

Chapter 11



Patterns in Lithic Artifact Distributions and the Social Organization of Space on Housepit Floors

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Introduction

This chapter is a summary analysis of patterns in the distribution of lithic artifacts on the floors of three housepits at the Keatley Creek site. A more complete analysis can be found in Spafford (1991). Assuming that the patterned use of space on housepit floors during the last occupation can be a major source of artifact patterning in the floor deposits, it is possible to make inferences about the social and economic organization of the residents of these housepits. The statistical and visual analyses of the data indicate that the largest house was divided into several separate spaces, each used by somewhat independent domestic groups for similar activities, while in each of the two smaller houses, a single domestic group shared a space divided into areas used for different activities. These patterns in the social organization of space are consistent with a model of social organization, based on the work of earlier researchers in this region (Stryd 1971, Hayden et al. 1985), arguing that the largest pithouse in large pithouse village sites in the Mid-Fraser River region might have been occupied by groups which were more hierarchical in their social organization than contemporaneous groups in smaller houses. The most recent occupations of the three housepits dealt with here (HP's 3, 7, and 12) all date to the Kamloops Phase of the Plateau Pithouse Tradition (ca. 1,200–200 BP—Richards and Rousseau 1987).

In the model of social organization proposed for Keatley Creek (Hayden et al. 1985), competition between groups within a society for control of important resources leads some groups to seek competitive advantages through new forms of social organization. Hayden et al. (1985) have suggested that some groups living in large pithouse villages in the Mid-Fraser River region might have gained a number of competitive advantages by organizing themselves into large, hierarchically-organized co-residential corporate groups. I argue that within a co-residential corporate group organized for this purpose, somewhat independent domestic groups would have been in competition with each other for wealth and power and would have maintained physically separate domestic economies in an effort to control and display their individual wealth and status. Each domestic group would be expected to deposit a largely redundant collection of artifacts within the bounds of its domestic space. The most influential group might be expected to occupy a somewhat larger area than the rest and this area might exhibit greater evidence of wealth, status and craft specialization. The largest domestic area might also be situated at some particularly desirable location within the structure; in the warmest part of the house or close to an important feature.

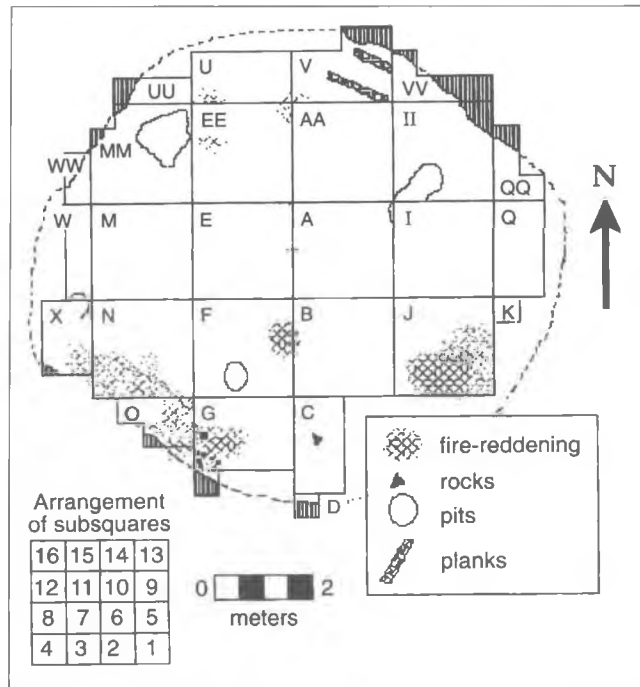


Figure 1. Arrangement of squares and subsquares on the floor of HP 3.

In a household organized primarily as a large family unit, with less internal competition between constituent groups for rank and status, activities such as sleeping, food preparation, refuse disposal and various manufacturing tasks would have been conducted communally in separate areas. Archaeologically, it would be expected that various classes of artifacts would have been deposited in quite different proportions in areas used for different activities.

The rim-crest to rim-crest diameter of HP 12 is 9 m, somewhat below the 11.13 m average diameter for housepits at the Keatley Creek site. Housepit 3 has a diameter of 14 m which is above average but considerably below the maximum diameter of 21 m, and HP 7 has a diameter of 19 m, near the upper end of the range. Population estimates for the three housepits based on Teit's (1906) observations from B.C.'s interior plateau in the late nineteenth century and Hayden et al.'s (1996) analysis of ethnographically recorded HP sizes and numbers of residents put the population of HP 12 at 19, HP 3 at 31, and HP 7 at 45 (see Spafford 1991: 19). Any of these populations is large enough to have been divided into several somewhat

independent domestic groups within a large, hierarchically organized, co-residential corporate group. However, the model proposed by Hayden et al. specifically associates large, hierarchically-organized co-residential corporate groups with the pithouses at the high end of the size distribution. Patterns in the distribution of lithic artifacts on the floor of HP 7 are, therefore, expected to be consistent with those predicted for the residences of large corporate groups. Patterns in the distributions of lithic artifacts on the floors of the two smaller HP's could reasonably be expected to be consistent with either type of social organization, though it is predicted that smaller houses are more likely to have been organized around a single domestic economy.

In this analysis, the housepit floors were divided into sectors distinguished by the locations of hearth and pit features and by visibly discrete clusters of artifacts (Figs. 1, 2, & 3). In order to identify artifact classes with distributions more likely to have resulted from patterned human behavior than from a random distribution process, the frequencies of various classes in the different sectors on each floor were compared using chi-squared tests or, for rarer artifact classes, the binomial distribution. Distributions which were not considered to be attributable to random processes were then examined visually in order to identify areas used for different activities. Finally, some activities which might have occurred in each of the identified "activity areas" were suggested on the basis of the artifact classes present.

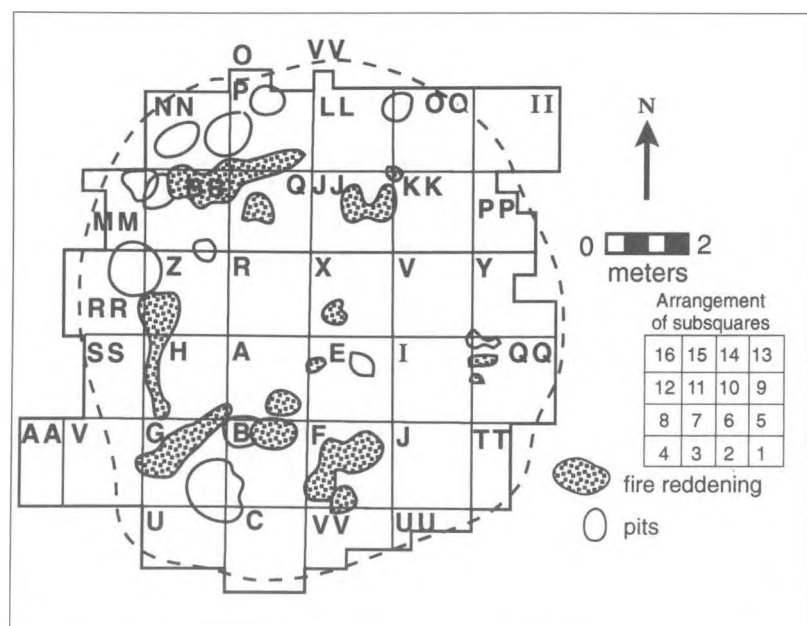


Figure 2. Arrangement of excavated squares and subsquares on the floor of HP 7.

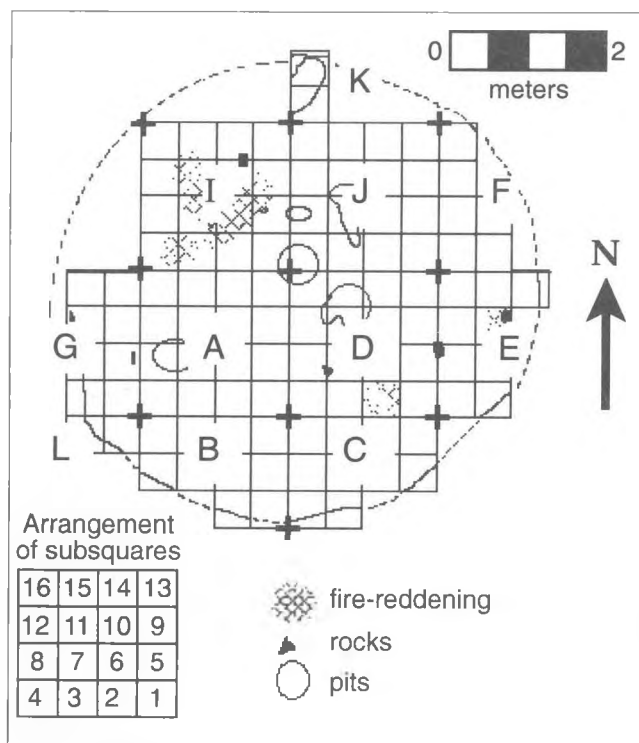


Figure 3. Arrangement of excavated squares and subsquares on the floor of HP 12.

Housepit 3

Since the patterns observed in the distribution of lithic artifacts on the floor of HP 3 (the medium-sized housepit) are in some respects the clearest, and provide a good basis for comparison with the other two housepits, they are presented first.

In HP 3, lithic artifact types which occur in some sectors in frequencies considered improbable ($p < 0.10$) in a random distribution include: utilized flakes (Fig. 4), bifacial knives, small piercers, and small billet flakes, which are unexpectedly abundant in the southwest sector but rare in the northeast sector; whereas heavily-retouched scrapers (Fig. 5), hammerstones, and debitage in general (Fig. 6) are improbably abundant in the northeast sector and rare in the southwest sector. Visual examination of distribution maps for these types confirm the impression that these distributions distinguish opposite sides of the floor. Between these areas, the center of the floor, represented by the center sector, is distinguished by a general scarcity of debitage and modified artifacts, though visual examination of the distribution of large notches suggests that the center of the floor was preferred for some activity involving the use of this modified artifact type.

Thus, there is little to suggest that this floor was divided among several domestic groups each of which used its own area for similar activities. Instead it seems that the southwest and northeast sides of the floor were each used for a distinct set of activities. The artifacts which characterize the southwest side tend to be acute-edged tools or by-products of the manufacture of acute edges and, since acute edges are probably best suited to working soft materials such as foodstuffs, birchbark, skins, and some fibres, this area was interpreted as a possible "kitchen" and/or women's work area. The relative abundance of heavily-retouched scrapers, hammerstones, and debitage on the northeast side suggests an emphasis on the working of harder materials such as wood and bone, materials which would have been used extensively in the manufacture and maintenance of equipment for activities such as fishing and hunting. For the sake of convenience I refer to the area distinguished by these artifact types as a "workshop." The central area probably served primarily as a traffic area. It may also have been used for activities requiring a large open work space. Large notches have been interpreted as tools used in working shafts and extra space would have been required for the manipulation of long objects.

In the absence of any clear evidence that this floor was divided into distinct areas used for similar activities, I argue that the residents of this house were organized into a single, economically cooperative, domestic unit. By this I mean that competition for status

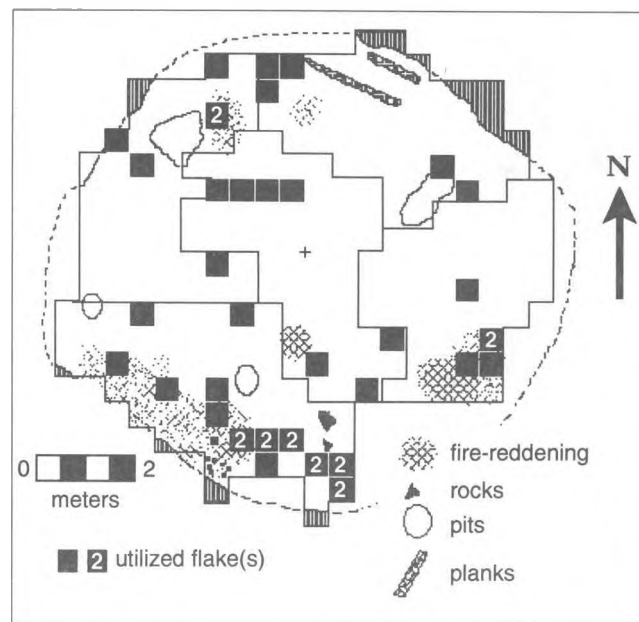


Figure 4. Distribution of utilized flakes on the floor of HP 3.

and resources would generally have been limited to competition between individuals rather than competition between groups or families. The most important distinctions within the co-residential group would have been based on sex, age, and individual status.

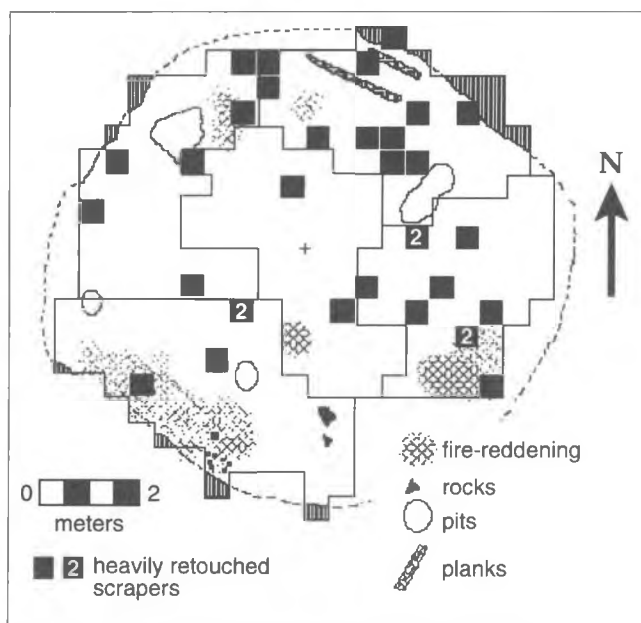


Figure 5. Distribution of heavily-retouched scrapers on the floor of HP 3.

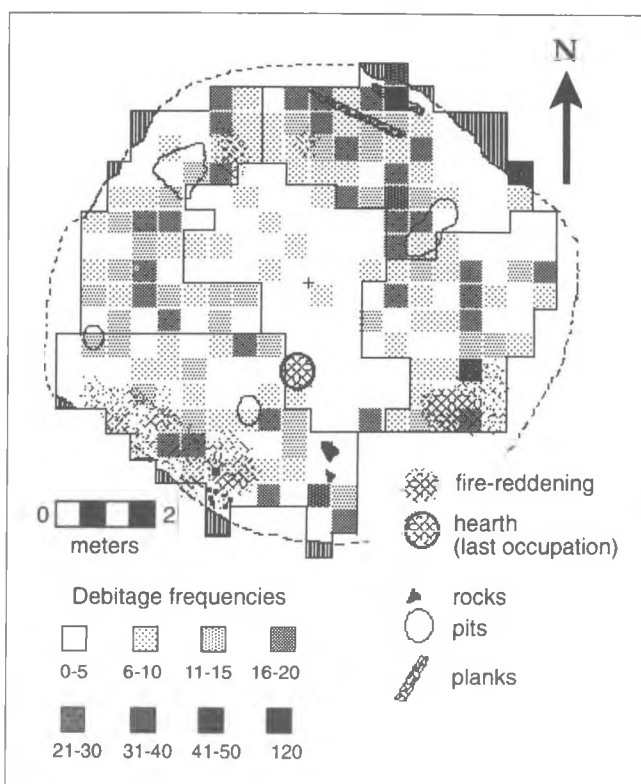


Figure 6. Distribution of debitage on the floor of HP 3.

The population of this housepit was estimated at 31. In a polygamous society, a large extended family, centered, perhaps, on two or three brothers with their wives, children, parents, elders, slaves, and other dependents, might have approached this size. Possibly, close bonds of kinship maintained this household as a cohesive social unit.

Housepit 12

The patterns observed in the distribution of lithic artifacts on the floor of HP 12 (Fig. 7) were similar in some respects to those on the floor of HP 3. In HP 12, acute-edged expedient flake tools are improbably abundant in the southwest sector and present in the southeast sector but absent in the east and northeast sectors. Expedient scrapers are improbably abundant in the east sector and present in the northeast sector but absent in the southwest and southeast sectors. There is less debitage than expected in a random distribution in the southwest and southeast sectors and more debitage than expected in the east and northeast sectors (Fig. 8). While different artifact types are involved, these complementary distributions, like those in HP 3, suggest that opposite sides of the floor were used for quite different activities. Another interesting similarity is that the center sector of HP 12, like the central area in HP 3, is rich in notches.

There are important differences between the two housepits, as well. Utilized flakes are associated with high debitage frequencies in HP 3 and with low debitage frequencies in HP 12. Also, the center sector of HP 12 is rich in fire cracked rock, debitage, and modified artifacts while the northwest sector is poor in all classes of lithic artifacts. The center sector of HP 3 is poor in both debitage and modified artifacts.

In fact, the use of space seems to have been organized somewhat differently in the two houses in functional terms. In HP 12, the center of the floor appears to have been used more intensively for activities involving heavy use of lithic artifacts. This may be because HP 12 is only 8 m in diameter as compared with 15 m for HP 3. Housepit 12 is also much shallower. Headroom and working space would, therefore have been more restricted near the edge of the floor in HP 12.

As far as the social organization of space is concerned though, the similarities between HP 3 and

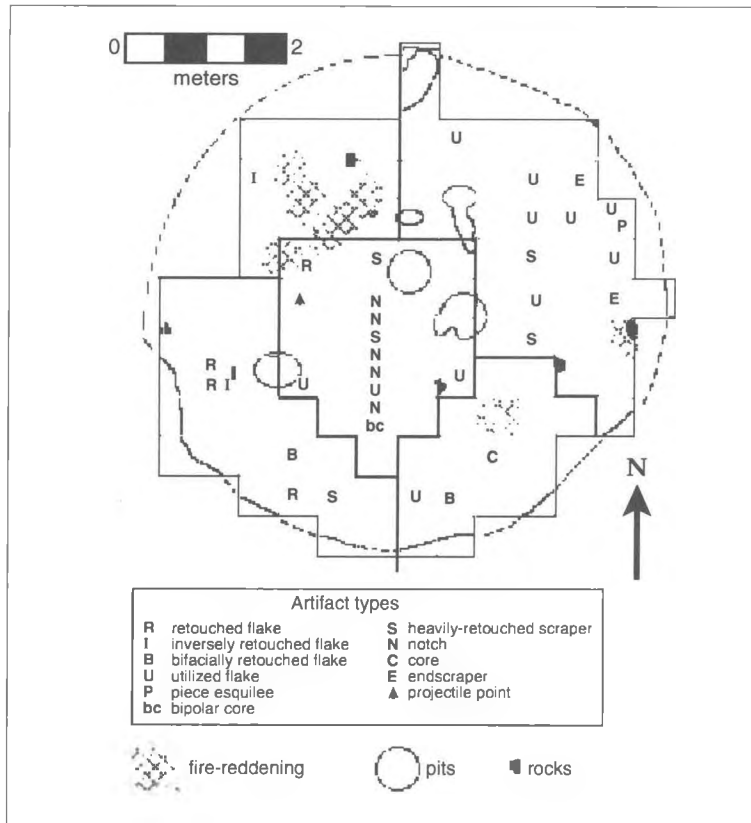


Figure 7. Distribution of modified artifact types on the floor of HP 12.

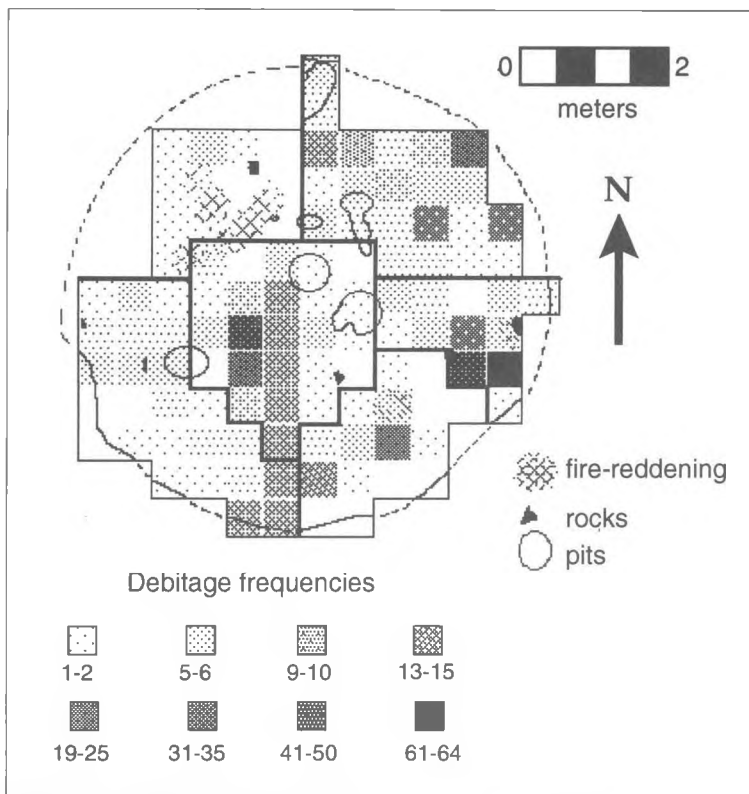


Figure 8. Distribution of debitage on the floor of HP 12.

HP 12 outweigh the differences. In both houses, the northeastern area of the floor appears to have been used for some activity which resulted in the deposition of relatively large quantities of debitage. Possibly, this location was chosen for lithic reduction because it received more daylight than other areas. In both houses the center of the floor appears to have been preferred for some activity involving the use of notches. While it does not appear that the southwest and northwest sides of the floor of HP 12 were used for the same sorts of activities as in HP 3, it seems clear that, in both houses, the most important division of space was between opposite sides of the floor, in which different activities occurred.

In HP 12, as in HP 3, there is no indication that separate areas of the floor were used by different domestic units for similar purposes. Instead, four distinctive areas were identified on the floor of HP 12, each of which appears to have been used for different activities. Again, I interpret this as evidence that social distinctions based on age, sex, and individual status were more important to the residents of HP 12 than was identification with any group within the co-residential group. I have not, however, identified specific areas on the floor of HP 12 as "kitchen" or "workshop" areas. The concentrations of debitage and utilized flakes which, to a large extent, distinguished a possible workshop from a possible kitchen in HP 3 occur in the same sector in HP 12. This may be because space was so constricted near the periphery of this floor that both "kitchen" and "workshop" tasks were confined to a relatively small area in the center.

The population of HP 12 was estimated at 19, which is few enough to be included in one large extended family centered around two or three adult siblings, but certainly more likely to represent several (probably related) families.

Housepit 7

In HP 7, lithic artifact types which occur in some sectors in frequencies considered improbable ($p < 0.10$) in a random distribution include: fire cracked rock (Fig. 9), debitage in general (Fig. 10), utilized flakes (Fig. 11), acute-edged expedient flake tools, expedient scrapers, heavily retouched expedient scrapers (Fig. 12), notches, drills/perforators, key-shaped scrapers, spall tools, and early projectile point types.

As in HP 3, heavily-retouched scrapers tend to be abundant where utilized flakes are scarce and vice versa. Also, heavily retouched scrapers are associated with high debitage frequencies in both houses. However, visual examination of the distributions of these types reveals quite a different pattern on the floor of HP 7.

In HP 3 utilized flakes were concentrated on one side of the floor and debitage and heavily retouched scrapers are concentrated on the other. In HP 7, the complementary distributions of heavily-retouched scrapers and utilized flakes are concentrically distributed. Assuming that areas rich in these two artifact types were associated with similar activities in both houses, it seems clear that space was organized somewhat differently in each house. Activities involving heavily-retouched scrapers and heavy deposition of debitage, which were concentrated on the northeast side of HP 3, were distributed around the northern perimeter of HP 7 while activities involving utilized flakes, which were concentrated on the southwest side of HP 3, were distributed in a band extending from slightly north of the center of the floor towards the southwestern and southeastern perimeter.

On the basis of these distributions, I have defined three concentric zones on the floor of HP 7 (Fig. 13). In the southern part of the floor, an "Inner zone" was distinguished from the remainder of the floor by relatively low frequencies of debitage and modified artifacts and by higher than expected frequencies of chert flakes. A "Central zone," surrounding the Inner zone, was distinguished by higher than expected frequencies of utilized flakes. Both the Inner and Central zones are

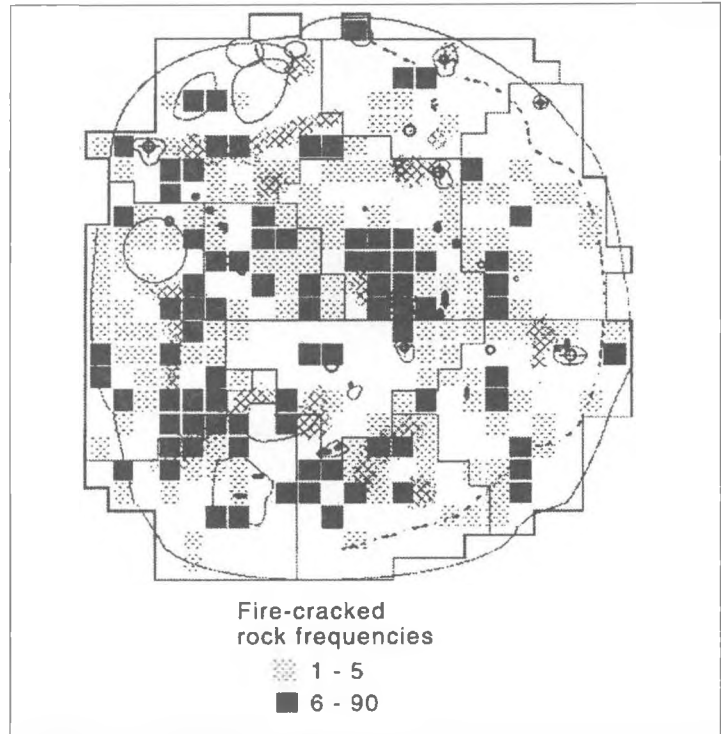


Figure 9. Distribution of fire-cracked rock on the floor of HP 7.

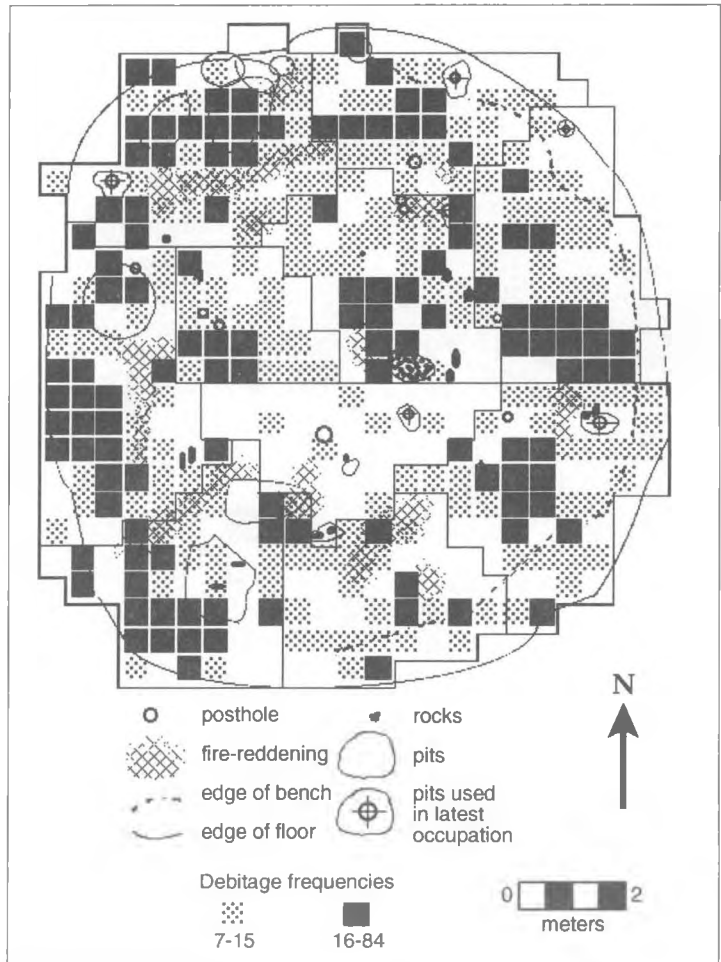


Figure 10. Distribution of debitage on the floor of HP 7.

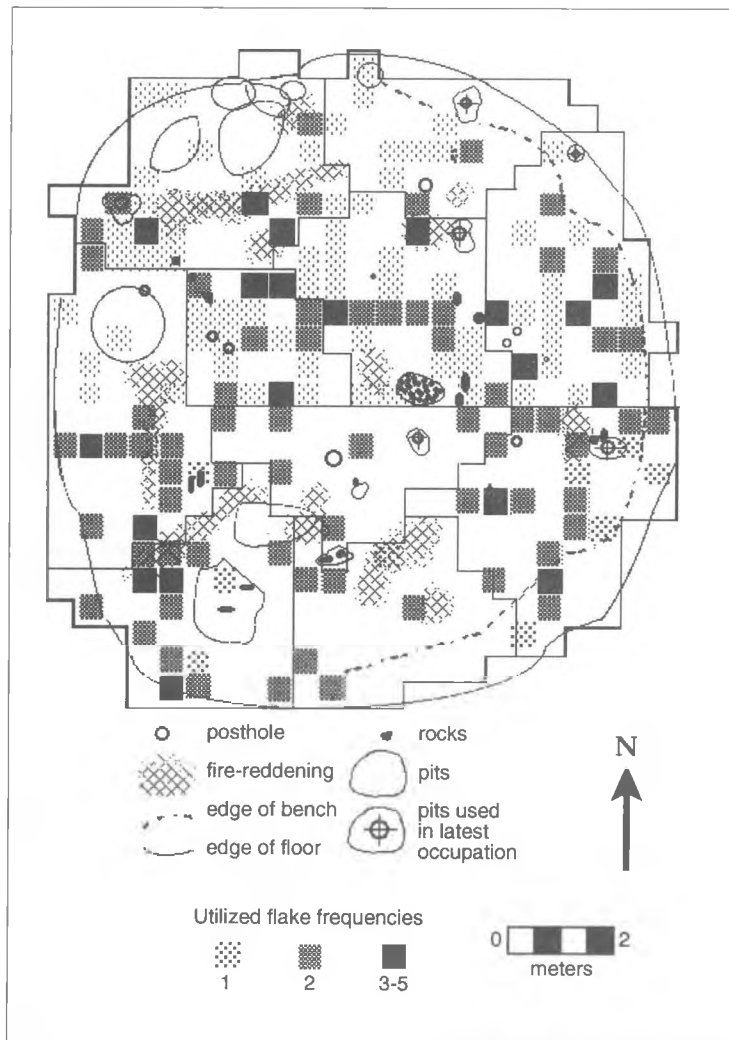


Figure 11. Distribution of utilized flakes on the floor of HP 7.

relatively rich in fire cracked rock, but in the Central zone, fire cracked rock is concentrated along the boundary with the Inner zone. Along the northern half of the perimeter, an "Outer zone" was distinguished by an abundance of debitage, higher than expected frequencies of heavily-retouched scrapers and a relative scarcity of fire cracked rock.

Similarities in the distributions of lithic artifacts suggest similarities in the activities which occurred in different spaces. Thus, the Central zone in HP 7, like the southwest side of the floor of HP 3, is interpreted as a possible "kitchen" area, used for handling foodstuffs and other relatively soft materials, while, the Outer Zone, like the northeast side of the floor of HP 3, is interpreted as a "workshop" area used for manufacturing, maintaining, and repairing equipment such as hunting and fishing gear.

In HP's 3 and 12 opposite sides of the floors appear to have been used for different activities and this was interpreted as evidence that a single domestic unit occupied each house. On the other hand, the concentric Inner and Central zones in HP 7 could readily have been divided among several separate domestic units so that each would have access to a portion of both the "kitchen" and "workshop" areas. The distribution of hearths, pit features, and discrete clusters of artifacts around the perimeter of this floor provide an additional indication of such an arrangement and suggest some possible lines along which the Outer and Central zones might have been divided.

In the Inner zone, despite the overall scarcity of modified artifacts, almost every modified artifact type is represented in proportions which are not improbable ($p > 0.10$) in an even distribution. This was interpreted as an indication that the Inner zone was used less intensively than the Central and Outer zones but for many of the same activities. I have suggested that the Inner zone, in association with a hearth in the southwestern part of the Central zone, might have been a domestic area occupied by a group whose high status entitled it to a larger living space than other domestic groups in this house. A possible hide-working area in the southeastern part of the floor, distinguished by an abundance

of spall tools improbable in a random distribution, could also have been attached to the Inner zone. Hide-working and control over hides is a probable indicator of high status, as argued by Hayden (1990).

Additional indicators of possible higher status for a group residing in the southern part of the floor include: the presence of a stone bead and a fragment of a nephrite ornament (the only artifacts in any of the three housepit floor assemblages which can be interpreted as status goods) and unexpectedly high frequencies of cores and of chert and chalcedony flakes, which may indicate control over lithic resources. Key-shaped scrapers, and drills/perforators represent an unexpectedly high proportion of the modified artifacts in the southern sectors and may be evidence of some form of craft specialization in the Inner zone.

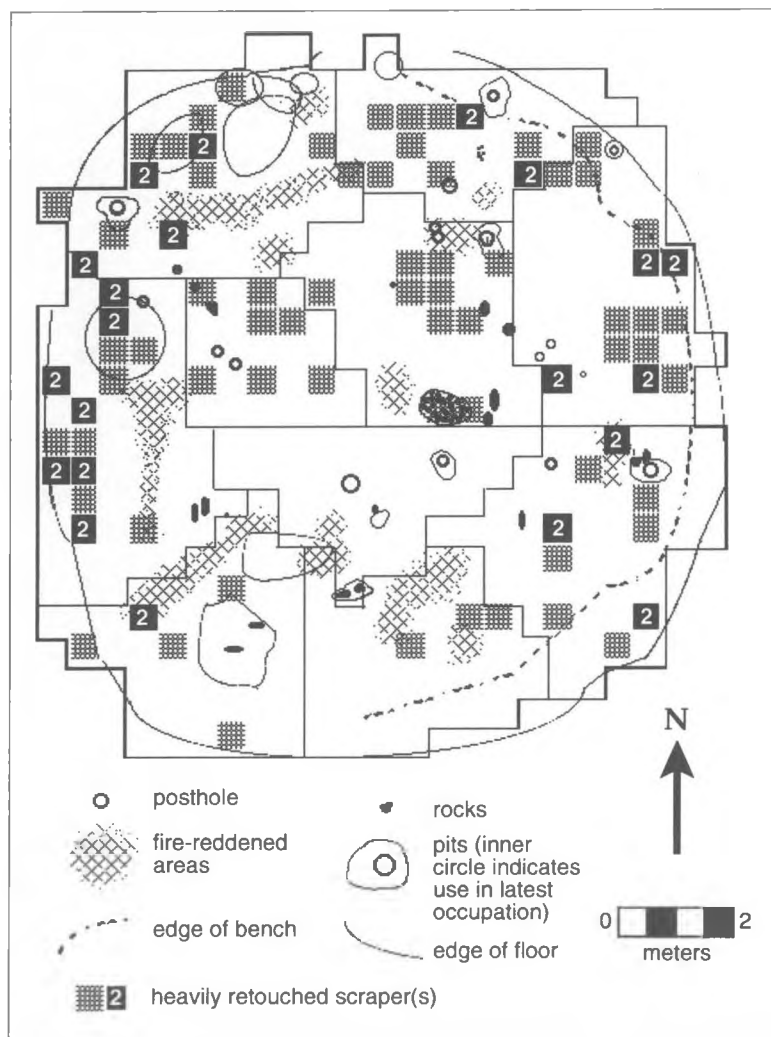


Figure 12. Distribution of heavily-retouched scrapers on the floor of HP 7.

Comparisons

The concentric zones on the floor of HP 7 are more consistent with the model of a space divided among several sub-groups, each of which had a similar role within a co-residential corporate group, than is the bilateral division of space described for HP's 3 and 12. If the activities represented by utilized flakes on the one hand and heavily-retouched scrapers and debitage on the other represent a fundamental division in general domestic behavior, possibly female vs. male activities, then it is likely that both components would be present in each area occupied by an economically independent sub-group within a co-residential corporate group. The concentric zones of HP 7 can be radially divided into several similar areas each incorporating a portion of each zone. Hearths are distributed on the floor of HP 7 in a manner which suggests the existence of

several such areas, each containing a hearth. In addition, boundaries between artifact clusters in these zones suggest boundaries between independent domestic areas. In HP 3, areas incorporating both the utilized flake component and the heavily-retouched scraper component would have to be laid out in longitudinal bands across the floor, parallel to the southwest-to-northeast axis. Such longitudinal bands would be split into two parts near the center of the floor, a presumed high traffic area. Bands farther from that axis would include only peripheral parts of the two important artifact concentrations. If, as the distributions of Kamloops points, expedient scrapers, and exotic flakes indicate, the Northwest sector was also used for different activities from the remainder of the floor, it would have been nearly impossible to devise a division of this floor into two domestic areas which each included part of any two activity areas, let alone all three. Similar difficulties arise in trying to divide the floor of HP 12 into areas which incorporate parts of each of the distinct distributions there. Assuming that all domestic areas would have been used for the same basic activities and that these activities would be represented archaeologically by collections of

artifacts in which most artifact types are represented in similar proportions, it is hard to imagine how the floor of either HP 3 or HP 12 could have been divided so as to include multiple domestic areas. In addition, there is good evidence for only a single hearth associated with the most recent occupation in either HP 3 or HP 12. Since it seems likely that each domestic area would have been organized around a hearth, this is further evidence that, in each of the two smaller houses the residents were organized into one domestic group.

Thus, of the three floors examined in this study, only the floor of the largest house, HP 7, has artifacts distributed on it in patterns which are clearly consistent with a division of the living space into several domestic areas. This is the arrangement predicted for the social organization of space in the residences of large, hierarchically-organized, co-residential corporate

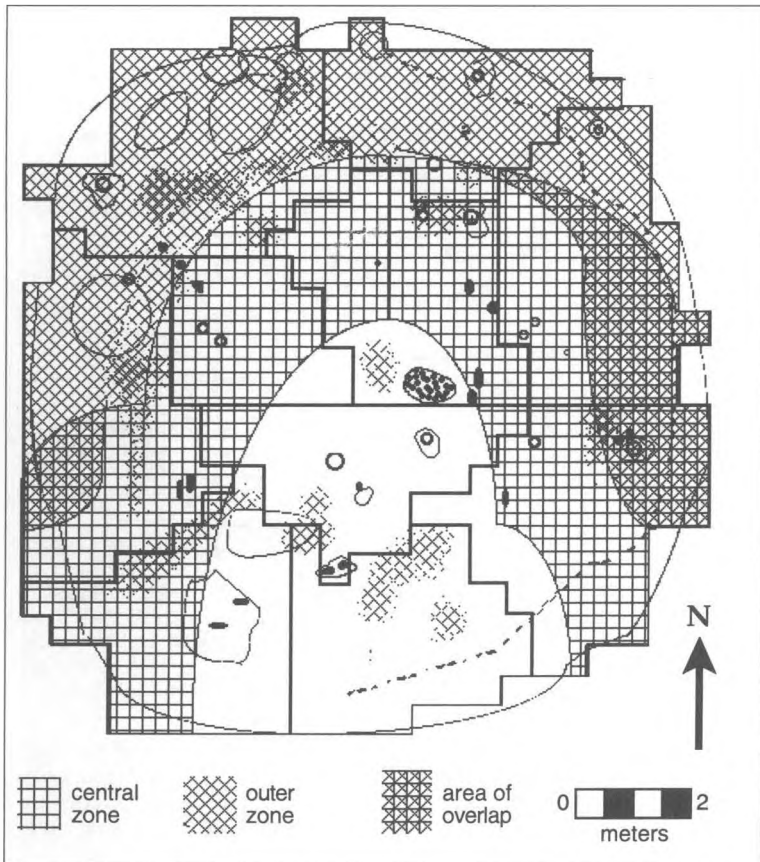


Figure 13. Sketch showing the boundaries of the Inner, Central, and Outer zones identified on the floor of HP 7.

groups. So, as far as these three housepits are concerned, the observed data is consistent with the model.

More detailed questions related to status differentiation, craft specialization, and the sexual division of labor cannot be so easily dealt with. Housepit 12 has substantially fewer lithic artifacts in relation to floor area than either of the two larger houses. It also has less diversity in artifact types, suggesting a narrower range of activities, and is relatively poor in exotic lithic raw materials. All of this could be interpreted as evidence of relative poverty for the residents of this house or of a shorter occupation span. There is less discrepancy between HP's 3 and 7.

All three houses contain spatial concentrations of exotic debitage, which might have been controlled by high status individuals, and all three have areas where artifact densities are relatively low. Special attention has been given to the southern part of the floor of HP 7 as an area which might have been occupied by a high-status domestic unit or complex. This suggestion was made on the basis of: the relatively clear space in the South Center sector (indicating some special use of part of the Inner zone as a space from which ordinary

activities were excluded), low artifact densities (indicating less involvement in mundane tasks) combined with a desirable southerly location, an abundance of fire cracked rocks and large hearth areas (associated with access to firewood), a concentration of desirable chert and chalcedony flakes, large storage pits in the sector, and proximity to an area which may have been used for hide-working.

The concentration of spall tools in the southeastern part of the floor of HP 7, which has proportionately more tools of this type than either of the other houses, may be the strongest indicator of an area set aside for a specialized activity in any of the three houses. However, in every house, some types of modified artifacts which may have been used for particular crafts have localized distributions. It is difficult to determine whether these concentrations represent areas set aside for a particular activity which was practiced by most residents of a house, or constitute areas used by a single craftsman in the context of their domestic space or generally accessible spaces. It is also possible that several members of a sub-group, within a co-residential corporate group, may have

specialized in a particular craft.

Thus, while there is evidence that HP 7 was organized differently from the two smaller houses, there is no clear indication that the residents of HP 3 had less wealth or status than the residents of HP 7 or that they were less active in specialized crafts. The argument that the residents of HP 12 may have been poorer and less specialized rests, to a great extent, on the size of the housepit itself and the relative richness of the larger assemblages in the larger houses. Since assemblage richness has been shown to be a function of assemblage size, this evidence is not compelling.

As far as the sexual division of labor is concerned, I have suggested that the artifact types which distinguish the southwest sector of HP 3 and the central zone of HP 7 could have been associated with female tasks. Similarly, the tools which distinguish the northeast sector of HP 3 and the Outer zone of HP 7 could have been associated with male tasks. I did not identify any similar distinction in HP 12. On the basis of ethnographic data, a sexual division of labor and of activity areas might be expected but there may be other reasonable explanations of these distributions.

Sectors of HP 7 Floor

SC	WC	EC	S	SW	W	NW	NE	E	SE	
■	■■■■■■■■■■	■■■■■■■■■■	■■■	■■■■■■■	■■■■■■■	■■■■■■■■■	■■■	■■■■■■■■■	■■■■■■■■■	Utilized Flakes
■	■■■	■■■	■	■■■	■■■■■	■■■	■■■	■■■■■	■■■	Acute Expedient
■	■■■	■■■	■	■■■	■■■■■■■	■■■	■■■	■■■■■	■■■	Retouched Scraper
■	■■■	■■■	■	■■■	■■■	■■■	■■■	■	■■■	Expedient Scraper
■	■	■■■	■	■	■	■	■	■■■	■	Miscellaneous
■	■	■	■	■	■	■	■	■	■	Bipolar Cores
■	■	■	■	■	■	■	■	■	■	Bifaces
■	■	■	■	■	■	■	■	■	■	Kamloops Points
■	■	■	■	■	■	■	■	■	■	Notches
■	■	■	■	■	■	■	■	■	■	Endscrapers
■	■	■	■	■	■	■	■	■	■	Cores
■	■	■	■	■	■	■	■	■	■	Other Points
■	■	■	■	■	■	■	■	■	■	Small Piercers
■	■	■	■	■	■	■	■	■	■	Spall Tools
■	■	■	■	■	■	■	■	■	■	Abraders
■	■	■	■	■	■	■	■	■	■	Hammerstones
■	■	■	■	■	■	■	■	■	■	Perforators
■	■	■	■	■	■	■	■	■	■	Key-Shapes
■	■	■	■	■	■	■	■	■	■	Bifacial Knives
■	■	■	■	■	■	■	■	■	■	Pieces Esquillees
■	■	■	■	■	■	■	■	■	■	Core Rejuvenation
■	■	■	■	■	■	■	■	■	■	Pounding Stone
■	■	■	■	■	■	■	■	■	■	Abraded Cobble
■	■	■	■	■	■	■	■	■	■	Jade Ornament
■	■	■	■	■	■	■	■	■	■	Bead

Figure 14. This chart represents the number of specific artifact types that occurred in each sector of the floor of Housepit 7. Note the general similarity between all of the sectors with the exception of the unusually low counts of modified tools in the south and south central sectors. Each completed point (■) represents three artifacts; partial points represent one or two artifacts. Sectors are: south center (SC), west center (WC), east center (EC), south (S), southwest (SW), west (W), northwest (NW), northeast (NE), east (E), and southeast (SE). From Spafford (1991).

Conclusion

The rim-crest to rim-crest diameter of HP 3 is 14 m which is above the 11.13 m average diameter for HP's at the Keatley Creek site but considerably below the maximum diameter of 21 m. HP 7 has a diameter of 19 m, near the upper end of the range, while HP 12 is only 9 m in diameter. Pithouses as large as HP 3 have been attributed to all phases of the Plateau Pithouse Tradition (Richards and Rousseau, 1987) and were being constructed until early historic times (Teit 1906).

If the full development of large, hierarchically-organized co-residential corporate groups was associated with the construction of the largest houses, patterns in the distribution of lithic artifacts on the floor of HP 7 would certainly be expected to be consistent with those predicted for the residences of large, hierarchically organized corporate groups. While HP's 3 and 12 may have been large enough to accommodate several sub-groups within a large, hierarchically organized, co-residential corporate group, they are also small enough to have been shared by a single domestic unit. Patterns

in the distributions of lithic artifacts on the floor of HP 3 could, therefore, be reasonably expected to be consistent with either type of social organization.

This study demonstrates that patterns can be identified in the distributions of lithic artifacts on housepit floors and indicates that, in some cases, those patterns can be most reasonably interpreted as the products of cultural processes which occurred on the floors during the periods when the structures were last occupied. Differences between housepits in the patterns observed can reasonably be interpreted as the result of differences in the spatial organization of activities on the floors arising out of different forms of social organization. While it cannot be definitely stated, on the basis of data from only three housepits, that all of the largest housepits at the Keatley Creek site were occupied by large, hierarchically-organized corporate groups, the observed patterns are consistent with those predicted by the model for the social organization of space in the residences of such groups.

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