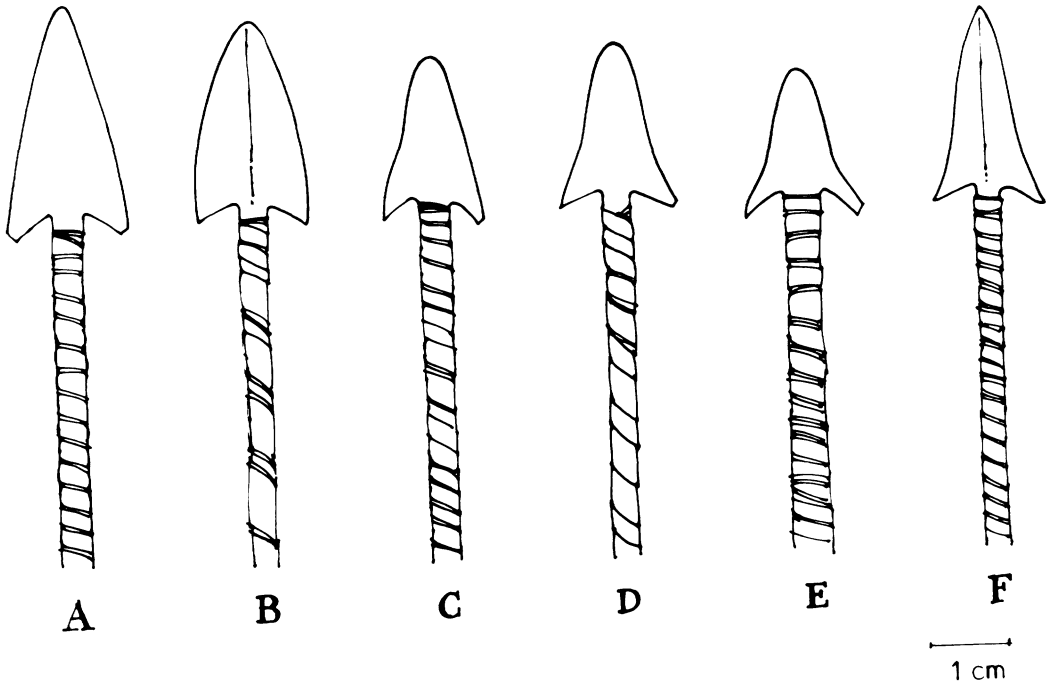

Figure 4. Range of variation in !Xo San projectile points.

arrows. Adequate samples could only be obtained to compare two band clusters among the !Xo, that at Bere (twenty-four arrows from seven hunters) and that at Lonetree (seventeen arrows from four hunters).

Statistical tests on variables (Student's t) and attributes (chi-square) yielded one significant difference at the .05 level between the two band clusters—a difference in body shape (Table 2). Arrows from the Bere cluster have largely convex upper portions and concave lower ones, yielding a bell-shaped point (Figure 4a-b), while those from the Lonetree cluster have convex or convex-and-straight body shapes (Figure 4c-f), with only four cases overlapping. The Bere !Xo recognized the Lonetree points as coming from !Xo "who are not our people," a phrase commonly used for !Xo of another band cluster (Heinz 1975). These results suggest that the first stylistic division occurs at the level of the band cluster among the !Xo and that of the dialect group among the !Kung.

Stylistic Variation at the Level of the Language Group

The bottom half of Table 2 shows the marked differences that occur in San projectile points between language groups. The !Kung arrows (Figure 3) differ from G/wi (Figure 5) and !Xo arrows (Figure 4) by size, the latter two being twice as large as the former with no overlap in range of variation. Because of this outstanding difference, other attributes were not comparble. Of the other attributes screened, each was highly variable and not significantly different from that of the !Kung except that the G/wi and the !Xo had wooden, uncarved link shafts and a wider variety of reeds used for the mainshaft, as these often have to be obtained through trade in G/wi and !Xo areas (Heinz 1975; Silberbauer 1972).

To compare G/wi and !Xo points, t-tests were run on all variables and chi-square tests on all attributes. Results that are statistically significant are marked with an asterisk in Table 2. For body shape, categories were collapsed in a variety of different ways, all yielding similar results. Significant differences between !Xo and G/wi points occur in tip, body, and base shape to make

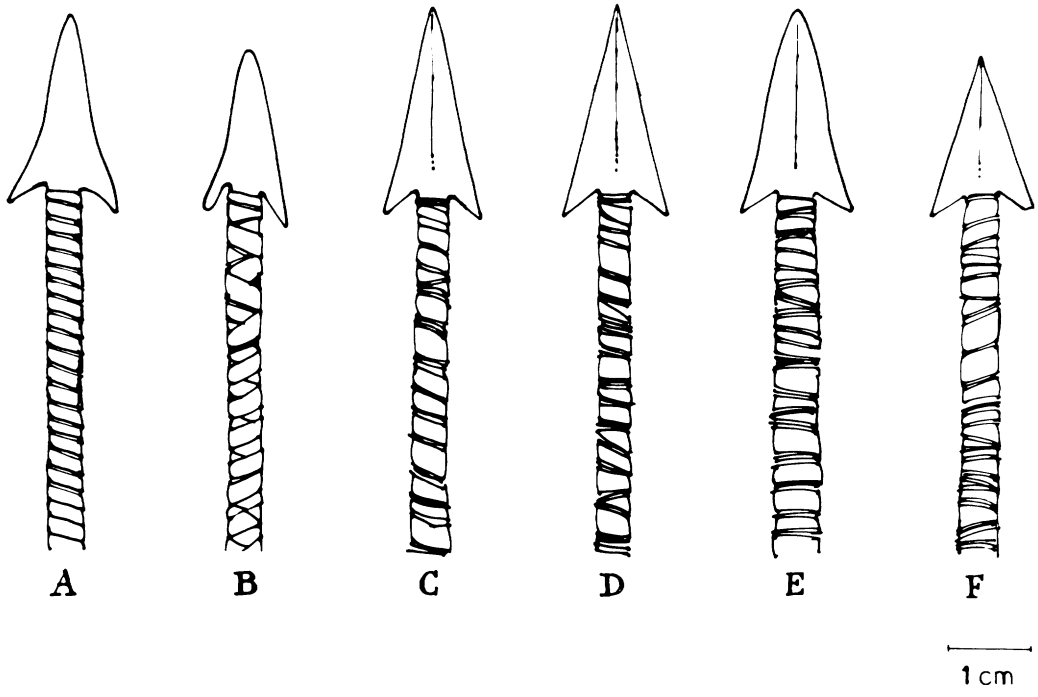

Figure 5. Range of variation in G/wi San projectile points.

the points of each language group distinct even to the casual observer. Of these differences, two were particularly marked and had discrete distributions. The first was tip width, which had a 3.2-mm difference between the G/wi and !Xo with no overlap in the ranges of variation in the two populations. The wide tips and blunt points are compensated for by their razorlike thinness of .2 mm (sd = .09, n = 7) compared to that of G/wi (x = .7 mm. sd = .17, n = 17) and !Kung points (x = .4 mm, sd = .11, n = 7), tip thickness being measured at 1 mm from the tip. The second attribute which is discretely distributed is body shape, with that of G/wi points ranging from straight to concave and that of !Xo points from concave to convex/concave. Only 2 of the 61 points fell outside of this spatially distinct distribution of the two types. It seems reasonable to conclude that the !Kung, G/wi, and !Xo linguistic groups are separated stylistically on the basis of attributes that are readily observable and discretely distributed within their group boundaries.

It was not possible to generalize about what happens to stylistic differences at boundaries between linguistic groups because most of these occur in farming areas. I was only able to observe three places in which linguistic groups intersected and bows and arrows were still used. The first was at Bere (Figure 1) where two Nharo families live on the !Xo settlement scheme. They had become predominantly !Xo both linguistically and stylistically and made !Xo style arrows. At the second place the G/wi and !Xo boundaries meet, and most G/wi and !Xo live in separate camps 5–25 km apart during the dry season. Here G/wi and !Xo maintain their own styles, although they claim to exchange arrows. Three !Xo informants said that they liked to get G/wi arrows which were sharper and better. When I asked why they did not make them that way they gave the standard reply, "because they were !Xo and did not know how." Since G/wi and !Xo engage in important exchanges of meat and skin for access to water and store-bought goods, this stylistic difference may help maintain formal relations and thus promote smoother interaction (Barth 1969; Wobst 1977). However, arrow exchange appeared to be only occasional and I found no !Xo arrows in G/wi quivers or vice versa. The third intersection point was on a farm in N.W. Ghanzi where two !Kung and one G/wi still had quivers. Each returned to his respective region to hunt

and maintained his own group's style of arrow making. Thus mixing or blending of styles in border areas would be minimal, despite frequent interaction. A much greater source of mixing of styles would result from wounded animals crossing these boundaries and dying in another area.

Ethnographic Perspective

Kalahari San arrows contain both emblemic and assertive style as indicated by their profiles of variation over space. The former clearly marks differences between language groups and may also function at the level of the dialect group and/or band cluster. The latter was present in attributes relating to body shape, base shape, quality, and other features such as link shaft engravings.

The occurrence of these two types of style, as they could be inferred from their profiles of spatial variation, was cross-checked ethnographically. The two to five arrows which had been collected from each hunter were kept for approximately a year, mixed with those of others, and presented for identification. First, 10 !Kung were individually shown samples of 5 to 10 arrows, which included one or more of their own arrows, an arrow of an exchange partner and at least one arrow from a !Kung in a distant area. Interestingly, only two could correctly identify their own arrows, and one thought that the arrow of an exchange partner was his own. No !Kung regarded arrows from other areas as different. They were surprised by this and found it hilarious that they could not identify their own arrows long after they had left their quivers.

The !Kung then do not use style to clearly signal ownership of arrows, although while making them they do include some elements of personal expression which aid in identification. For hunters who make arrows together or exchange arrows, similarities in certain aspects of their arrows may serve to express shared ideas or friendship at the time, while other aspects express individuality. Unlike features relating to linguistic group identity, these more casual features appear to be the result of momentary decisions and display little continuity through time. For archaeologists, these features hold little information about degree of contact other than perhaps that contact does exist, for reasons which will be discussed later.

Next, arrows from the three linguistic groups were presented to the above-mentioned !Kung as well as to three G/wi and three !Xo hunters. Informants were encouraged to discuss the arrows with others. The !Kung reacted to the G/wi and !Xo arrows with surprise and anxiety. A discussion ensued from one small group about what they would do if they found a dead animal with such an arrow embedded in it in their own area, saying that they would be worried about the possibility that a stranger was nearby about whom they knew nothing at all. Although afraid of !Kung strangers as well, they said that if a man makes arrows in the same way, one could be fairly sure that he shares similar values around hunting, landrights, and general conduct. Otherwise the !Kung were impressed by the large sharp G/wi arrows, said that they must have been made by people who "know things," and suggested that the larger tip might be more accurate than their own. They were dubious about the effectiveness of the blunter, thin !Xo points.

The G/wi and !Xo informants who had never seen !Kung arrows before first laughed saying that they were pathetic and could not kill anything, but after careful consideration mentioned that the small tip might allow the poison to enter more effectively. Because the G/wi and !Xo interviewed had contact with one another in the dry season, they could correctly identify each other's arrows. They attributed the stylistic differences to the fact that the arrows were made by different people who did things in a different way. Both !Xo and G/wi admitted that the G/wi point was probably a more effective design.

Thus for the San, the emblemic style carries a clear message to members of a linguistic group as to whether arrows come from their own group or a foreign one. In the former case it signals that the maker also holds similar values. In the latter case, the stylistic difference may either signal another set of values and practices, if the two groups are known to each other, or if not, that its maker is foreign and his behavior is unpredictable. For archaeologists, these stylistic differences could be used to delimit the boundaries between language groups, but they give no further information about degree of contact across them.

Discussion

Although the above analysis was carried out on metal projectile points, a number of findings should be relevant for lithic points as well. First, San projectile points, which like many lithic tools have a limited number of alternative designs due to restrictions imposed by materials, technology and function, are suitable for carrying style as an emblem to mark boundaries. But they appear to be less appropriate for bearing style that contains information about contact between groups, probably because: (1) the ease with which each simple alternative design can be remembered and duplicated makes it a poor indicator of contact and (2) given a common material, technology, and purpose and restrictions imposed by other stylistic attributes, individuals are likely to arrive at each of a number of possible designs independently. Consequently, the diffusion of style may not be dependent on degree of contact. Under these circumstances, when stylistic variation does occur, it becomes very difficult to interpret. This point is illustrated in the study of White et al. (1977) among the Duna of Papua New Guinea. After a careful study of formal variation in Duna multipurpose flake tools, they conclude that if materials and purpose are one, then a rather consistent form will result among all groups despite differences in degrees of contact. The significant variation that they did find in one out of five communities was difficult to explain. Before stylistic variation is interpreted in terms of differential contact, then, the following properties that might make it an indicator of contact should be considered: (1) complexity of design and ease with which it can be replicated and/or achieved independently, (2) possible range of variation given restrictions imposed by materials, technology, and function as well as other stylistic features (i.e., size among the !Kung), and (3) the frequency of stylistic investment on a given type of artifact and thus the signal density within the population.

Secondly, of potential importance for studies of lithic artifacts is the fact that the choice of stylistic attributes on projectile points follows no regular pattern. For instance, no single attribute consistently carried information about linguistic group affiliation. The !Kung use size for this purpose, and the G/wi and !Xo tip and body shape. Size, a variable that carries information about linguistic group identity among the !Kung, is one contributing factor to individual identification of arrows made among the G/wi and !Xo. Attributes that contain emblemic and assertive style vary from those that are detached from function and technology and are used largely to shape a point, such as shape of sides and barbs, to others that play an important role in the functional performance of an arrow—size, tip shape, and thickness. These results support the proposal of Stiles (1979), that in choosing stylistic attributes, one should omit only attributes whose variation can be proven by experiment to be exclusively caused by function. Until such variables are established by experiment, the method proposed by Close (1979) is effective if carried out conservatively. That is, items and attributes on these items which vary over space are selected as potential carriers of social information, and then functional hypotheses that might explain this variation are systematically excluded. Since homogeneity can be as important a social indicator as variability, this method should not be restricted to attributes that vary, but extended also to those that have many possible alternate forms, but that are homogeneous over space.

Thirdly, the San results bring to light the possibility that different attributes on a given item can simultaneously carry different social messages. For instance, on !Kung points, size carries clear information about linguistic group affiliation while other attributes such as tip, body, and base shape contain individual expression. Among the !Xo, tip and body shape distinguish G/wi from !Xo points, shape of sides signals band cluster membership, while shape of base signals individual expression. Close (1979:234) has proposed that "aspects of the typology which do not co-vary with stylistic attributes may be those which were primarily functionally determined," but the San data indicate that stylistic features that do not co-vary may be ones that have different referents. Consequently, profiles of variation in single attributes should be screened before stylistic types are defined.

Finally, the San results underscore the importance of employing spatial perspectives as broad as possible in stylistic analyses. The variation present in the points from any San camp could be used in a variety of hypotheses about San organization, ranging from the presence of different

bands at different times at one site (Rick 1980) to the presence of one band with several hunters, to the hypothesis that the differences in points indicate that members of the band were only together for part of the year (Voss 1977).

STYLISTIC VARIATION AND SAN ORGANIZATION

The final goal of the study was to look at (1) conditions that evoke the use of style to signal personal and social similarity or differentiation and (2) the combination of these conditions operating in a given form of organization, to learn whether it generates a characteristic pattern of stylistic variation over space. With respect to the first question, research concerning the conditions that promote interpersonal differentiation has shown that both situations that lead to extreme uniformity between individuals and those that promote competition cause individuals to differentiate themselves from others in order to establish their own identities (Lemaine et al. 1978; Turner 1978). Among the San, both factors play a role and result in an interesting stylistic pattern at the level of the individual. On the one hand, a lack of overt interindividual competition among the San manifests itself in the absence of ownership marks or highly developed personal styles in arrows. The lack of competition can be largely attributed to the risk-sharing strategy of the San (Wiessner 1982b), a strategy that is only effective if an individual can receive access to goods and resources in periods of both high and low productivity. It is the San's egalitarian norms that allow each family to maintain the status of equal citizen entitled to a share of meat or resources regardless of recent economic success. San constantly work at reinforcing this norm with a code of extreme modesty (Lee 1979; Marshall 1976), particularly with regard to hunting. As Marshall says, "the society seems to want to extinguish in every possible way the concept of the meat belonging to the hunter" (1976:297).

On the other hand, San also react stylistically against uniformity in their egalitarian society and strive to differentiate themselves from others by choosing different objects or art forms for personal expression. In this way they find their own niches and express complementarity rather than competitiveness. This has two stylistic effects: (1) most curated artifacts are decorated by at least 5–10% of the population and (2) there is a wide range of quality in many artifacts because limited numbers of persons put individual expression into them. For example, in San arrows only 3–8% of all link shafts were decorated, and only 9 out of 55 (16%) arrow makers were considered to be experts producing arrow sets of excellent quality, quality being measured by symmetry and similarity of arrows in a set. In the Dobe and Tsodilo areas, of 40 randomly chosen arrows, 30% were symmetric and carefully made, 43% slightly asymmetric and moderately well made, and the remaining 27% asymmetric and poorly made. Although quality may be difficult to measure archaeologically by fixed standards, changes in the range of quality might be detected through time, and the effect of competition on quality could be tested by an experiment in which knappers are asked to make a set of projectile points under a variety of competitive and noncompetitive conditions.

Research on group differentiation also yields results pertinent to style. Numerous experiments have shown that classification of persons into groups, even on a completely arbitrary basis, results in discrimination at a high level of significance (Tajfel 1978). Apparently this effect is due to the role that identification with a group plays in establishing identity. However, only in situations where other conditions such as stress and competition are present does this differentiation become marked. Style would be most appropriate for expressing group affiliation under stressful conditions because of its efficiency for transferring recurrent messages to a socially distant segment of a population (Wobst 1977). It also is a tactful means of communication which allows information exchange to take place prior to interaction. It is not surprising, then, that Hodder (1979) has found that style is accentuated by socioeconomic stress.

Among the San, the lack of competition between bands and the efforts of each family to blend itself into the larger population in order to obtain access to the resources of others in the pool may explain the lack of stylistic expression at the level of the band. At the level of the language group, however, stylistic divisions clearly occur. There is, however, no evidence of socioeconomic

competition between groups. To the contrary, most San living in the center of linguistic groups are only vaguely aware of the existence of other San. !Kung informants in the Dobe-/Xai/Xai area did not make their arrows within a certain size range to consciously express linguistic affiliation vis-à-vis others. Rather, they claimed to make them just as they pleased. Only when confronted with suggestions that they make them 10–20 cm larger did they respond that it would never occur to them to do so, as other !Kung would not know what to expect of a hunter who made points that way. The use of style by populations that pool risk among the San, then, does not appear to be the result of social stress, but rather of environmental stress in the Kalahari. Style helps to overcome intergroup discrimination which might result from residential arrangements and unites the larger population that pools risk.

A second factor that appears to be important in promoting stylistic expression is one proposed by White and Modjeska (1978)—the correspondence between the formal group, the group to which persons see themselves belonging, and the local group, that in which they actually live. White and Modjeska have proposed that people would not want to express formal group membership stylistically if it would inhibit their ability to fit into their local groups. Interestingly, among the San stylistic expression of group membership first occurs at the level of the population that pools risk, which is also the first level in which the formal and local group coincide. This population would also be the first group, in such a highly mobile population, with enough continuity through time to allow stylistic differences that mark boundaries to show up in the archaeological record.

The above results then suggest that San organization, which combines a foraging strategy for resource procurement (Binford 1980) with risk pooling strategies involving widespread reciprocity on a regional scale (Wiessner 1977, 1982b), does appear to generate a characteristic pattern of stylistic variation. That is, within the population that pools risk, style is homogeneous for some attributes, and no attributes are used as emblems of individual, band, or, for the !Kung, band cluster identity. In attributes that vary, there are no significantly different percentages of different styles between either bands or band clusters when the latter is not the population that pools risk. There is also considerable variation in the quality of projectile points and a low percentage of arrows with additional decoration, such as link shaft carvings, as a result of individuals finding different modes of self-expression to express complementarity rather than competitiveness.

Finally, it is interesting that the population that pools risk and expresses itself stylistically is, in the !Kung case, much larger (1,500–2,000 persons) than Wobst's (1976) estimated minimal breeding population of 475 persons, and in the !Xo case, smaller (120–300 persons). When it is smaller, its members use intralinguistic group ties to find mates but do not develop these ties into social alliances that would extinguish the band cluster's almost exclusive territorial rights (Heinz 1979). The need to expand or limit access to resources appears to be the predominant factor in determining the size of these groupings, with the arrangements for marriage worked out accordingly.

CONCLUSION

The aim of this study was to gain understanding about three factors: (1) items and attributes on these items that carry social information, (2) conditions that bring about the use of certain items of material culture to transmit messages about social relations, (3) the means by which different patterns of stylistic variation over space correspond to different intergroup and intragroup relations. The San data have shed light on some of these issues with both positive and negative findings.

On the positive side, the San data suggest that the choice of artifacts in which stylistic information is invested follows some basic principles and thus is predictable to some degree for the vast majority of San artifacts. The projectile point, an artifact that is present in many lithic assemblages, was found to be well suited for carrying information about groups and boundaries because of its widespread social, economic, political, and symbolic import. This should be particularly true for projectile points used in large game hunting because, due to the highly variable returns, the meat sharing that ensues is often used to solidify socioeconomic ties. The stylistic information contained in San projectile points was a good indicator of linguistic group boundaries.

However, I would like to emphasize that the projectile point is only a single item, and is capable of yielding information only about some aspects of San organization—this information should be supplemented by looking at stylistic variation in other items. For example, the assertive style contained in other San items adds to the picture presented by projectile points (Wiessner 1982c) by giving some measure of degree of contact over the boundaries so defined.

On the negative side, a number of factors that can add to the complexity of stylistic analysis and interpretation became apparent. Style was contained in a wide range of attributes on projectile points including those of shape as well as others that might have important functional properties, such as size and tip thickness. The choice of attributes in which to invest style appeared to be the result of historical events, rather than following coherent principles. To further complicate matters, different attributes on projectile points simultaneously carried different kinds of social information. Although I have made some suggestions as to how these problems could be handled, I found no simple solutions.

Perhaps the greatest difficulty in working up the San data was the lack of any coherent theory of stylistic behavior in the archaeological literature. The two most widely used approaches, information theory and social interaction theory, provided some guidelines but on the whole were inadequate to explain many of the results (Wiessner 1982c). Plog (1980) has come to a similar conclusion. Information theory was indispensible for explaining why style in material culture, as opposed to other forms of verbal and nonverbal communication, was appropriate for transmitting certain messages, but it could not be used to predict under which conditions personal and social differentiation take place. Social interaction theory (Deetz 1965; Hill 1970, Longacre 1970; Voss 1977; Whallon 1968) emphasizes the importance of learning and interaction in the transmission of style, factors that are important, but alone insufficient to explain decisions to simulate or differentiate stylistically. As Hodder has found in his study of the Baringo, "The distribution of material culture traits, and the maintenance of group identity in terms of material culture, are not necessarily and wholly structured by patterns of interaction. It is quite possible to have distinct groups with distinct material cultures but who have very strong and frequent interaction" (Hodder 1977:269).

In working towards a better understanding of stylistic behavior I have found a combination of two approaches promising. The first is to view style as a means of expressing personal and social identity, which has different aspects according to the nature of its referent and the level of organization that generates it. These aspects may have quite different points of origin in the past, may be evoked by different conditions, and may require different methods of analysis. The second approach is to try to see how the combination of conditions operating in a given form of organization together generate a characteristic pattern of stylistic variation over space and through time. These approaches will certainly not make stylistic prediction and interpretation less complex, particularly with our current understanding of the use of style for social simulation and differentiation, but then, it has become clear by now that stylistic behavior is not uncomplicated. Fortunately, the various aspects of style and strategies of social organization are present in many societies, and thus our understanding of them can be obtained from many sources, not just from the few remaining hunter-gatherers.

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