Shipibo archaeo-ethnography: site formation processes and archaeological interpretation

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Introduction

Because of archaeological site formation processes it is often difficult to reconstruct or distinguish objectively between different kinds of primary activity loci and refuse disposal areas, and to investigate the associations between such elements of a site. Differential preservation, post-depositional disturbances, and curation are factors that may influence how the archaeological record is perceived by the investigator. It is important, therefore, for the archaeologist to understand in a detailed manner the context, and the processes that determine the resultant archaeological record (Schiffer 1976; Butzer 1982).

Along these lines, archaeologists recently have been interested in examining behavioral systems in order to document and evaluate variability within material residues that become archaeological deposits (Gifford 1978, 1980; Binford 1980, 1982; Gould 1980; Kent 1984). Some investigators have chosen to examine recently abandoned settlements, where the previous occupants were available for interviewing (Lange and Rydberg 1972; Bonnichsen 1973). Lange and Rydberg (1972) examined a recently abandoned house compound in northern Costa Rica as if it was an archaeological site. Prior to interviewing one of the former occupants of the house, the investigators generated reconstructions of how the different portions of the house area had been used. These were based upon the spatial relationships of various classes of artifacts and features. Lange and Rydberg (1972: 429) found that most of their inferences were corroborated by the informant. Bonnichsen (1973) conducted a similar study within a recently abandoned Indian camp in the central Canadian Rockies.

In both of these studies the recently abandoned context was evaluated, and then archaeological interpretations were confirmed or rejected on the basis of informant interviews. In neither case was it possible to ascertain specifically what elements of a pre-abandonment compound were absent in the abandoned site. Furthermore, by relying upon interviews to evaluate how activities were spatially organized, the investigators were unavoidably considering a situation seen through a filter of the biases and memories of the informants (see also O'Connell 1974; Schiffer 1978: 234–5).

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In the present study we are concerned with evaluating the conditions under which secondary disposal areas may be distinguished from primary activity areas. Furthermore, we are interested in considering the degree to which such distinctions may be recognized prehistorically. We are following Schiffer's analytical distinction between primary and secondary refuse: 'If trash is discarded at its location of use, it forms *primary refuse*, and if away from its location of use, *secondary refuse*' (Schiffer 1976: 30, emphasis in original). To this end house compounds of a group of Shipibo Indians were investigated.[1] Based upon ceramic data and settlement patterns and distributions it is clear that the Shipibo have prehistoric antecedents in the 9th to 13th century A.D. Cumancaya Tradition (Lathrap 1970: 136–40; Roe 1973: 168–70; Raymond 1972: 210–12; Raymond *et al.* 1975: 138). Thus, we are viewing the ethnographic end of at least a 1000 year continuum of a cultural tradition within a new alluvial Amazonian floodplain setting. We have chosen to investigate two house compounds within the same village, one of which was reported and mapped by DeBoer and Lathrap (1979), and represents the initial stages of refuse deposition. For some classes of material, such as the fishbones, debris had been mapped prior to the refuse clearing (DeBoer and Lathrap 1979:129). For the purposes of the present study, the compound presented by De Boer and Lathrap will be evaluated as an example of the systemic context. Following Schiffer, 'materials within an on-going behavioral system . . . are in systemic context' (Schiffer 1976: 28). Of course, the notion of 'systemic context' is a relative concept. Material debris may be in varying states depending upon the user's perceived needs until the material is discarded, at which point the debris may be considered to be a component of the archaeological record. As will be discussed later, aspects of what investigators often consider to be the archaeological context are more appropriately referred to as various states of the systemic context. In other words, tools may be discarded and houses and settlements abandoned, only to be curated later by the same or different group of people.

The second house compound examined in this study was recently abandoned, and therefore represents the archaeological context. The ethnographic context is analyzed using the same methods applied to the archaeological record. In doing so, the systemic context becomes a set of expectations, against which the archaeological setting may be compared, and insight is gained into those elements of the on-going system that are maintained or transformed when the archaeological context is formed. By focusing on these two states of a settlement's life history we will be able to evaluate the processes associated with the formation of archaeological sites. Understanding these processes is important for reconstructing the kinds of activities conducted within a site. Further, by comparing the spatial organization of an actively occupied settlement with an analogous abandoned settlement, we do not have to deal with a 'filter factor' imposed on the analysis by the biases of the informants. Although, of course, data from such informants are useful and will be included in the analysis. Before presenting the comparison between the archaeological and systemic contexts it is important to provide some background into Shipibo lifeways and activity patterns.

Shipibo lifeways and activity patterns

The Shipibo Indians are a moderately acculturated tropical forest group in eastern Peru

within the Central Ucayali watershed (Fig. 1). The Ucayali is a large northerly-flowing river that drains into the Amazon River. Shipibo settlements are linearly distributed along the Ucayali River, and generally are located on river levees or on the alluvial bluffs above the floodplain. This pattern reflects their economic orientation to the highly fertile new alluvial silts, as well as to the riverine resources and transportation routes of the Ucayali basin.

Within the framework of a linear settlement pattern a Shipibo village is partitioned into a series of 'nodes', or 'compounds' that reflect social structure and its concomitant interaction networks. Following a matrilocal residence rule each compound is comprised of one to three related females with their respective spouses and children. Frequently,

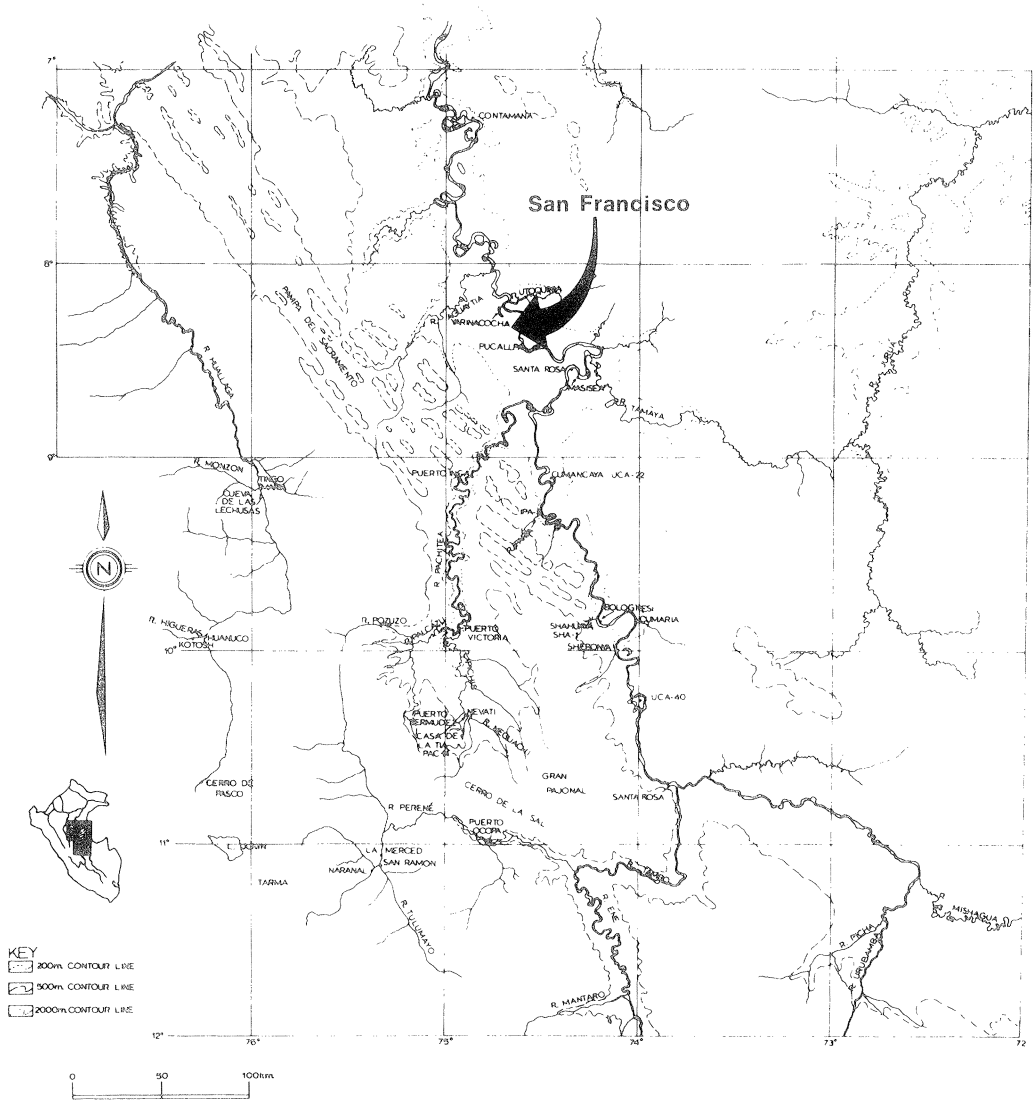

Figure 1 Location of San Francisco de Yarinacocha in eastern Peru.

the parents of the core females also reside in the compound. The number of nuclear families living within a single compound will determine the number of structures present. Roe (1980) indicates that these isolated nuclear family residences are the fragmented remains of an ancient communal hut, or *maloca* as it is called. The *maloca* housed the larger matrilineal families that are still the backbone of Shipibo social structure.

Any compound minimally consists of certain characteristic elements. The kinds of constructions that one finds within a compound are generically referred to as *shobo* in Shipibo. However, the actual constructional types subsumed under the Shipibo word, which means 'house', are quite varied and have a complex history. As the life trajectories of Shipibo structures are discussed in detail elsewhere (Roe and Siegel in press), only a brief background to the subject will be presented at this time.

Each nuclear family generally resides within its own residential structure, normally measuring 5–7 m long, 3–5 m wide, and with raised house floors approximately 50–100 cm above ground surface. In contrast to the residential structures there are smaller, special purpose huts within a compound (usually less than half the size of the residential building). A plethora of uses are associated with these huts, ranging from chicken coop, to pottery shed, to cook shed. Generally, these somewhat more sloppily built structures have neither walls nor floors.

Another important element of the compound is characterized by the elevated racks, or *tapo* in Shipibo, which function to store ceramics, dried fish, plantains, or any other food-related item. As DeBoer and Lathrap (1979: 133) show, the surface of the plaza around these *tapo* are often 'hot spots' for sherds produced by vessels falling from the racks and breaking on the hard clay surface of the compound. Therefore, provided the cleaning activities have not been too thorough, archaeologically, the *tapo* will reveal their vanished presence indirectly by the 'shadow' of debris surrounding them (such patterns emerged in the present study).

An integral component of a typical Shipibo compound is the plaza. Roe (1982: 136) indicates that this cleared central space and the residence it contains is everywhere in Amazonia a symbol for human's 'cultural' domain, which confronts and keeps at bay the dark ringing wall of the jungle as 'nature' incarnate. The plazas are kept free of weeds and are continually swept clear of debris, in a centrifugal fashion, eventually resulting in a doughnut-shaped midden (DeBoer and Lathrap 1979: 128). This midden is another feature of a compound (Lathrap 1962: 145), and is composed of the organic and inorganic refuse swept from the plaza. Furthermore, it represents a 'mine' or 'cache' of still-useful material through which children and others frequently search for things that may be re-cycled.

In addition to refuse found within the midden, one frequently observes within a compound items that superficially appear as garbage. However, if these items were to be tagged and followed we would find that these objects are clearly being funneled through a separate trajectory from those elements that quickly make it to the midden. A prime example of this are sherds resulting from broken ceramic vessels. Small sherds are often ground up and used as temper in the manufacture of new vessels. Large sherds might be used as serving platters or small storage containers. Another example of an apparent discard is seen in Pl. 1. The large wooden trough, or *shasho*, is stored (has not been

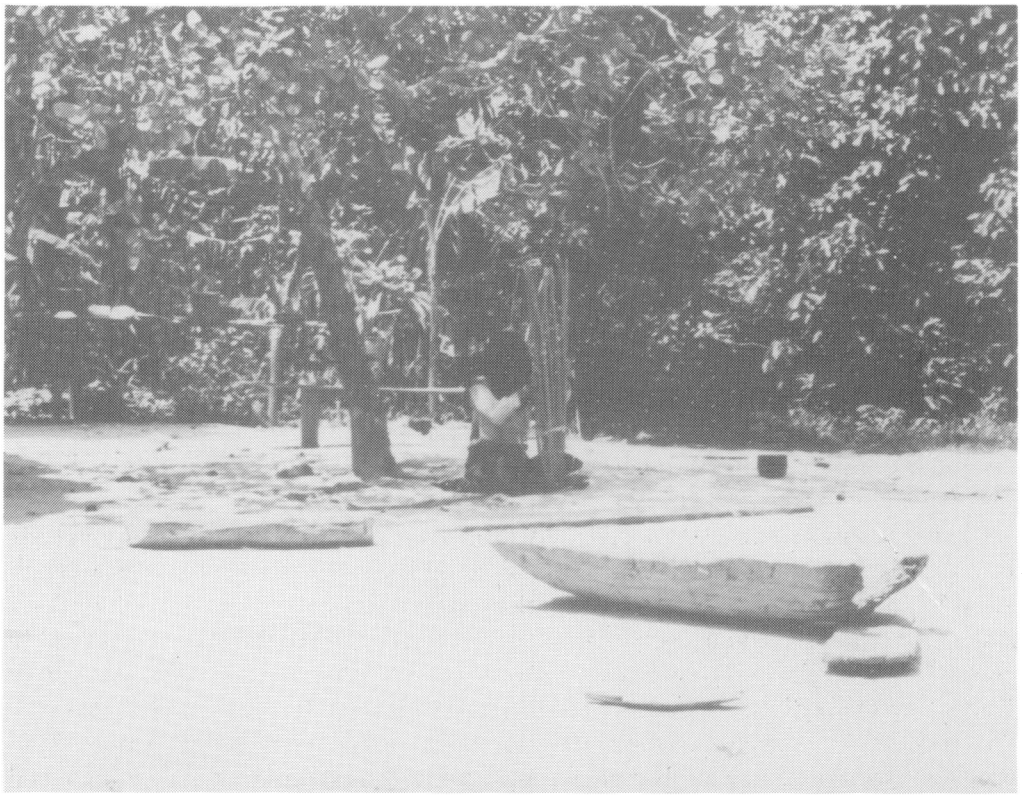

Plate 1 Apparent discards actually in open-air storage in a Shipibo plaza, San Francisco. The large artifact in the center is a wooden rocker-mortar, or *shasho*, for grinding temper.

discarded) in the center of the plaza, where it is easily available to be used for grinding temper (*quenquesh*) for pottery.

This is a very common pattern in Shipibo artifact curation. It derives from a casual attitude to manufactured items, which probably originated during traditional times when all artifacts were characterized by both ease of manufacture and replacement because they were only once removed 'naturefacts' derived from the organic raw materials of the tropical forest. These same attitudes have now been transferred to items of imported Western technology. They manifest themselves in an apparent lack of concern for maintenance and indiscriminant exposure of imported items to the ravages of the elements. Roe has observed Shipibo axe heads or machetes lying in the plaza rusting away. Of course, the stone implements that they replaced were treated similarly, but they did not oxidize.

The ethnoarchaeological significance of this system is that these apparent discards are actually in temporary open-air storage awaiting reuse. A Shipibo will walk over to such an axe-head, partially excavate it from the plaza (since it works its way into the clay as a result of sheet erosion due to the torrential rainfall that removes the clay from beneath it but cannot carry the heavy object away), and haft it onto a wooden shaft made that day

for a specific purpose. Sometimes, of course, these objects continue to sink, are forgotten, and hence enter the archaeological record as isolated finds in the plaza. Such indifference to artifact decay or loss is also present with regard to native items such as the wooden rocker-mortar seen in Plate 1, pestles, clay-kneading boards, and so on. The only exceptions to this pattern are archaeologically the most ephemeral, but ethnographically the most valued, bird's feathers. These treasures are carefully sequestered in the roof thatch of the *shobo* as *materia prima* for arrow fletching as well as male headdress (or *maiti*) construction.

Hayden and Cannon (1983) recently have discussed the issue of relative degrees of refuse processing within the Mayan highlands. The process they described may be thought of as a system of 'refuse management'. Objects are evaluated in terms of future potential uses, hindrance factors, and effort associated with their movement. The results of this evaluation process (to which the Shipibo would add aesthetic concerns) determine how the objects are cycled through the system, and where their use lives ultimately end (Hayden and Cannon 1983: 154).

Within the structure of a compound, and through the process of refuse management by the Shipibo a model for the compound organization and archaeology may be generated. Based upon this model it should be feasible to delineate kinds of activity and disposal areas, and the associations between them. Through this analysis we will begin to understand the relevant processes involved in the formation of sites, and more importantly the conditions under which different patterns will emerge and change.

To this end, an actively occupied house compound in San Francisco de Yarinacocha, Peru was investigated. This compound was mapped and recorded by DeBoer and Lathrap (1979), and represents the systemic context. An abandoned compound, located within the same village was also examined as representative of the archaeological context (Roe and Siegel 1977). The relative fit between the two contexts provides an objective basis for discussing specific processes in the formation of archaeological sites, as well as methods for dealing explicitly with perceptual biases on the part of the analyst.

A spatial analytic technique for investigating artifact distributions developed by Kintigh and Ammerman (1982) was employed. This is *k*-means cluster analysis, the details of which are adequately described elsewhere (Doran and Hodson 1975: 180–4, 235–7; Kintigh and Ammerman 1982; Simek and Larick 1983; Simek 1984). Therefore, we will only present a brief description and rationale for its use in the present study. We used this analytic technique as a tool in elucidating some of the spatial patterning within the two sites. Further, the defined clusters provide spatial units within which relative proportions of different artifact classes may be examined.

K-means cluster analysis

The *k*-means procedure is a non-hierarchical cluster analysis, and therefore the clustering levels are not necessarily nested. *K*-means may be used in a variety of ways for spatial analysis. One, which is followed in the present study, is to use only the point locations of the artifacts in the entire assemblage as input for the clustering algorithm. Once the useful clustering levels are defined we may then decompose each cluster into

the constituent artifact classes. Clusters may be compared spatially as well as by their contents. Therefore, the unit of analysis, in this case, is the spatial cluster of artifacts.

The *k*-means procedure as developed by Kintigh and Ammerman (1982) 'attempts to minimize the intracluster variances while maximizing the intercluster distances' at each clustering stage (Kintigh and Ammerman 1982: 39). Using the input data the program divides all of the objects into a series of clusters. Each cluster has a spatial center point (centroid), which is 'the point with the mean x and mean y values of all of the objects in the cluster' (Kintigh and Ammerman 1982: 39).

In addition to the itemization of cluster contents the computer program (written by Kintigh) provides a number of summary statistics for each of the clustering stages. One of these values is the root mean squared deviation (RMS), which is 'the square root of the mean of the squared distances from each point in the cluster to the centroid' (Kintigh and Ammerman 1982: 41–2). Each cluster has an RMS-score and the value may be used as a cluster radius (Kintigh and Ammerman 1982: 41). Therefore, a circle denoting the cluster size may be drawn around each centroid.

In the present study, two clustering stages for each site were selected for analysis. The first (or lower) clustering stage corresponded to our intuitively based characterization of the spatial organizations for the sites. The second (higher) clustering stage enabled us to focus on the spatial distributions of various artifact classes that could not be discerned intuitively. Further, the higher clustering stages selected for analysis in this study were those that included clusters containing appreciable numbers of artifacts. Otherwise, one is confronted with the problem of discussing clusters that may have very few members.

Results and discussion

The defined clusters provide analytic units within which relative proportions of different artifact classes may be examined. As can be seen in both contexts, the gross spatial patterns that could be observed visually were identified as clear-cut clusters in the analysis (see Figs. 2 and 6). In both contexts, artifact clusters at all levels of analysis are associated with features (or complexes of features). However, the less obvious patterns, which we argue represent subtle differences in the activity organization of the settlement, were more readily recognized through the cluster analysis than by visual inspection. At the higher clustering levels, where a finer degree of spatial differentiation is monitored, we argue that distinctions are being made between secondary and the associated primary disposal areas.

For example, at the seven cluster level of the on-going context (Fig. 8), cluster #1 at the four cluster level (cluster #1 * 4, Fig. 6) has decomposed into three smaller clusters (#1 * 7, #5 * 7, #7 * 7). If we examine the respective contents of these clusters suggestive patterns are apparent. In cluster #1 * 4 (Fig. 7) corncobs, which are cast-off elements associated with the kitchen, represent 7.5% of the cluster artifacts. Looking at corncobs in the three smaller clusters (Fig. 9) we see that in cluster #5 * 7 corncobs now are 21% of the cluster artifacts. In the other two clusters (#7 * 7 and #1 * 7) corncobs are trivial elements. A similar pattern holds for the bone/shell category. The reverse pattern is seen for ceramics, with 7% and 4% in clusters #7 * 7 and #5 * 7 respectively, but

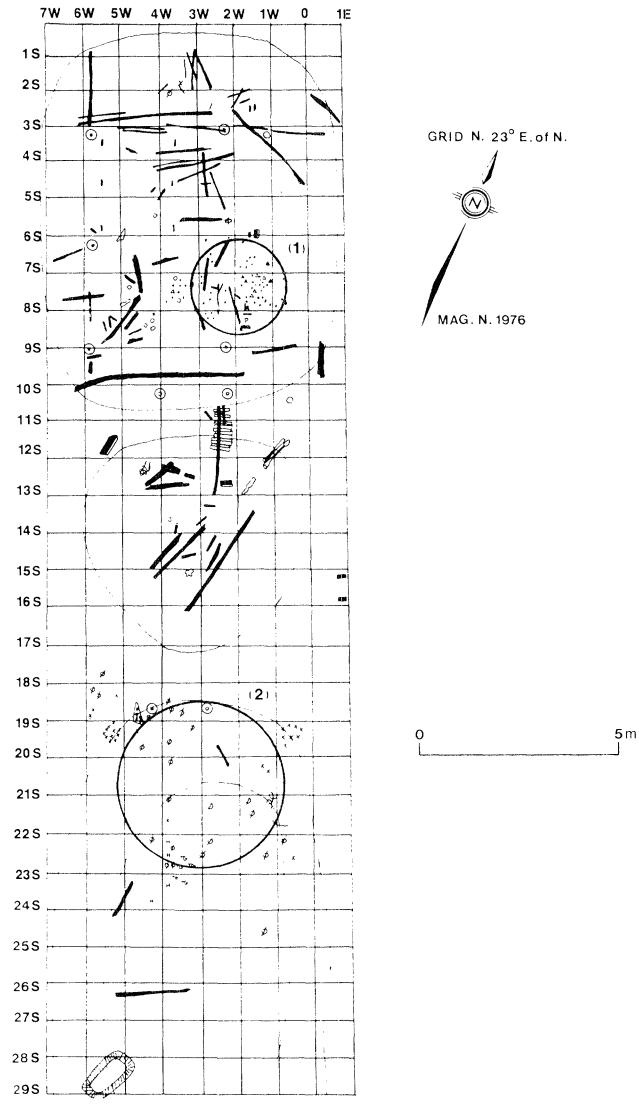

Figure 2 Plan view of the archaeological context showing the artifact spatial patterning at the two cluster solution. Note that these clusters highlight the two major concentrations of artifacts. Cluster numbers are in parentheses.

representing 35% of the artifacts in cluster #1 * 7. The cluster centroid for #1 * 7 is located in the area of the storage racks associated with the kitchen. The large percentage of pottery in this cluster reflects the observation that children and animals often bump into these racks thus dislodging ceramic vessels, which fall to the ground below and break.

The pattern that begins to take form here is that elements are differentially distributed within this portion of the site. Further, we may suggest that the areas with high quantities of organic remains are likely to be the disposal areas associated with the kitchen.

Now let us turn to the archaeological site. If we examine the ceramic shed and cooking area in the archaeological context the model of the compound organization as represented in the systemic context may be used to evaluate the artifact distributions. The presence of a large proportion of organic remains within a cluster that is associated with a kitchen area will signify that part of the area used for garbage. Therefore, in the archaeological context cluster #4 * 4 represents the disposal area for debris swept out of the ceramic cooking shed (which was centered at 21S, 3W; Fig. 5). Clusters #2 * 4 and #3 * 4 reflect the loci of two separate racks (posts from one of the racks were still present at 19S, 4W and 19S, 3W). The percentage of ceramics for each of these two clusters is the

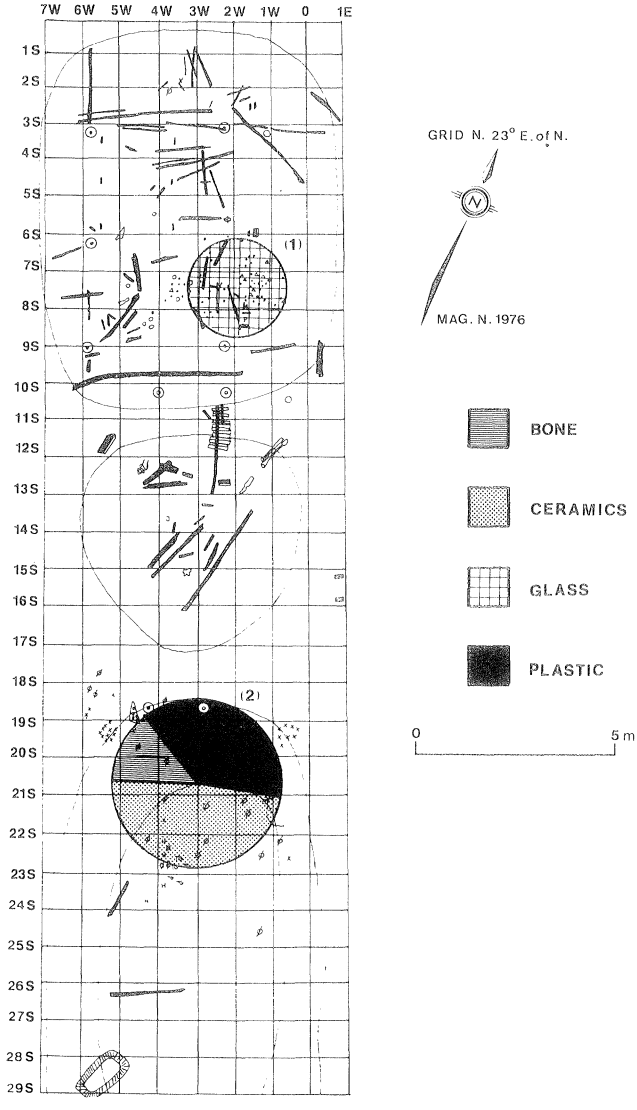

Figure 3 Plan view of the archaeological context showing the artifact spatial patterning and percentage distribution at the two cluster solution. Cluster numbers are in parentheses.

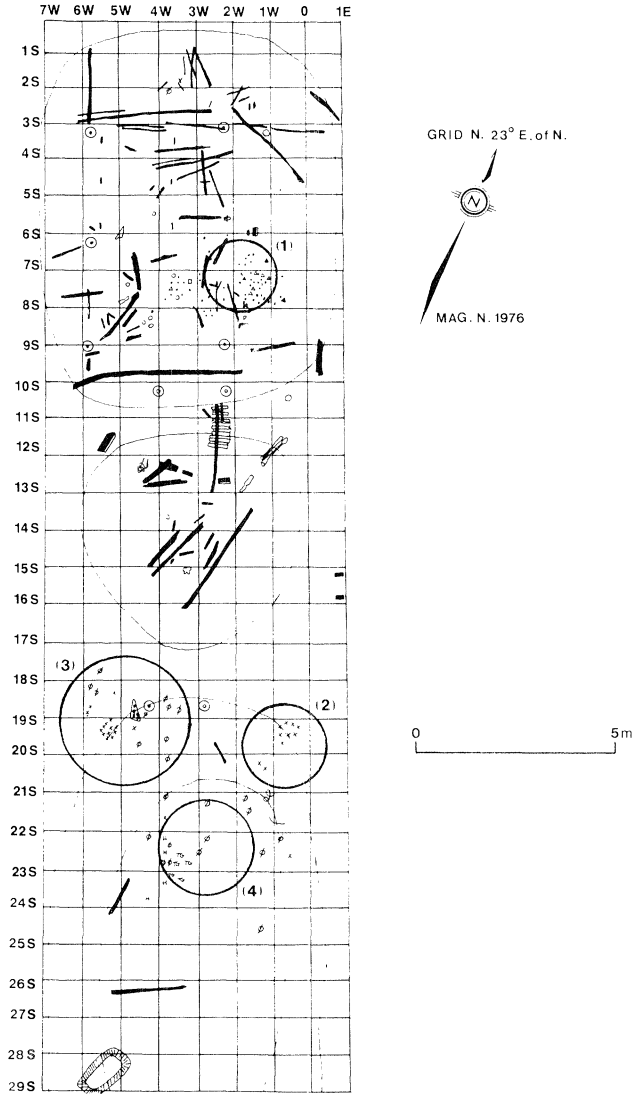

Figure 4 Plan view of the archaeological context showing the artifact spatial patterning at the four cluster solution. Note that cluster #2 in fig. 3 has now decomposed into 3 smaller clusters. Cluster numbers are in parentheses.

highest at the site, and reflects the observation noted earlier regarding the occurrence of pottery vessels commonly being dislodged from the storage racks.

The house in the archaeological site is similar to the abandoned house within the ongoing site to the extent that very little debris (other than house posts) is present in each. DeBoer and Lathrap (1979: 133–4) indicate that when the occupants of the abandoned house vacated this structure they moved into an adjacent structure. All of the household

furniture and utensils were transported to the new house. DeBoer and Lathrap suggest that as distances between abandoned and new residences increase one might expect a greater amount of material to be left behind. Yet, with regard to the archaeological site discussed in this paper, it appears that this relationship does not necessarily hold. The former occupants of this abandoned house compound moved to a new residence about 1.5 km away. However, factors other than the original occupants transporting all of their material may be involved. The Shipibo tend to visit abandoned house compounds for the

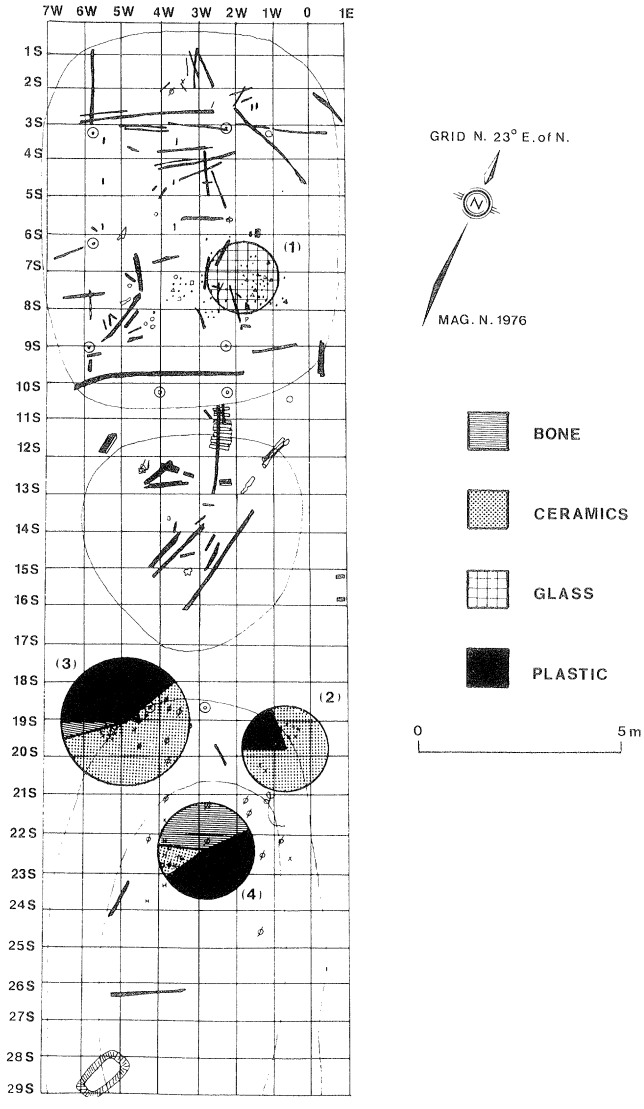

Figure 5 Plan view of the archaeological context showing the artifact spatial patterning and percentage distribution at the four cluster solution. Note that cluster #4 now has a considerably greater percentage of bone, whereas clusters #2 and 3 have greater percentages of ceramics than does cluster #2 in fig. 4. Cluster numbers are in parentheses.

purpose of exploiting some of the resources that these areas represent (see also Gould *et al.* 1971: 163; Robbins 1973; Hall 1981; Newell 1981; Schiffer 1983: 683). One of us (Siegel) observed a good example of this activity while mapping the distribution of the remaining artifacts at the archaeological site. One of the Shipibo helping in the project was evaluating the timbers that were part of the house. Finally, he selected one of the posts that was still standing and began pulling it out of the ground. (Siegel requested that he let the post stay in the ground until he had photographed the site.)

A factor accounting for the low quantities of material found with the abandoned houses (in the on-going as well as archaeological contexts), therefore, is the Shipibo practice of re-using elements associated with abandoned structures.[2] In light of this phenomenon it might be suggested that abandoned Shipibo structures are not really components of the archaeological record, but have merely changed status within the systemic context. Instead of being considered as living structures, or kitchens, or ceramic sheds, etc., after abandonment the Shipibo seem to incorporate these facilities into the economy as additional resource patches.

Distinctions between secondary and primary disposal areas were only apparent at the higher clustering levels in the *k*-means analysis. At the lower clustering level the secondary and primary disposal areas were seen as indistinguishable clusters. This

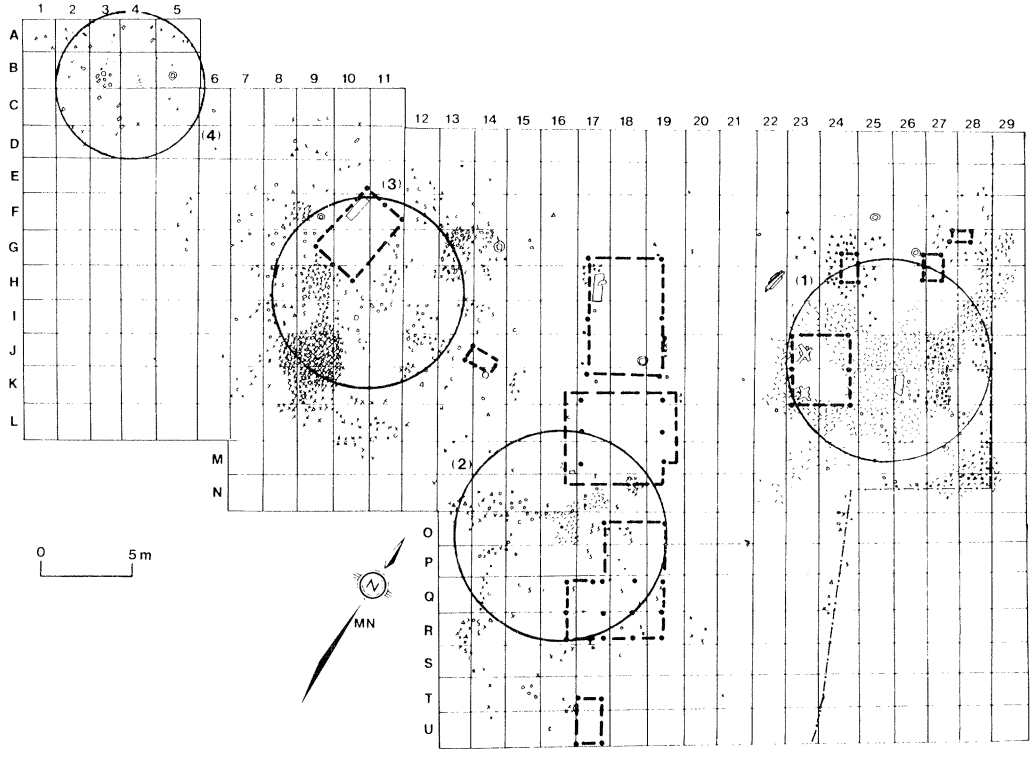

Figure 6 Plan view of the systemic context showing the artifact spatial patterning at the four cluster solution. The major artifact concentrations are highlighted in this solution. Cluster numbers are in parentheses.

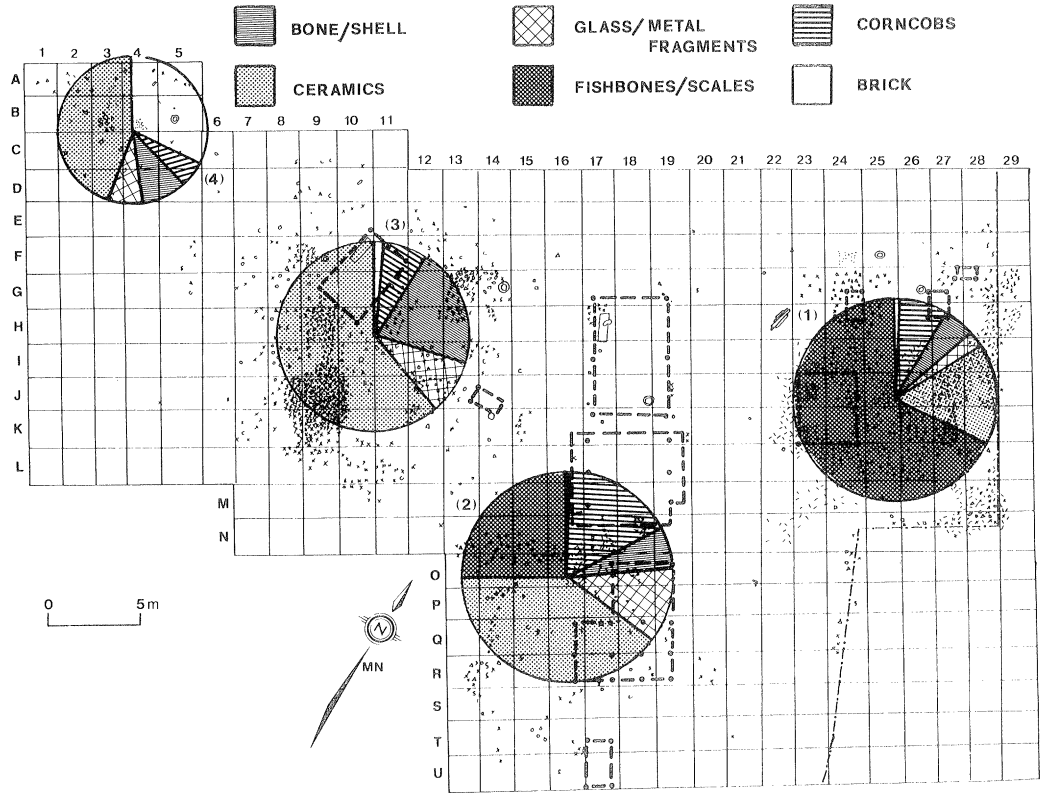

Figure 7 Plan view of the systemic context showing the artifact spatial patterning and percentage distribution at the four cluster solution. Cluster numbers are in parentheses.

pattern seemingly contradicts Schiffer's (1972: 162) hypothesis that with 'increasing intensity of occupation, there will be a decreasing correspondence between the use and discard locations for all elements used in activities and discarded at a site.' As discussed earlier the Shipibo are fully sedentary and their settlements are occupied intensively. It is appropriate, therefore, to qualify Schiffer's proposition by indicating that the relative 'correspondence between use and discard locations' within a given settlement will vary depending upon the spatial scale under consideration and the activities associated with the use and discard areas.

In terms of the spatial analysis of the refuse patterns observed in the present study, differential distribution of the various categories of debris (primarily fishbones and scales, corncobs, bone, shell and ceramics) are not recognizable at the lower clustering stages. However, at the higher clustering levels we are able to differentiate, spatially, kinds of refuse (primary vs. secondary). The Shipibo represent a case where at the gross level of analysis there is complete correspondence between the primary and secondary refuse. At the more detailed level this correspondence breaks down, and we are able to discern the disposal areas associated with the primary activities. As will be discussed below, however, the relationship between use and discard locations may not simply be related to occupational intensity.

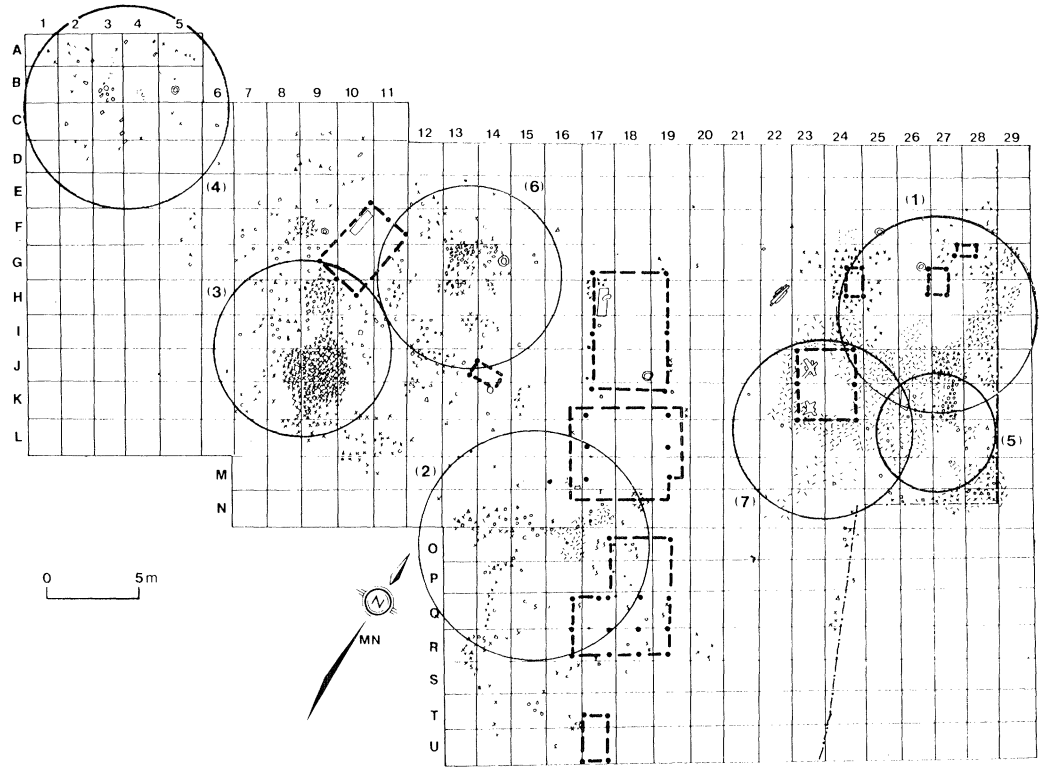

Figure 8 Plan view of the systemic context showing the artifact spatial patterning at the seven cluster solution. Note that clusters #1 and 3 have decomposed into 3 and 2 smaller clusters, respectively. Cluster numbers are in parentheses.

In order to evaluate the relationship between varying levels of occupational intensity and degree of spatial correspondence of primary and secondary refuse it would be important to investigate a number of societies representing a range of sociocultural integration and activity patterns. Using the Human Relations Area Files data Murray (1980) has conducted such a study. As a result of her survey Murray concludes that there is a low 'correspondence between use and discard locations' only for elements associated with enclosed activity loci (Murray 1980: 497). She indicates that for migratory, as well as sedentary groups, there may be spatial discordance between use and discard locations as long as activities are conducted within enclosed structures. In our study, we corroborate Murray's observation only with respect to the living structures. Given varying levels of spatial resolution the overlap of primary and secondary discard locations with other enclosed activity loci was observed (see kitchen of systemic context, Fig. 7 units J23, J24, and K23, K24). We would suggest, therefore, that the spatial relationship between primary and secondary discard locations is not determined by enclosed vs. open-air activity contexts (although this may be a contributing factor). The nature of the use to discard spatial relationship is determined by the category of activities being conducted, the nature of the debris, and the planned use of the locus in the future (see also Kent

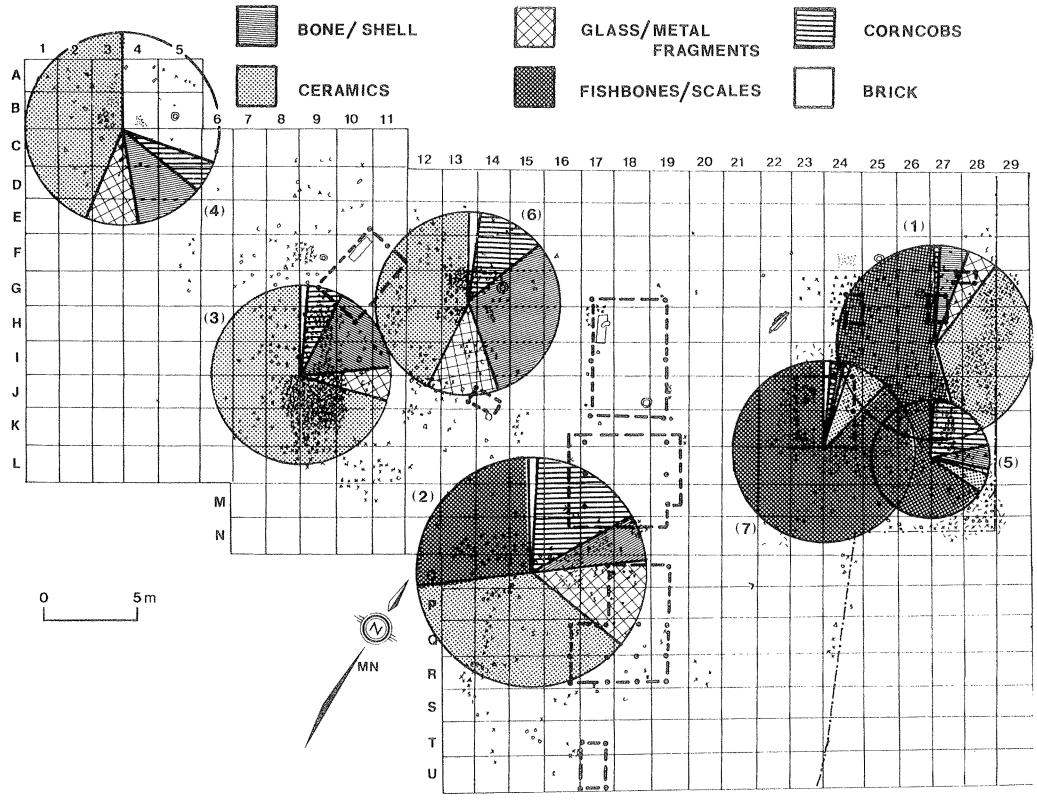

Figure 9 Plan view of the systemic context showing the artifact spatial patterning and percentage distribution at the seven cluster solution. Cluster numbers are in parentheses.

1984: 171). In other words, within any given cultural group there is likely to be a range of spatial relationships between use and discard locations depending upon what activities are being conducted.

One of the implications of this study is somewhat negative. This concerns the problem of preservational bias. In both the on-going and archaeological contexts much of the interpretations, comparisons, and functional attributions were based upon the spatial analysis of organic remains. In the highly acidic soils of the Amazonian lowlands these sorts of residues will have decomposed within 20 years (Roe and Siegel in press). The Eastern Woodlands of North America represent a similar situation, and investigators have dealt with the problem through chemical analyses of the site soils (Dincauze 1976: 96–9, 121–6, 1979, 1981; Bawden and Williams 1977: 110–14; Eidt 1973, 1977; see also Provan 1971; Proudfoot 1975; Shackley 1975: 61–74). We would suggest that it is appropriate to attempt similar approaches in the South American lowlands (Eidt 1984).

The results of the present study may provide a useful framework within which soil sampling of a site matrix in lowland South America should proceed. Once a site is discovered it will be important to investigate an area of approximately 1500 square meters. Of course a settlement may be smaller or larger than this value, but we have found that individual house compounds will not be much greater than 1500 square

meters. Within this area we would suggest that soil samples be taken systematically at one meter intervals. A contour plot of the chemical profile for the site may then be constructed, which may be evaluated within the framework of the artifact distributions recovered from the site (Heidenreich and Konrad 1973). Following this procedure it may be feasible to characterize objectively the internal organization of a prehistoric settlement located on the new alluvium of the South American lowlands.

One potential problem with using the modern-day Shipibo as a model for prehistoric groups in the area is that prehistorically the Shipibo probably occupied large communal houses known as *maloca*. These have been observed ethnographically for a number of South American tropical forest groups (Lowie 1948: 29; Nimuendaju 1948: 236; Reichel-Dolmatoff 1971: 104–10; Siskind 1973: 47–66; Goldman 1979: 39–42). Goldman indicates that a standard sized *maloca* 'was 75 feet long, 55 feet wide, and 21 feet high' (1979: 39). This is 1503.7 square meters, which compares favourably with the 1500 square meters of an average sized modern-day Shipibo house compound. Further, it is apparent that symbolically and organizationally the concept of 'maloca' and the present day compound serve the same function. That is, both the *maloca* and the house compound provide the occupants with security and protection from the surrounding evil jungle spirits (see Reichel-Dolmatoff 1971: 108–9; Roe 1982: 220, 226). In light of the dimensional and the functional isomorphic characteristics between the *maloca* and the present day compound we would suggest that it is appropriate to employ the current Shipibo activity organizational patterns as a set of expectations when evaluating prehistoric sites recovered in the Amazonian lowlands.

Summary

In this paper it was seen that by carefully analyzing the spatial distributions and associations of the full range of artifacts from an on-going context insight was gained into distinguishing primary from secondary refuse. Using the patterns observed in the systemic context as a model we were able to evaluate the spatial relationships of artifacts recovered in the archaeological context.

Prehistoric sites in the South American lowlands represent a further degree of abstraction of the systemic context than that of the abandoned compound examined in this study. This is due to the efficiency and rapidity of the deteriorational elements in the tropical rain forest. In order to deal with this problem we have suggested that soil chemical analyses of the site matrices would be appropriate.

In the present analysis we have indicated that occupational intensity of a settlement is not the only factor that should be considered when evaluating the correspondence between use and discard areas. The spatial relationship between use and discard locations may vary considerably within a single settlement, depending upon the nature of the activities. Therefore, when determining whether use and discard locales are spatially associated it is not appropriate to simply classify settlements as high vs. low intensity occupations, or by the presence/absence of structures. It is reasonable, and perhaps necessary, to follow a more open-ended approach, in that we recognize for any

settlement the range of activities conducted, and that there will exist a variety of spatial relationships between use and discard locations.

Notes

1 This work took place in the summer of 1976, during the dry season, the only time when any archaeological work is possible in this humid region. It was part of a continuing program of research into the prehistory and ethnography of the Shipibo Indians initiated by Roe in 1969, while a graduate student under the supervision of Donald W. Lathrap of the University of Illinois at Urbana-Champaign.

2 However, indirect arguments from remains of ancient cultural practices are possible since not everything can be hauled away. Generally, solid hardwoods are preferred for the main standing support posts in Shipibo huts because of their obvious durability. Yet where there is significant population pressure, these valued hardwoods are the first to be used up within an acceptable transportation radius of the village. At that time one sees much less desirable palmwood logs being substituted for them. Since their soft pithy interior means that they rot much quicker than the hardwood logs, they are not removed for structural reuse or for firewood when a hut is abandoned. The only posts that Roe has seen still standing in long-abandoned house sites have been these palmwood logs. Since post-molds can only form with posts allowed to rot *in situ*, and that situation is characteristic just of palmwood logs, which are poor second choices for structural supports under conditions of high population density, then the finding of post-molds in an archaeological site might be used indirectly to infer demographic pressure at that site when it was occupied!

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20.xii.85

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Abstract

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Shipibo Archaeo-ethnography: site formation processes and archaeological interpretation

The structures of two Shipibo house compounds are considered. One described by DeBoer and Lathrap (1979) represents the on-going ethnographic context.The other was recently abandoned and therefore represents the archaeological record. A *k*-means cluster analysis program is used to investigate the spatial structures of both the ethnographic and archaeological contexts. In doing so, the systemic context becomes a model against which the archaeological setting may be compared. We find that there is a variety of spatial relationships between use and discard locations manifested by a single cultural group, the precise nature of which is constrained by the range of activities conducted by the occupants of the group. Based upon this analysis we suggest that the correspondence between use and discard areas should not only be examined in terms of occupational intensity or enclosed vs. open-air activities, but should also include a consideration of the variability in the settlement activity organization. Theoretical expectations and sampling considerations are proposed for excavating prehistoric settlements in the South American lowlands.