Chapter 3
Plans and Processes

Choosing a Site and Planning Excavations

With the goal of investigating prehistoric social and economic organization of complex hunter-gatherers firmly in mind, and having heard stories of unusually large dwellings in the Interior Plateau of British Columbia, my students and I began a thorough search of the recorded housepit village sites of British Columbia to find the largest structures. On the basis of previous work on Iroquoian longhouses (Hayden, 1977; Hayden & Cannon, 1982), 1 reasoned that large houses would constitute a distinctive type of social and economic organization. I referred to large, multifamily houses as *residential corporate groups.* It seemed that the chances of recovering social organization would be best if we concentrated on such corporate structures. If I was right, then the economic and social characteristics of large multifamily dwellings should be substantially different from small houses and should provide clues to the reasons for the formation of the large dwellings.

The archaeological site at Keatley Creek (Figures 3.1, 3.2) not only had the largest houses recorded for the Interior of British Columbia, but also had the highest num-

Figure 3.1. *A general view of the core of the Keatley Creek site. The actual creek is in the ravine to the left.*

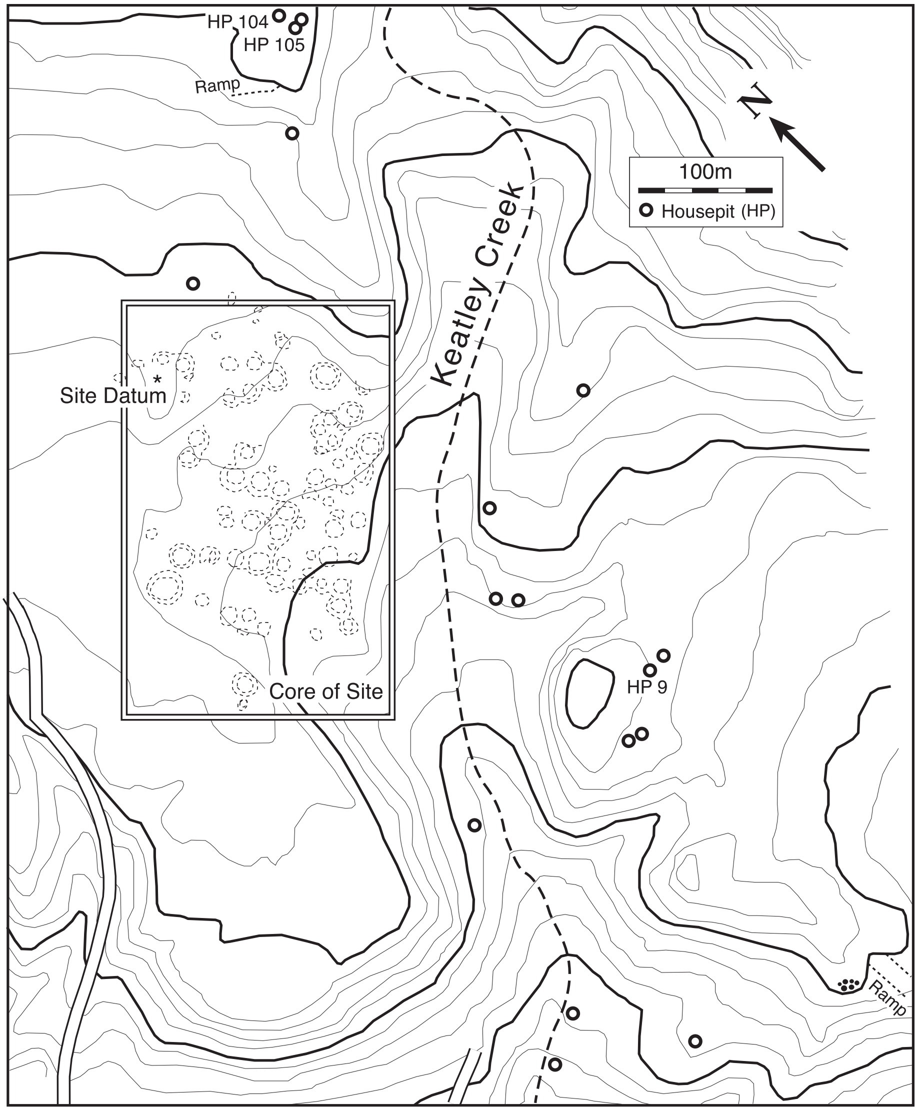


Figure 3.2. *A contour map of the full site area at Keatley Creek. The core area covers about 5 ha, while isolated housepits and cachepits in outlying areas of the site cover at least another 8 ha. Several structures and small features also occur along the creek about 70 m upstream from the top of the map. Contour interval = 5 m.*

ber of houses recorded for any site. I therefore decided to concentrate excavations at Keatley Creek, and the Fraser River Investigations of Corporate Group Archaeology project was born with financial assistance from the Canadian Social Sciences and Humanities Research Council.

The second step was to determine which houses at Keatley Creek to excavate. As is evident from the site map (Figure 3.3), there are only five or six very large housepits out of the 120 structures at the site. Thus, we placed narrow (50 cm wide) test trenches from the edge to the center of all the large housepits, as well as in a number of medium and small housepits. These houses were chosen on a judgmental basis to emphasize the perimeters of the site where we assumed there would be less disturbance from rebuilding. The sampling design may not have been statistically sophisticated; however, there was really nothing warranting a random sample in this case. We excluded all structures that had been cut into by later building activity, as well as the vast majority of structures that were

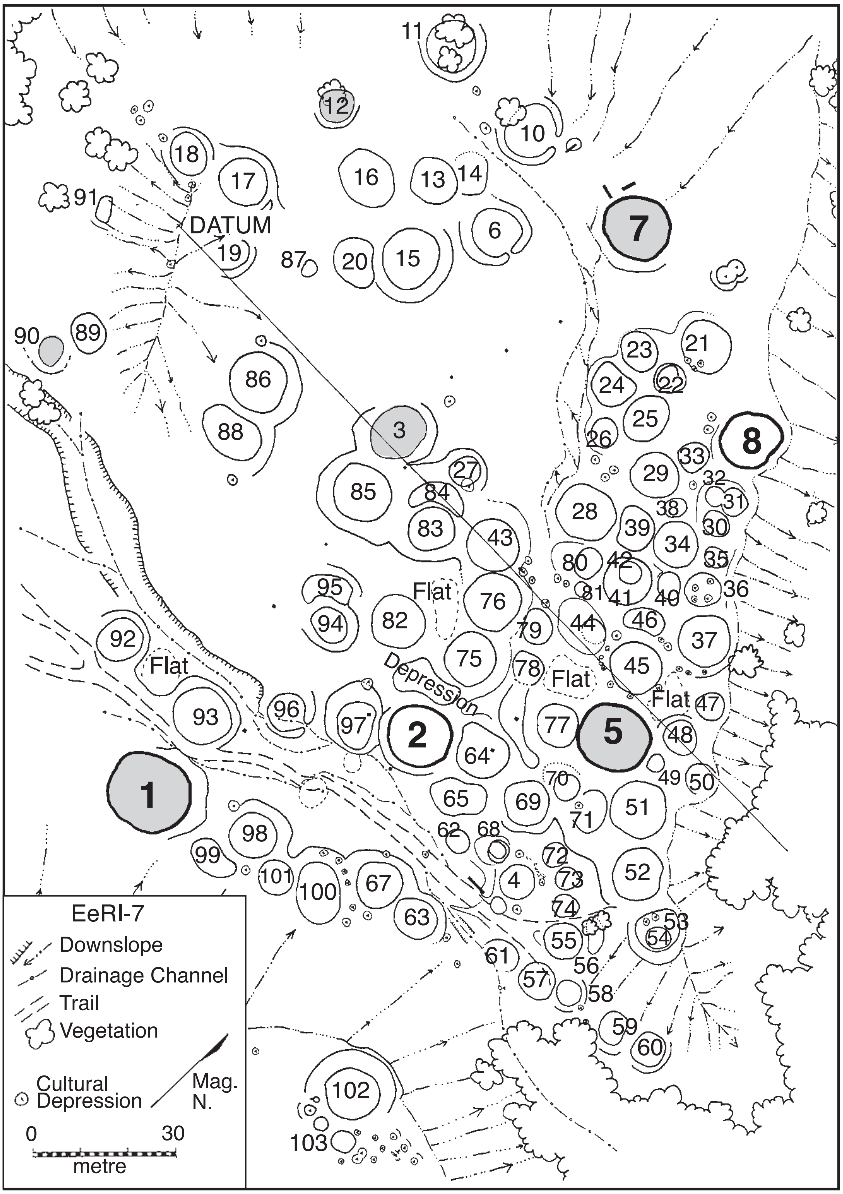


Figure 3.3. *Map of the core of the Keatley Creek site with housepit numbers indicated. Excavated housepits mentioned in the text are highlighted in gray, and the five largest housepits are designated in bolder numbers.*

crowded into the center of the site, and structures that had been badly disturbed by pothunters. Ultimately, we tested 24 of the structures at the site, or about 20% of the total.

This testing phase of the structures provided a number of extremely valuable observations about the site. First, it became clear that the vast majority of deposits at the site could be divided into several basic types. Following are the most important types:

1. *Sterile till.* These sediments were composed of yellowish sands, silts, and gravels that glaciers had ground up and left as mixed homogeneous deposits on the bottoms and sides of valleys after the glaciers melted.
2. *Floor deposits* in houses. These deposits sometimes had slightly less gravel, were generally dark gray, but could vary in color and texture depending on the length of occupation and other factors (Figure 3.4).
3. *Roof deposits.* These sediments had very high gravel, silt, and sand contents similar to the till parent material. They were typically dark gray and homogenous.
4. *Rim deposits.* These deposits varied dramatically from lenses consisting almost completely of dry organic material that literally floated in water, to roof-like lenses, to lenses that were essentially the same as the sterile underlying till.
5. *Surface loess.* This was a windblown silt from 5–15 cm thick, deposited over all the other deposits.

A second result of our housepit testing program revealed that the larger structures and most medium-sized structures had thick midden deposits forming the "rim" around the housepit depressions (Figure 3.5). Typically, the bottom of these rim deposits was

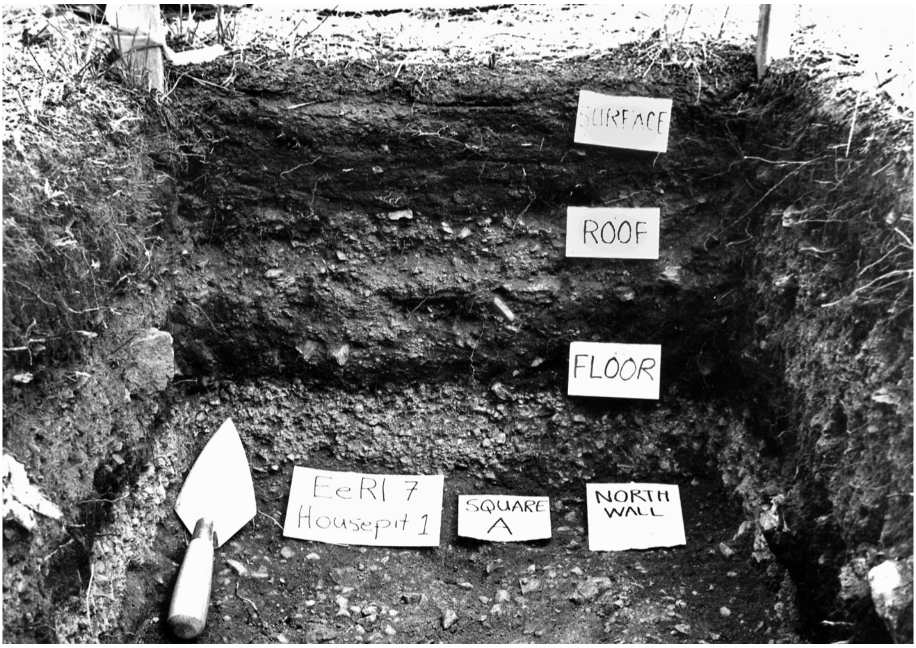


Figure 3.4. *The distinctive color differences that sometimes showed up between the roof and floor deposits is clearly evident in this excavation unit while in others, the occurrence of burned beams clearly demarcated the roof sediments from the floor sediments.*

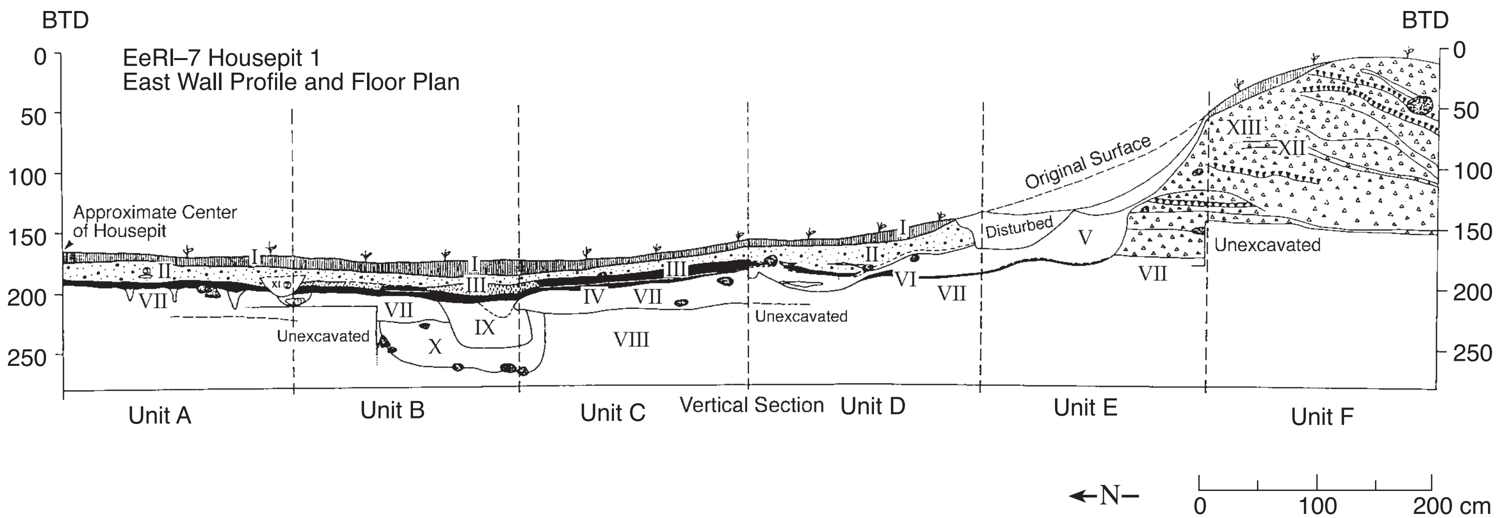


Figure 3.5. *Cross section of a typical large housepit test trench extending from the center of the house (at left) to the top of the rim midden that encircles the house (at right). Note in particular the large storage pit under the floor and the clearly stratified nature of the rim deposits. Floor deposits are solid black. The rim strata maintain approximately the same dip, or angle, from the middle of the rim to its top, indicating that the overall house size had probably not changed significantly during this period and perhaps even earlier.*

stratified and contained some Shushwap projectile points, dating to 2400–3500 B.P., and occasional earlier Lochnore or Lehman points that had been dug up prehistorically and redeposited, probably during the digging of the housepit (Figure 3.6). The middle zones of the rim middens were also stratified and contained primarily Plateau projectile point types dating to 1,200–2,400 years ago; while the uppermost level was not stratified, but mixed, resembling the roof deposits, and contained a mixture of Plateau and Kamloops points, the latter dating from 1200–200 B.P. These results indicated that the large- and medium-sized houses were occupied from the initial housebuilding period of the site and continued to be occupied at least intermittently to the end of the site's history about 1,000 years ago. The occupation of large houses in large winter sites over this entire period is what I refer to as the classic Lillooet culture. If you examine Figure 3.5 carefully, you will note the layers throughout most of the rim's depth are intact; they have not been mixed in a fashion that happens when rototillers or people dig up earth. Thus, these deposits have not been significantly disturbed from the time they were originally deposited. Moreover, the angle or dip of the lenses within the rims do not change in their basic orientation. This constitutes an important bit of information. It shows that the large and medium houses with these deep, intact, rim deposits stayed about the same size from when they were originally built during Shuswap or Plateau horizon times, until the time the site was abandoned.

A third important result of the housepit testing program revealed that small housepits, almost without exception, had no organic buildup of midden material in their rims. There was not any significant accumulation of worn-out stone tools or debris in these rims as there was with the larger housepits. Nor were the rims or roof deposits of the small housepits deeply discolored from charcoal or other organic matter. In short, all indications show that the smaller housepits were used only for comparatively brief periods of time, perhaps a few years or a generation or two, but certainly not the hundreds and thousands of years represented by the larger structures.

A fourth important result of the housepit testing program was the establishment of a clear chronology for the site, beginning with diagnostic bladelet deposits from the middle Prehistoric period (3500–7000 B.P.) found underneath the rim deposits of houses, through the Shuswap, Plateau, and Kamloops horizons. We were able to confirm that the changes in styles of projectile points found at Keatley Creek corresponded to changes in point styles during each of the cultural horizons that typified the Interior Plateau as a whole (see Figure 3.6; Richards & Rousseau, 1987; Stryd & Rousseau, 1995). These changes in projectile point style are much like the changes in style over time of automobiles, or Coke bottles, or telephones, with which we are all familiar.

A fifth important result from the housepit testing program, and one of the main objectives of the testing program, was that we were able to identify those housepits that had the clearest distinctions between the various types of deposits. I was particularly interested in locating structures where the floor deposits could be easily seen. It was from these living floors that we had the best chance for recovering details of how the individuals within the houses organized their social and economic activities and how families differed in terms of activities, wealth, or other aspects. To be sure, it was possible to make coarse observations on the overall social and economic dif-

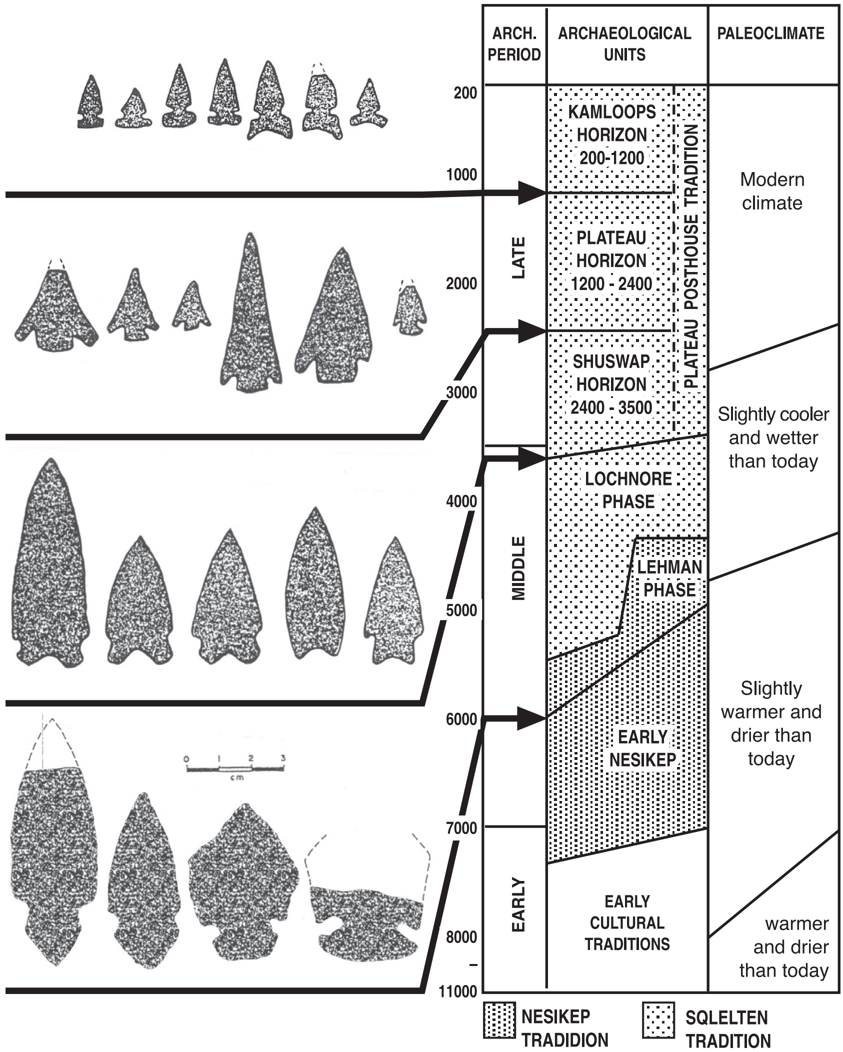


Figure 3.6. *A general chronological chart for the Canadian Plateau showing some of the changes in projectile point styles that occurred during the main periods of occupation (After Richards & Rousseau, 1987; Stryd & Rousseau, 1995).*

ferences between houses as entire entities, but if it were possible to study the details of the internal organization of each house, this would provide far greater information on the social and economic life of the prehistoric inhabitants of Keatley Creek. When we began, there were few people who thought that isolating the living floors in housepits would be possible. They said there would be so much mixing and contamination that no meaningful conclusions could be drawn from such a study. Therefore, in our first season, it was extremely gratifying to actually see distinct layers of 3–5 cm thick sediments resting directly on sterile till within some housepit depressions. These few bottom centimeters looked and felt different from the mass of overlying dirt which we believed represented roof deposits (see Figure 3.4).

Finally, the housepit testing program confirmed the basic assumptions we had made about the nature of the structures at the site using historical and ethnographic documents. That is, people dug shallow, flat-bottomed pits into the ground, then erected a timber roof frame over the pit which was covered with dirt (primarily for insulation), as described by James Teit (1900) and others (Figure 3.7a, b). In the course of our excavations, we discovered many details that did not conform to the ethnographic description of these houses, but the basic house model was corroborated.

Given the results from our testing program, it was possible to choose a number of housepits for more extensive excavation. My goal was to fully excavate the floor

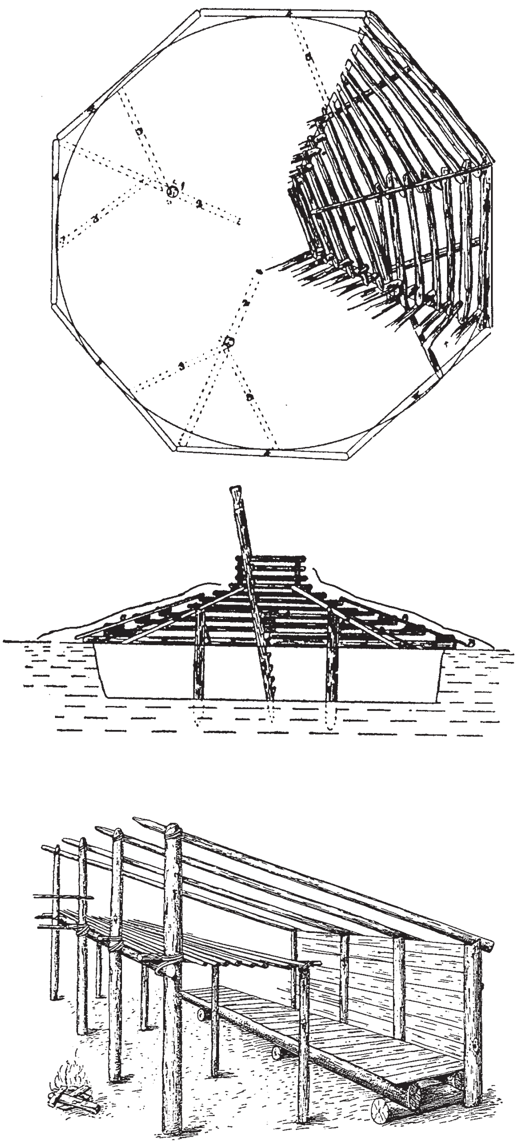


Figure 3.7a. *Dawson (1892) illustrated the construction details of these houses among the Shurwap (lower left) while Teit (1906) showed how sleeping benches and storage racks were traditionally constructed among the Lower Lillooet (below, right). Similar furniture is reported to have been used in pithouses.*

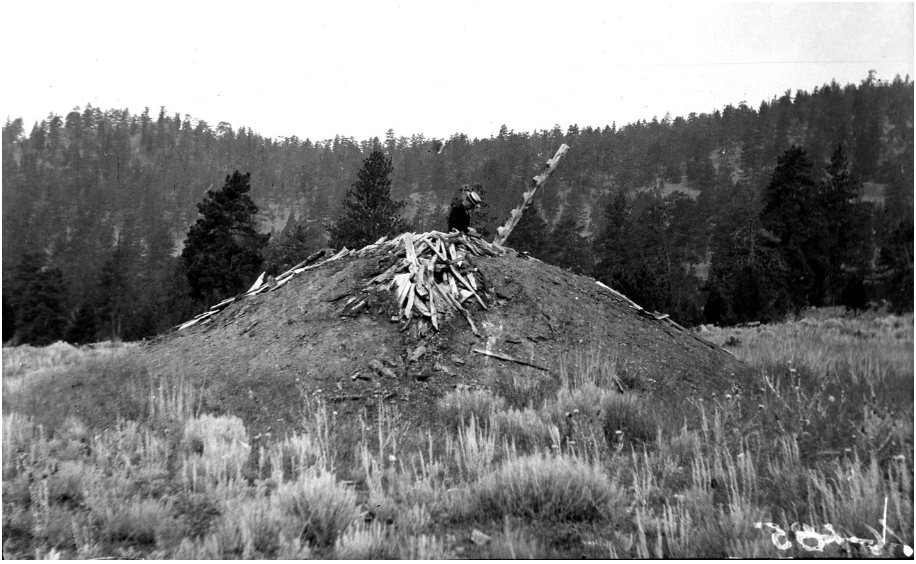


Figure 3.7b. *A photograph of one of the few remaining pithouses at the turn of the century. Note in particular the earth covering and notched log ladder.*

of at least one large, one medium-sized, and one small housepit. This obviously did not constitute a large enough sample from which to make statements about all large, medium, and small housepits at the site, but it did provide an initial indication as to what those differences might well be like. Moreover, on the basis of our test trenches in other large and small houses at the site, it seems that the distinctive characteristics we identified from extensive excavations of large versus small housepits are also reflected in the other tested large versus small houses. In fact, we were able to excavate two additional small housepits, which provided a better appreciation of their variability. I feel relatively confident that the "small" versus "large" differences that will be discussed in the following chapters actually do characterize small versus large pithouses at the site.

We excavated each house in squares only 50 by 50 cm. This enabled us to control stratigraphic changes more accurately than larger excavation units would have permitted. Excavating in such small units also enabled us to create detailed distribution maps of artifacts across the living floors without having to record the precise coordinates of each object. For recording purposes, 16 of these 50 cm squares were grouped together to form a larger 2 by 2 m square. Each housepit was completely gridded in this fashion so it was possible to identify the artifacts' vertical position (by the different strata and level in which they occurred) and their horizontal position (by the square and subsquare in which they occurred). Soil samples were taken from all floor deposits at regular intervals for flotation involving the recovery of botanical remains, small faunal remains, and small lithic debris.

From the outset, we expected that if there were developed social and economic inequalities at Keatley Creek, these would be apparent in the differences between housepits in prestige items such as nephrite tools (nephrite is very similar to jade), copper and shell jewelry, or carved bone and stone. We also hoped to detect some differences in the use of economic resources such as fish versus deer and different storage capabilities. Finally, we hoped that social and economic divisions within the largest houses might be detectable using the same criteria. Traditionally, the grave goods associated with burials have constituted some of the best evidence for social and economic inequalities in past societies. However, we did not know where the cemetery for Keatley Creek was and we were not prepared to deal with the many complexities involved in excavating burials. In short, locating burials was not one of our goals.

Formation Processes

Michael Schiffer (1987) and many others since have stressed the importance of understanding how artifact-bearing deposits form to clearly understand what archaeological objects represent and what biases might be present in the remains we study. For example, objects found inside house depressions might have been left by inhabitants fleeing a fire, or by neighborhood children using abandoned structures to play in, or by neighbors dumping refuse in abandoned houses. The objects might also have been artifacts from earlier occupations that had been accidentally introduced into later occupations as roofing material that collapsed, or they might simply represent the refuse existing in the house at the time it was abandoned. By studying formation processes, we can tell which scenario corresponds to particular deposits being excavated. To determine whether the floor deposits at Keatley Creek were authentic and to be able to interpret the remains from the site in social and economic terms, it was clearly necessary to understand how our archaeological deposits came to be created. We therefore embarked on a relatively detailed study of how deposits at Keatley Creek were formed. Some of these interpretations were straightforward and required little special analysis. Others were much more complicated.

Till

For instance, from geological work done in the area by June Ryder (1978) and others, it was relatively clear that the sterile deposits underlying the housepits were composed of till deposited by glaciers, the upper layers of which had been slightly weathered and become indurated from the leaching and subsequent precipitation of salts. About 20–30 cm of windblown silt, or loess, had been deposited on top of this till and periodically was swept up by high winds and redeposited.

When people built their houses, they removed this loess and dug down varying depths into the till. They piled this dug-out material around their housepit and used it to cover their roofs (Figure 3.8). Frequently, some of this dug up “sterile” material occurs at the base of housepit rims, but is less consolidated than the undisturbed, sterile till material and has an occasional piece of charcoal or stone flake in it.

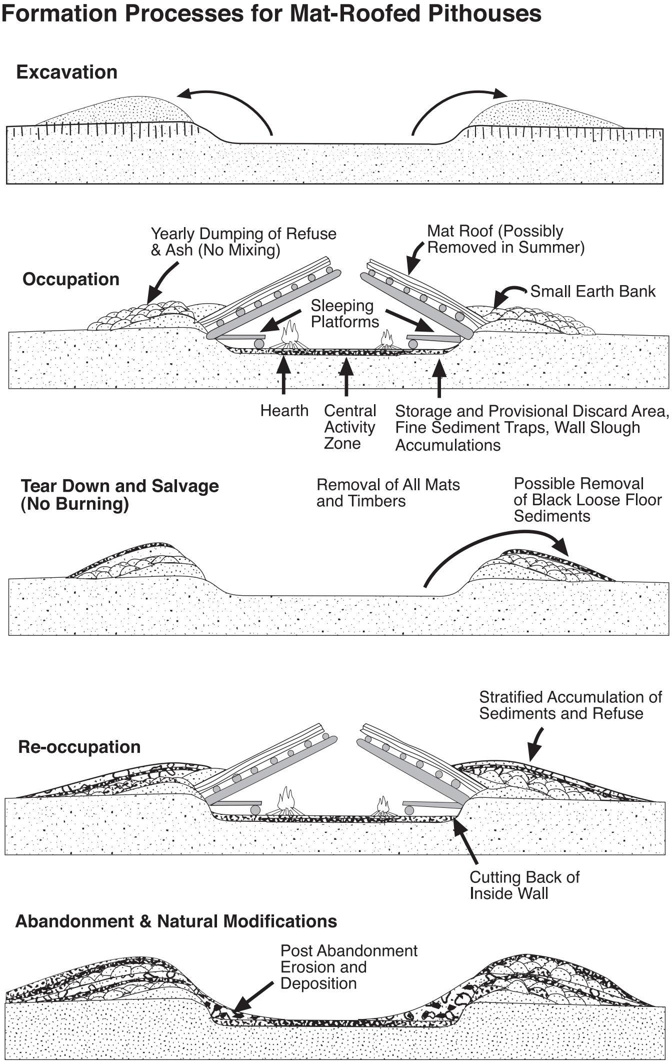
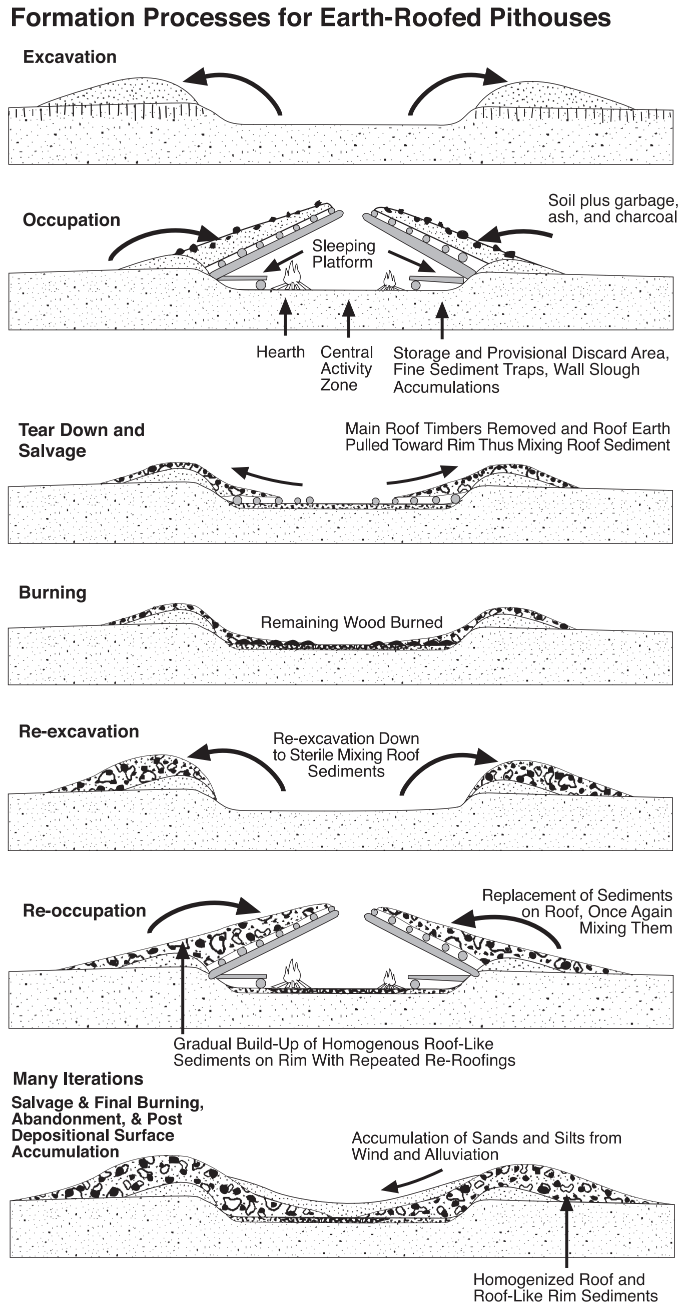


Figure 3.8. *A schematic illustration of the formation of roof and rim deposits over several cycles of roof replacements. Important differences information processes and deposit characteristics depended on whether the roofs of structures were mat covered or earth covered. Rim deposits of mat covered structures retained the stratified features of the deposited refuse, whereas the moving and churning of dirt for roofs in earth-covered houses generally destroyed stratification of refuse depostis in the rim. Medium and large housepits display a progression from clearly stratified rim deposits in lower levels to homogenized, churned deposits in the upper levels indicating a change from mat-covered to earth-covered roofs probably around 1,500 years ago.*



In each re-roofing cycle of earth-covered houses, refuse accumulated on the roof and on the rim during occupation. All this material was then piled on the rims while the old roof was being replaced, and much of the soil and refuse from the previous occupations was then thrown on top of the new roof or left churned up on the rims. In this way, increasing amounts mixed together and accumulated over time in the roof deposits and in the portion of the rim affected by re-roofing activities.

Floors

In the course of excavating through roof, floor, and till deposits, we made numerous observations indicating that the living floor deposits were derived largely from the underlying till. Some of the intense, black organic staining that characterized many parts of floors was observed extending underneath cobbles that were clearly embedded in their original position within the till matrix. Patches of silt that occurred naturally within the till also typified the floor deposits immediately overlying them, but differed from the gravel-rich roof deposits that lay on top of the floor deposits. The view that floor sediments were essentially derived from the underlying till makes sense because after people had dug out the pit for their house, they would have begun to walk over the fresh till floor, scuffing up gravel and pebbles, and gradually creating a loose matrix that could easily incorporate small objects, ash, charcoal, and other material residues from various activities carried out within the house. However, there is more to the origin of floor deposits. Most floor deposits have reduced gravel contents compared to roof or till deposits. It appears that either gravel was being removed during house-cleaning, or that fine silts and sands were being introduced into the houses by winds or by filtering through the roof onto the floor. The intense dark color of most floors, especially near hearth areas, almost certainly results from the grinding of charcoal underfoot as people walked across the floor and from other small organic wastes that decomposed within the floor sediments.

As might be expected, all the bones and stone tools found in the floor deposits displayed few indications of weathering. In fact, salmon ribs were still flexible and springy after more than a thousand years in the ground. When the houses were still standing, these materials were protected from sun and rain inside the houses, and when the roofs collapsed, the dirt on the roofs covered the floors, thereby sealing the deposits and helping to preserve bone and plant remains over the centuries.

One of the most important aspects of studying formation processes is to understand what objects have been brought into a depositional context, what objects have been removed from deposits to be discarded at a distance, and what objects have remained in the deposits. We will discuss what objects were brought into the housepits in the following chapters. Here it is sufficient to note that analysis of all the deposits associated with each housepit indicates the materials left in the floors seem representative of all the types of materials generated by the inhabitants with two special exceptions. First, items of great value (sculptures, jewelry, nephrite adzes) were taken away to other locations or buried with their owners and thus are rare in floor deposits. Second, most whole or useful tools were simply carried around until broken or used up and so there are few whole tools in floor deposits. On the other hand, some whole and useful items of little value such as large anvil stones and bulky, but easily made, spall tools were left inside the houses. A number of broken tools were also stored under beds. This is similar to how modern children often build up middens of unwanted or broken toys and objects under their beds, and to how homeowners store broken tools in corners of garages or basements in the hope that someday they might be of use. I refer to these types of items as “provisionally discarded" items. Since they are of little value, they are frequently left behind when houses are abandoned.

The rarity of valuable items and serviceable tools in the floor deposits at Keatley Creek indicates that the houses were not abandoned in a rush, since people typically leave many useful or valuable items behind if fire or warfare causes them to abandon their houses. There were no skeletons found to indicate violence or calamities and there were no charred posts in most of the postholes. Because the roof superstructures in the housepits we tested had been burned in the great majority of cases, the absence of large charred beams and center posts indicates that the main support posts and beams had been deliberately removed before the houses had been burned. The occurrence of the smaller, charred cross-beams and thin layers of charcoal lying on top of the floor deposits indicates that these roofs were burned soon after the residents had left; that is, not enough time had elapsed to allow the roofs to collapse even partially from rotting.

Thus, the objects left in the floor deposits were either of little value to the inhabitants or objects that were small and had been lost. Although we tested other areas of the site to determine if there were garbage dump locations, such as pits or abandoned houses, we did not find any indication that the dumping of garbage took place to any significant degree away from the houses where it was produced. Given the very cold temperatures of Lillooet winters, it is not surprising that people generally dumped their garbage as close as possible, notably, out the door.

Finally, most of the houses we tested had only 3–5 cm of floor deposits laying over the sterile till, and these floors always had projectile points in them from the last occupation period of the house. It seems clear that when the inhabitants replaced the roofs of the houses (probably every 10 to 20 years—Condrashoff, 1972, 1980) they cleaned out all of the loose floor deposits that had accumulated over the previous 20 years and dumped them around the edge of the housepit. Later this material would be incorporated into the dirt heaped on the newly constructed roof (see Figure 3.8).

Roofs

It is obvious the roof deposits are derived from till because the percentage of sand, silt, and gravel in the roof deposits is almost identical to the underlying till. While there are some oral accounts of people bringing in clay or silt to cover their roofs, there is little evidence that anyone at Keatley Creek did this a thousand and more years ago. However, there is more to the roofs than just sand, silt, and gravel. The roof deposits have a distinctive, dark gray color and contain artifacts, bones, and carbonized plant remains that do not occur in the till. As already noted, there is a range of color from brown to almost black depending upon the housepit size; and there is a similar range in artifact, bone, and carbonized plant material density, from extremely sparse occurrences among some of the smaller housepits to the extremely dense occurrences of larger housepits. Moreover, there is no stratification of deposits in the roof materials such as in the rim deposits of larger houses.

The varying and sometimes dark color of the roof can be easily explained in terms of waste organic materials accumulating and decaying in these sediments. These materials probably included human wastes, discarded plant remains, discarded animal wastes (bone fragments, spilled fats, hair), and certainly ashes and charcoal powder or bits. The longer a house was used, the more this organic material was incorporated into the roof deposits. However, it was not clear whether these materials, as well as the bone and stone waste (a) were thrown onto the roof as garbage cleaned out from the house interiors, (b) whether they were waste products from activities performed on the roof, or (c) whether they were incidentally incorporated into the roof deposits when the roof was replaced and floor deposits were cleaned out only to become mixed with the soil used on the new roof.

Therefore, we conducted a series of analyses comparing the breakage state of stone tools, the wear state of tools, the weathering state of tools, the density of tools, the relative frequencies of different types of stone tools, and the spatial distribution of tools from the roof and floor deposits. From these analyses, it was clear the stone tools and their conditions in the roof were almost identical to the tools in the floors, except that the tools in the roof exhibited slightly more staining and weathering. Types and proportions of stone waste materials, or debitage, were also very similar. Thus it became evident that either people were cleaning up their waste materials and throwing them on the roof, or that everything that was being incorporated into the floor deposits was subsequently incorporated into the roof deposits during reroofing events.

On the other hand, there was also some evidence from the spatial distributions that at least some roof areas were probably used for special activities, notably in the southwest sectors where the afternoon sun was warmest and in the northeast sector, which had the most shade. The northeast areas may actually have been used as butchering areas and as special dumping areas for cumbersome types of garbage, such as fire-cracked rock (Figure 3.9). Large bones and fire-cracked rocks are found concentrated in the northeast in several housepit roofs. But the contribution of these specialized activity areas and refuse dumping areas to the artifacts contained in the roof assemblage as a whole is swamped by the great quantity of everyday garbage incorporated into the roofs.

It is reasonable to assume that other bone and plant material was treated like the stone material, however, two processes have reduced their visibility in the roof deposits. First, being thrown onto the surface of the roof would have rendered organic objects susceptible to decay from exposure to the elements and pulverization from foot traffic as well as to scavenging from dogs, rodents, or birds. Second, the fact that roof deposits were periodically churned up during the reroofing of houses would have cycled many buried elements to the surface where they would tend to decay, as well as grinding up fragile elements. These inferences are supported by the lower density and frequency of the more fragile types of bone remains in the roof deposits, compared to floor and rim deposits, as well as by the notably weathered nature of almost all faunal remains recovered from the roof deposits versus the almost pristine, unweathered condition of most bone elements recovered from the floors. The homogenous nature of the roof deposits also testifies to the periodic churning that must have occurred.

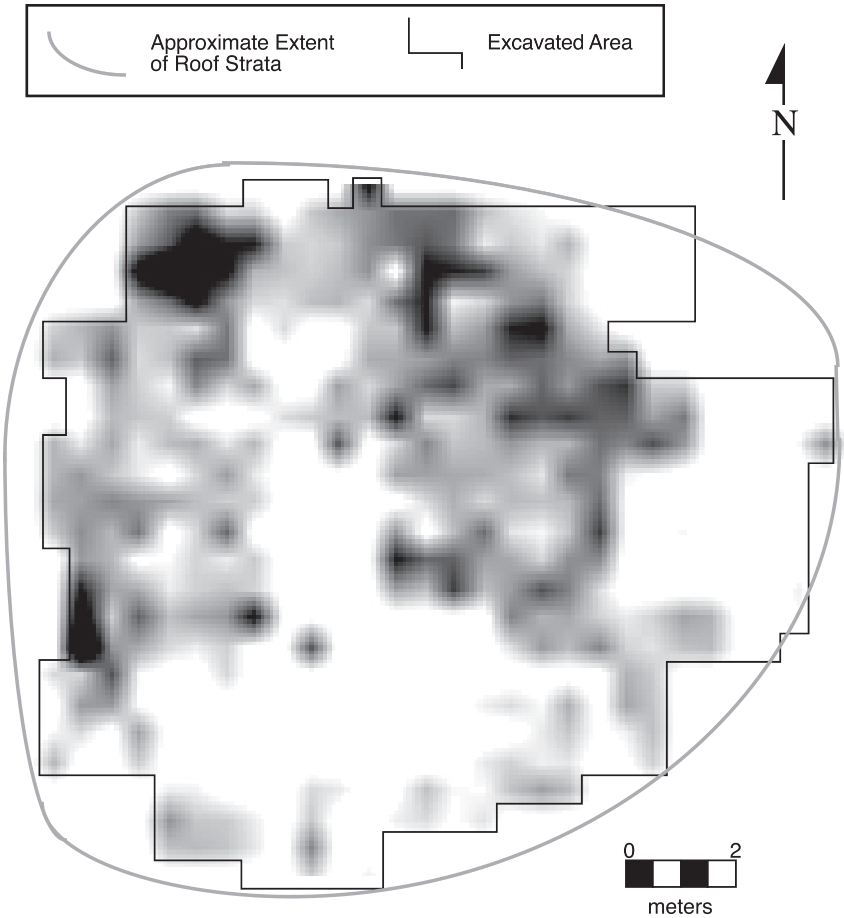


Figure 3.9. *Distribution of fire-cracked rocks in the roof of Housepit 7. Note the strong concentration of these objects in the northeast side of the house where it would have been coldest and the roof would have been least likely to be used during the day.*

Rims

In the case of small houses, it is clear that the rims were simply extensions of the dirt covering the roof; these rims had all the same characteristics as the roof sediments. In the case of the thick rim middens of large housepits, there appeared to be something different involved since there were remarkably thick deposits of organic materials, alternating with lenses of till, or charcoal, or discolored sand and gravel. The nature of the thin, limited lenses made it apparent that they were dumps of waste material or soils from inside the houses that had been removed in the excavation of storage pits or other renovations. The dumping of large amounts of plant materials appeared to be major events, such as might occur during renovations or once a year when the previous year's dried conifer needles, grasses, and other plant wastes would be cleaned out of the house before moving in for the winter. The thick and rapid buildup of these materials on the rim together with the downcurved surface of the rim all seems to have helped shed rainwater and helped keep the inside of these rims remarkably dry, thus helping preserve the plant materials inside them. However, as with the roof, we also discovered evidence for special areas of the rim being used for flintknapping or the special discard of lithic materials.

Summary

The study of site formation processes has enabled us to determine several important facts. It has demonstrated that the houses at Keatley Creek were abandoned in a planned and systematic fashion. It has also demonstrated that there are no significant differences between types of deposits in terms of the types of refuse or material remains left behind. Exceptions involve a high concentration of preserved plant material in the rims, the poor preservation of bone materials in the roof deposits, and the concentration inside the houses of provisionally discarded or bulky items of little worth such as anvils and abrading stones. However, these objects were of great importance from the perspective of the goals of the project, as we shall see.

The study of formation processes also indicated that there were some very important differences between floor deposits and roof deposits. The floors had less gravel; the bones and carbonized plant remains in floor deposits were better preserved and more abundant than in the roof; the floors mirrored localized changes in the texture of underlying till deposits rather than resembling the overlying roof deposits; and the floors were frequently covered by burned beams or thin charcoal layers. We also examined the angle, or dip, of artifacts found in roof and floor deposits and found that artifacts in roof deposits exhibited more random orientations, occurring vertically, horizontally and at oblique angles, as one might expect from churned up sediments; whereas there was a marked tendency for artifacts found in floor deposits to occur in horizontal positions.

This study of the formation of deposits at Keatley Creek therefore contributed a number of vital facts to our research. Of critical importance for the following chapters, it confirmed our initial impressions from the housepit testing program that at least in the houses we had selected for excavation, it was possible to successfully distinguish floor from roof deposits. Therefore, our hope of being able to recover some patterns from the floors that could indicate the nature of social and economic organization inside the houses was considerably strengthened. But until we had completed the excavation program and actually analyzed the stones and bones and plants from the floors, we would not really know if we could say anything about any aspect of organized behavior inside the housepits at the site. The intervening years of analysis were frustratingly long, and many people devoted a great deal of time to pursing this question. Our efforts were well rewarded, as readers may appreciate in the following chapters.