Rethinking Emic Pottery Classification

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Introduction

In an age when archaeologists should be concerned with cultural processes and hermeneutic spirals, the topic of artifact classification seems neither exciting nor fashionable. However, because typologies are the backbone of prehistoric archaeology, artifact classification is a theoretical problem of critical importance (Adams and Adams 1991:8; Benfer and Benfer 1981; Chang 1967:4; Cowgill 1990; Dunnell 1986; Rice 1984). According to Cowgill (1990:61), "if we cannot get our ideas about classification right, we cannot get anything else right," including the larger, more stimulating questions about past societies. In 1984 Rice (1984:248-9) recognized the importance of classification—"because classifications organize and structure data, they necessarily also organize and structure research problems"—and singled out classification as the first key issue for future directions in ceramic studies. However, in the 12 years between Rice's promising prediction for classification studies and her more recent review of ceramic studies, "classification of pottery has been largely disregarded" (Rice 1996:155-156). This is especially surprising given the fact that few of the major theoretical problems in artifact classification have been resolved. This paper focuses on one of these theoretical problems: emic classification—the attempt to discover categories used and recognized by prehistoric societies (Dunnell 1986:177). We will be concerned primarily with the emic classification of one type of material culture, pottery, but the conclusions should be applicable to the emic classification of other archaeological materials. Where applicable, we follow Adams' and Adams' definition of key terms like classification, typology, type, and category (Adams and Adams 1991).

Despite the modest amount of recent literature on emic classification, recent attempts at discovering emic classifications among prehistoric materials (Read 1989; Read and Russell 1996) have been both theoretically sophisticated and elegantly performed. Nevertheless, these attempts are hindered by two problems. The first section of this paper presents the first problem: whether it is methodologically possible to find a truly emic classification, i.e., one that involves absolutely no subjective input from the researcher. The development and application of computer processing to archaeological data, an important feature of the New Archaeology, gave archaeologists tools for the objective discovery of artifact clusters that correspond to the actual groupings of artifacts envisioned by the creators and users themselves.

Because these clusters were non-random and created automatically by computers, they were presumed to be purely emic and therefore free of the influence and intervention of the archaeologist's own etic ideas. A review of some of the most objective and sophisticated "automatic" classifications demonstrates, however, that the heavy etic hand of the archaeologist has not yet been removed from the creation of emic categories and perhaps never will be. As a consequence, the traditional conceptual polarity between emic and etic needs to be reconsidered, and, regardless of the typologists' intentions, the types are never completely emic nor etic but always a combination of the two. This also implies that types can never be "discovered" and that there can be no "objective" typology. Of course, it would be just as incorrect to suggest that types are completely constructed or totally subjective.

The second problem behind recent attempts to discover "emic" classifications, the subject of the second section of this paper, concerns the meaning attributed to the resulting types. Those interested in discovering the "emic" typologies often misconstrue the nature of the society under investigation; they presume, unconsciously perhaps, that there is only one way of classifying material culture, and that all members of the society under investigation follow the same set of rules when categorizing their world. The rise of ethnoarchaeological studies, a second important feature of the New Archaeology, has given us reason to challenge this unified, monolithic view of native artifact classification. It seems more likely that there are multiple and sometimes contradictory ways of classifying material objects within a single society. This paper argues that the way in which someone classifies pottery will depend on that actor's position within society with regard to occupation, wealth, status, gender, age, etc. Because there are many positions within a society, the pottery left behind will have multiple emic classifications. Adjusting our conception of "emic" classifications to the fact that material culture is polysemous and multivocal (different people read material culture differently) brings archaeological classification closer to recent developments in cultural anthropology that stress the fragmented and contested nature of culture.

Despite the two barriers to the construction of "emic" classification that is proposed here, the attempt to get a better understanding of how people classify their world is still an important pursuit that should *not* be abandoned. The third section of this paper tentatively and briefly suggests how one might approach the possibility of mapping different "emics" within a society.

Unfinished Business in Automatic Classification

Using Harris' (1968:571-5) dichotomy between emic units and etic units, Dunnell (1986) provides two subtly different interpretations of the emic unit in archaeological literature. In the first interpretation-the cognitive interpretation-emic units may be seen as mental categories, used and recognized by the people being studied, that govern the classification of things. In the second interpretation, emic units arise from the things themselves: emic categories result from the recognition that

all the objects in a group are similar in some sense. We refer to the second interpretation as 'methodological' because of the emphasis on how the emic units are generated. Another way to think of the distinction is that cognitive emic categories begin from ideas, whereas methodological emic categories begin from things. The first consideration of the importance of emic units in classification came from Kluckhohn, who suggested that archaeologists should be concerned with the relation between typologies and concrete human behaviors (Kluckhohn 1939). Soon after, Krieger (1944) attempted to adapt Kluckhohn's suggestion to the practical and procedural issues of constructing types. Krieger's types were emic units in the cognitive sense because each type was said to represent a category in the mental patterns of those who produced and used the types (1944:272). However, Krieger did not succeed in producing emic types because his criteria for the formation of types depended not on how well they reflected mental patterns but on the decidedly etic consideration of how well the types served archaeologists as chronological tools.

In his landmark 1953 paper, Spaulding proposed a resolution to the problem of finding emic types. A lucid account of Spaulding's breakthrough has been written by Dunnell (1986: 178-180). What is interesting for our purposes is that Spaulding achieved this by shifting away from the cognitive interpretation of emic units and toward the methodological interpretation. In other words, Spaulding's method for finding emic types is directly consistent with the view of emic units as subject-generated structures in behavior. In Spaulding's view, types are a group of artifacts exhibiting a characteristic pattern of variable associations. ['Variable association' is explained in greater depth below. We follow Cowgill's definitions (1982:31) for "variable"— a particular kind of observation on an object—and "attribute"—a particular value or range of values of a variable.] Because Spaulding's method was said to be inductive, the resulting types are subject-generated, as opposed to being generated by a deductive framework imposed on the data by the archaeologist. Because the types are subject-generated, they are already inherent in the data. They are not "created" but "discovered" through statistical analyses. Because the artifacts in Spaulding's types exhibit a non-random pattern of variable associations, they must be the result of purposeful human behavior.

Spaulding's shift to the methodological approach to the emic unit was extremely important. Though his definition of the type and prescription for its discovery was hotly contested (Ford 1954), his approach prevailed. As a consequence, most subsequent research in classification followed Spaulding's initiative and concerned itself with methodological issues in forming emic types (Dunnell 1986). The shift away from the cognitive interpretation was not total, but the few who still engaged in the cognitive approach (Chang 1967:228) did do so with little caution (Binford 1967; Cowgill 1967), therefore stigmatizing the cognitive approach as a whole. Despite the stigma, we will argue later in the paper that the prioritization of methodological concerns over cognitive concerns has serious drawbacks.

Since Spaulding's lead, research in the methodological tradition of emic units has advanced greatly with the development and use of sophisticated statistical algorithms and powerful information processing systems for computing such algorithms. Many archaeologists have pursued the construction of emic artifact classifications with the goal of making type discovery a rigorously objective procedure (Clarke 1968; Thomas 1978; Whallon 1972; Gunn and Prewitt 1975; Read 1982, 1987, 1989; Read and Russell 1996). However, nearly as many archaeolgists have identified shortcomings in the numerical methods. (Benfer and Benfer 1981; Christenson and Read 1977; Cowgill 1990; Dunnell, 1986; Read 1989; Spaulding 1977; Thomas 1978). A mere two decades after Spaulding's auspicious start, (1978:506) declared that "there are no generally accepted so-called objective classification procedures for archaeological procedures." Even Spaulding (1977) has argued that numerical classifications are not a direct guide to categorizations of artifacts made by the original makers and users.

There are many reasons why the goal of objectivity has not been realized. Though it is not within the scope of this paper to provide a thorough discussion of the many critical contributions to the classification debate (partial discussion can be found in Benfer and Benfer 1981, Read 1989, Christenson and Read 1977, Dunnell 1986, and papers in Carr 1985 and Whallon and Brown 1982), we reiterate on a very basic level four criticisms that we think most forcefully demonstrate that an intuitive method, no matter how rigorous, always involves some type of subjective etic input from the archaeologist.

Perhaps the most commonly noted shortcoming of numerical techniques is the global problem of determining which variables had relevance to the makers and users of the artifacts. (Christenson and Read 1977; Dunnell 1986:180-1; Read 1989:170-1; Read and Russell 1996; Rice 1984). For every sherd, there is an infinite number of variables that can be measured. Archaeologists must determine which of these variables guided the classifications of the creators and users of prehistoric pottery. In other words, before choosing a particular combination of variables to analyze, the researcher must demonstrate that these variables had emic saliency. Otherwise, the selected variables represent a subjective input; they reflect the archaeologist's ideas about what aspects of the pottery served to differentiate one type from another. A specific example of how archaeologists' presuppositions condition their search concerns shape. Because shape seems to be a natural descriptive dimension among English speakers (Dunnell 1986:158), archaeologists consciously or unconsciously select for their analysis a disproportionate amount of variables pertaining to shape (Read 1982). Of course, there is no reason to assume that morphologic similarities were salient to the creators of the artifacts (Read 1989: 159).

Dwight Read (1989; Read and Russell 1996) has proposed guidelines for selecting variables. Read assumes that when an "artisan deems that one group of artifacts is of one kind and another group of artifacts is of another kind, then there are dimensions to those artifacts along which a qualitative variable will take on distinct

values and a quantitative variable will exhibit bi- or multimodality." Thus, if a variable is emically salient, it should subdivide the data into bi- or multimodal frequency distributions (Read and Russell 1996:667,670). Another guideline is to choose variables that will eliminate redundancy; no single aspect of an artifact should be measured by more than one variable (Read and Russell 1996:670). Lastly, one should choose variables that measure aspects of artifacts that are relevant to the task to be completed by the artifact. For example, a classification of arrow points should prioritize variables that measure angularity of the point because only a certain range of angularity will permit the point to accomplish the presumed task of puncturing a target (Read 1989:179). Unfortunately, there is still much variability in artifacts not directly related to functional considerations, especially for projectile points (Sackett 1982; Deetz 1967:90). Also, implicit in the suggestion of using functional characteristics to help select variables is the idea that etic concerns of functionality also have emic saliency. This might be true for projectile points, but for pottery, it is not always certain that the functional benefits of certain tempers or wall thicknesses were recognized by the artisans (Braun 1983, Read 1989:170).

In spite of these helpful guidelines, Read is aware of the fact that the problem has not been solved. As of yet, no approach can provide unequivocal information about the emically relevant dimensions of artifacts (Read 1989:184). Many feel that this problem will only be resolved when archaeologists agree on a high level theory to guide the selection of variables (Christenson and Read 1977; Read and Russell 1996:670; Dunnell 1986:193; Rice 1984:247). We hope to contribute to this resolution in the next section.

The second place where the archeologist's subjective etic input invades what is meant to be a rigorously objective analysis is in the choice of statistical tools. For example, a cluster analysis using unweighted variables and an R-mode factor analysis will most likely produce different classifications of the same set of artifacts (Christenson and Read 1977). Within cluster analysis alone there are six families of methods, each of which produces a different classification for the same data set (Aldenderfer and Blashfeld 1978). Whallon's 1972 classification of Owasco ceramics from upstate New York is an excellent example of how minute variations in the statistical algorithm can produce different classifications. By simply varying the minimum expected cell frequencies of the chi-square algorithm, Whallon produced markedly different classificatory trees. In sum, different statistical methods produce different classifications for the same set of objects, throwing into relief the problem of finding a "correct" emic classification.

In both the cases of variable selection and algorithm selection, decisions made by the archaeologist affect the nature of the classification. The fact that the same group of data can generate multiple classificatory solutions forces the archaeologist to select the "correct" solution from all of those available. The criteria for selecting the correct classification illustrates the third way in which the archaeologists' etic decisions affect the "objective" classification. In some cases, certain solutions may be

eliminated because the assumptions underlying the algorithms involved are inappropriate for the specific data set under consideration (Carr 1985; Read 1985). In many cases, however, there is no procedure for determining which solution is "correct." The only way to judge the adequacy of one solution over another is to see which solution best approximates the archaeologist's intuitive notions about how the artifacts should be classified (Christenson and Read 1977).

The intuitive notions of the archaeologist include both general ideas about the nature of types and specific ideas about how a particular assemblage should be classified. A good case of how intuitive notions about the general nature of types affects the outcome of a classification comes from the comparison of the object clustering approach to type discovery and the variable association approach to type discovery. Though the two approaches exhibit similarities (Dunnell 1986), a fundamental difference separates them. In the object clustering approach (Doran 1975; Hodson 1982; Christenson and Read 1977), "types" are groups of artifacts which exhibit internal cohesion and external isolation. In other words, all the artifacts in the group are more similar to each other than they are to any artifact outside the group, just as the difference between two objects within the group is less than the difference between any artifact within the group and any artifact outside it. In variable association (Spaudling 1953, 1977, 1982; Whallon 1972), the defining feature of a "type" is a non-random association between attributes found within artifacts. For example, the combination of sand temper (a specific attribute of the "temper" variable) and red slip (a specific attribute of the "slip color" variable) would qualify as a type in the variable association method if most sand tempered vessels have red slip and most red slipped vessels have sand temper. Whereas a type in the object clustering approach is a group of artifacts, a type in the variable association approach is an abstract criteria for group membership. In practice, these two notions of how a type should be defined can create different classifications of the same material (Cowgill 1982). For a specific example of how intuitive notions about a particular set of artifacts influences the archaeologists choice of the "correct" classification from many plausible ones, we return to Whallon's study of Owasco ceramics. For Whallon, the most satisfying of his many solutions was the one that most resembled the earlier classification of Ritchie and MacNeish (1949). In other words, Whallon allows a preexisting *etic* classification to determine which of his *emic* classifications is best (Dunnell 1986:184). In this case, the intuitive assumptions of the archaeologist, not the artifact maker, guided emic classifications.

The last place in which the subjective, etic assumption of the archaeologist interferes with the objective process of type discovery is the initial selection of which artifacts to include in a classification. Some archaeologists decide that outliers—those artifacts that are peculiar with regard to other objects in the assemblage—can be removed from the assemblage before the analysis begins. Christenson and Read (1977: 170-1) believe that outliers may represent either idiosyncrasies or genuine properties of the data heretofore not recognized. Christenson and Read argue that if the outliers are idiosyncrasies, they may be removed from the analysis. This seems

plausible if idiosyncrasies are seen as "mistakes." In subtractive technologies like flintknapping, it is likely that mistakes will be preserved in the archaeological record: if the knapper accidentally removes a flake that is too large, the potential tool, which no longer resembles the other tools comprising the archaeologist's assemblage, cannot be corrected. The product of this accident does not fit any of the conceptual categories of the makers, and can therefore be excluded from an analysis that seeks to discover those categories (Deetz 1967:48). Unfortunately, we cannot always tell which idiosyncratic objects are mistakes and which represent rare but genuine categories, especially for additive technologies like pottery.

The point behind the above discussion of outliers is simply that the boundaries around what should and what should not be included in an emic classification are not always clear. Given the subjective nature of these boundaries, some have claimed that even what we assume to be the unproblematic procedure of separating artifacts into general categories of pottery, stone, metal, etc. needs to be scrutinized. Such "basic" categories are neither natural, transcendent, nor neutral, and therefore not necessarily the same categories recognized by people of the past (Shanks and Tilley 1987:16-18). In practice, we cannot endorse such a radical view, but as a rhetorical ploy, Shanks' and Tilley's views do succeed in drawing attention to the inevitable dose of subjectivity that underlies any supposedly objective attempt at emic type discovery.

Though the arguments presented above are neither exhaustive nor new, they are still valid. Because we can never know which variables were important to ancient societies, our objective typologies will always be partially subjective, that is, partially the creation of the archaeologist (etic) and partially the creation of the people being studied (emic). This suggests that the lines separating emic and etic may be overdrawn (Adams 1988; Adams and Adams 1991; Voorrips 1982), and recalls well known arguments about the blurring of the subjective and the objective in archaeological epistemology (Hodder 1986; Shanks and Tilley 1987). But just because we can never get fully emic classifications does not mean we should give up our search—we are reminded of Robert Solow's remark (via Geertz 1973:30) that just because a perfectly aseptic environment does not exist, we should not conduct surgery in a sewer. To abandon the quest for types that tell us something of the thoughts of the natives would also mean turning our backs on the half century of slow but sure progress in the Typological Debate. We recommend a change of focus. Now that we know that our objective procedures will never be free from subjective assumptions, we need to address the subjective assumptions that always creep into our objective methods. This is not simply a question of "applying" critical theory. We advocate a change of focus from the methodological aspect of emic units to the cognitive aspect of emic units.

A Return to the Cognitive Aspect of Emic Units

By advocating that we focus more of our attention on the cognitive interpretation of types—the notion of the types as categories used and recognized by the subject population—we are in a sense reaffirming the long-acknowledged connection between archaeology and cultural anthropology (Steward and Setzler 1938; Bullen 1947; Chang 1967). Archaeologists are in an excellent position for a *rapprochemente* with ethnographic methods given the growing attention to ethnoarchaeology, one of the positive results of the New Archaeology's stress on middle range theory. Many archaeologists and anthropologists have conducted ethnographic field projects with an explicit focus on material culture and a concern for archaeological interpretation. Many of these ethnoarchaeological studies have made potters and pottery users their prime subjects of analysis (Arnold 1985; David and Hennig 1972; David et al. 1988; Dietler and Herbich 1989, 1994; Gosselain 1992; Kaplan 1985; Longacre 1991; Miller 1985; Skibo 1992; Sterner 1989). These sources are valuable in that they furnish ideas about how people go about classifying their pottery in societies where pottery production and consumption has yet to be industrialized.[1]

The ethnoarchaeological literature reviewed below suggests that the contributors to the emic typology debate have an inappropriate idea of the nature of native categories. More specifically, these contributors often presume that there is a single system of categorization shared by all members of a society. Recent authors have presumed that "one's society shares an idea of what a certain kind of object should look like" (Cowgill: 1990:61) or that a single native cognitive/perceptual domain underlies the construction of material objects (Read and Russell 1996). We believe this assumption about widely held mental templates needs to be reconsidered; there may be many and oftentimes conflicting conceptual categories within one society. Ethnographic and ethnoarchaeological studies reveal that, to quote Daniel Miller, "there is no true typology or taxonomy ... a classification given by a native captures only a part of the order embedded in material categories and is always from a particular perspective" (Miller 1985:11). In other words, different sectors of the community hold differing views or perspectives of the pottery. An emic classification that pretends to reconstruct the categories of all members of the community is necessarily partial. Washburn and Petitto (1993) have demonstrated among Lao women that in the realm of clothing, producers and consumers exhibit different levels of familiarity with skirts, which causes them to hold different classifications of them. The idea that producers and consumers of pottery might also have different mental templates about classification has been suggested by Michael Lind (1987). [Unlike producers of pottery] a consumer going to market to buy ceramics is not going to have paste and ware foremost in mind. That is, the consumer is not headed to the market to buy, for example, Thin Orange ware vessels with micaceous paste. Instead, it seems likely that he or she would have in mind a particular vessel shape of a particular size

and perhaps with a particular surface finish, for example, a large olla for cooking beans, a set of small dishes for serving beans, or perhaps an incense burner for the household altar."

A number of ethnoarchaeological sources support Lind's point about differentiation between producers and consumers. Longacre (1991:102-3) reports in his work among the Kalinga of the Philippines that males, who do not make pottery, classify pottery solely in terms of intended function and/or shape. By contrast, the women, who are the producers of pottery, are aware of many more variables, including the nature of the decoration, the specific design elements involved, the number of bands of design elements, and how those bands are arranged below the rim. Due to this intimate familiarity, the women's classifications are so specific that the identity of the producer is included in the categorization.

Deitler and Herbich's work among the Luo of Kenya suggests a similar disparity in how potters and non-potters perceive ceramic vessels (1989:159). By making slight variations on their pottery, the potters are able to distinguish their own work from that of others and communicate a message understood by other potters but not even recognized by the consumers. As in the Kalinga example, the potters are much more sensitive to their products and are sensitive to many more categories than their consumers.

The important point in these examples is that potters are aware of more and different variables than non-specialists. Certain aspects of the pottery, like the type of temper, would be important to the potter, who might be responsible for procuring the temper, but not to anyone else. The classifications held by the potters are not necessarily incompatible with those of the consumers but are likely to stress the technical details of production. The consumer's/user's understanding of pottery is quite different. Having to handle and clean the pots, the consumer might be more sensitized to variables like interior surface finish (pertinent to the cleaning of the pot) and rim or handle form (pertinent to ease of handling). The consumers/users are likely to classify the pottery differently than the producers because different variables are key to their understandings of the pottery.

However, even this distinction between potter and consumer may be too simplistic. In instances where pottery production is specialized in some way, potters are likely to possess only partial knowledge of the full repertoire of vessels available in a community. Nicklin (1971) reports that among the Shai potters of Ghana, some techniques of painting are withheld from younger members because the designs, with their complex ritual associations, might be dangerous in the hands of amateurs. The younger potters are therefore unaware of the ritual categories of pottery. In Negros Oriental of the Philippines, Van der Leeuw (1984) reports that large scale pottery manufacturers recognize and produce six distinct sizes of pots. In the same community, a part-time household potter producing only the pottery she alone requires recognizes only two categories, large and small. Though the household producer would certainly acknowledge that the larger scale producers in the same

town produce more than two sizes, it is unlikely that she thinks in terms of the six categories of these potters because she is not exposed to the demands made on these potters by their diverse clients. In other words, the conceptual categories of pottery producers are in part structured by the demands of the "audience"—consumers—of their pottery, and since different producers have wildly different audiences, these producers' cognitive classifications will be heterogeneous.

It has been demonstrated that potters and non-potters as well as different types of potters classify their pottery differently. However, whether one is a producer or a consumer is not the only dimension of difference in society. Other dimensions which have been demonstrated to impinge upon artifact classification include gender, seniority, status, and ethnicity. Miller's examination of category formation in the village of Dangwara, India, demonstrates how differences in status affect native categorizations of pottery (Miller 1985). Miller (1985: 176-8) observed that in several cases the referential term applied to a specific vessel type varied according to one's caste membership. Similarly, the function of a specific vessel type varied according to caste.

Kempton's well known work on the "fuzzy" nature of categories of folk classifications demonstrates that age and gender are also important dimensions affecting the way individuals categorize pottery (1981). Because women in Tlaxcala, Mexico play a greater role in tasks that include pottery, such as food preparation, they are more attentive to the functional dimensions of pottery than men. Kempton also observes that older community members categorize pottery differently than younger members. This is especially the case during periods of sudden change in the nature of material culture. In the three contemporary Tlaxcalan villages where Kempton carried out his research, metal and plastic containers had begun to replace traditional pottery. Under these circumstances younger community members who were less familiar with traditional pottery categorized it differently from older community members.

The major obstacles that archaeologists face in discovering emic categories are several. The sort of high level theory advocated by Rice (1984) and Dunnell (1986) that might identify relevant variables for the construction of emic types is inadequate. Our study suggests that if there is to be a high level theory, it must take into account the idea that there may be multiple emic classifications in any one society. Such a theory should be flexible rather than restrictive in its approach to variable selection. Perhaps it is a congeries of middle range analogies, none of them universally applicable, that will best describe the complex interaction between variability in material culture and cognition. The multiplicity of pottery classifications that exist in society is yet another manifestation of the fragmentary nature of culture that has begun to be highlighted by anthropologists over the last 30 years. A more profitable approach is to permit this ambiguity rather than reduce it. Although the task of retrieving native categories becomes more difficult, we propose new directions for getting closer to this goal.

New Approaches

The major finding of this paper is that archaeologists need to specify whose emic classification they are referring to. If it is the emic of the producer that is under consideration, then variables related to technical production *in addition* to the function of the artifact are also salient. We mentioned before that variation in the organization of production may contribute to multiple emic categories among potters. The scheme of emic categorization that underlies a pot made by a small-scale operation like a part-time craft specialist operating at home ("household production" in Peacock's (1982) typology of productive scale and intensity) will be different than the emic classification that underlies a pot produced in a large scale operation (such as a "factory" or "nucleated Workshop"; Peacock 1982; see also Costin 1991). If it is the case that the pots in an assemblage are produced exclusively by small scale, low intensity operations, such as household production, then it will be extremely difficult to create emic classifications for two reasons.

First, household potters make few pots. This means that there must be more potters and most likely greater variation in how pots are classified. When the scale of production increases—for instance, when potters begin to make pots full-time—each potter produces many more pots, and the population's demand can thus be satisfied by fewer potters. When there are fewer potters, variation in the finished pots may decrease. A number of authors have noted that pottery produced by full time specialists is more uniform than that produced by the non-specialist (Arnold and Nieves 1993; Kaplan 1994; Kvamme et al. 1996; Logacre et al. 1988). Second, though there may be more potters when pottery production is small in scale, it is likely that in a small scale production regime, there is less coordination between potters. In other words, when production is a small-scale, part-time activity, each potter has fewer assistants and could work alone. With less coordination between potters there is less communication about potting, which means that the technological sequence (or chaine operatoire, Lemmonier 1986) of each potter is understood at an implicit level, at the level of practical consciousness, not yet crystallized into verbal instructions. When pot making is not openly discussed between potters, potting methods are unlikely to be standardized, which means that the details of the products of the various potters will be quite diverse and varied. When the scale of organization increases, potters begin to work together to increase efficiency. When working together, potters must coordinate their activities. Coordination requires communication, and there is a shift from practical consciousness of the chaine operatoire to a discursive consciousness. Differences in emic classifications among potters are clarified and in some senses eliminated as potters talk about what needs to be produced and conform to standardized types. This conformity assures more concordance, or less discrepancy, between, on the one hand, the conceptual categories (defined as combinations of desired traits) that guide a potter through production and, on the other hand, the pots actually produced. This increased interplay between what Dunnell (1986) refers to as the group (the actual pots) and the class (the abstract conceptual categories) reduces

noise in the variables measured, which results in the increased salience of variables. Increased salience refers to situations in which the values of a variable, such as rim curvature, exhibit distinct and discontinuous modes as opposed to an indivisible, continuous distribution. In an assemblage where certain variables or traits are more salient, archaeologists attentive to these variables have less difficulty creating types. Changes in scale of production may therefore explain why, as archaeologists have noted (Cowgill 1982; Read 1989), some artifact assemblages are easier to arrange into types than others.

On the other hand, it is not always correct to say that increases in the scale of production results in increasing uniformity of products. Where pottery production is specialized within a community or region but there is a relatively large number of producers, the ceramic assemblage as a whole may display little standardization (Sinopoli 1989; also see Blackman et al. 1993). This is so because as noted above the increasing uniformity of a ceramic assemblage is the result of two independent processes that tend to but do not always accompany the shift to a higher scale of production: the reduction in the number of pottery producers, and the adoption of more efficient, cost-cutting production techniques (Costin 1991). It is under those circumstances where ceramic production is organized at a higher scale of production and there are comparatively few producers that a relatively standardized and uniform ceramic assemblage may be expected (Markens 2002).

As noted above and in papers by Lind (1987) and Washburn and Pettito (1993), consumers, in contrast to producers, are more concerned with variables pertaining to function. Thus, in order to produce an emic of the consumer, archaeologists must move beyond the analysis of sherds alone and pay greater attention to contextual variables (Hodder 1986). These extrinsic variables (Adams and Adams 1991: 102) include, for example, use wear, residues, and differences in primary and secondary deposition. In short these are variables that tell us how ceramics were used by the consumer. Although the problem of understanding ceramic categories from an emic point of view has been addressed from increasingly different perspectives recently, there has been a convergence on this idea of the importance placed on context in considering emic types. Deitler and Herbich (1994), and Miller (1985) argue that Bourdieu's concept of the *habitus*, a set of dispositions responding to the demands of social relationships, explains variability in pottery. Since the *habitus* varies form society to society, attention to local context is crucial. In a similar vein, Van der Leeuw's (1991) (re)-creative approach also emphasizes the dispositions available to the producer that are embedded in divers social contexts.

Conclusion

To conclude, most of the research directed at discovering native classifications has been approached through the applications of statistics and computer processing. While this approach promised objective results, a number of shortcomings have become apparent over the last few years. This paper demonstrates that the search

for a single emic classification in native societies needs to be reconsidered. The work of ethnoarchaeologists and cognitive anthropologists suggests that groups within the community may partition material culture differently on the basis of their knowledge of the class of material. Social dimensions affecting classifications include producer vs. consumer, status, gender and age grade. While some advocate the development of a global theory for determining which variables should be used to construct emic types, we see this instead as a middle range problem. Archaeologists must specify whose emic they are recovering and pay greater attention to the social context of production and use.

By encouraging archaeologists to deconstruct the idea of a generalized emic and begin to recognize that emic classification depends on roles and statuses within a society, we are endorsing Tringham's suggestion that we eliminate faceless blobs and replace them with differentiated actors (Tringham 1991). Classfiication studies in general have been criticized because their goal—to reproduce native categories—is an exercise in reproduction of normative mindframes that does not address how these mindframes are negotiated, renegotiated, and changed (Shanks and Tilley 1987). We think that this criticism can be mitigated if archaeologists reconstruct a mindframe (emic classifications) for each pertinent type of actor. Understanding how these mindframes are different, and perhaps in opposition to each other within the same society, allows us to model prehistoric societies in a manner that is congruent to the way recent anthropologists have been understanding conflict and struggle in modern societies. In this way, it is hoped that attention to the multiple meanings of pottery provides appropriate positioning for studies concerned with inferring truly dynamic social contexts from the statics of the archaeological record.

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[1] We are not the first contributors to the typology debate to use ethnographic sources for guidance concerning how artifacts are classified. Using the work of ethnosemanticists like Kay (1966) and Berlin (Berlin et.al. 1968), Whallon (1972) demonstrated that human classification proceeds hierarchically. Consequently, Whallon and later others (Christenson and Read 1977,

Read) campaigned for the use of hierarchical as opposed to paradigmatic methods in automatic classification. Recently, Read has referred to Chumash ethnography to help interpret the meaning of an "emic" classification discovered among the arrowpoints from the 4-Ven39 site (Read 1989:175-6) and to ethnoarchaeology among the Australian aborigines (Gould 1980) to assess the degree to which functional classifications of utilized flakes might have emic saliency (Read and Russell 1996:673).